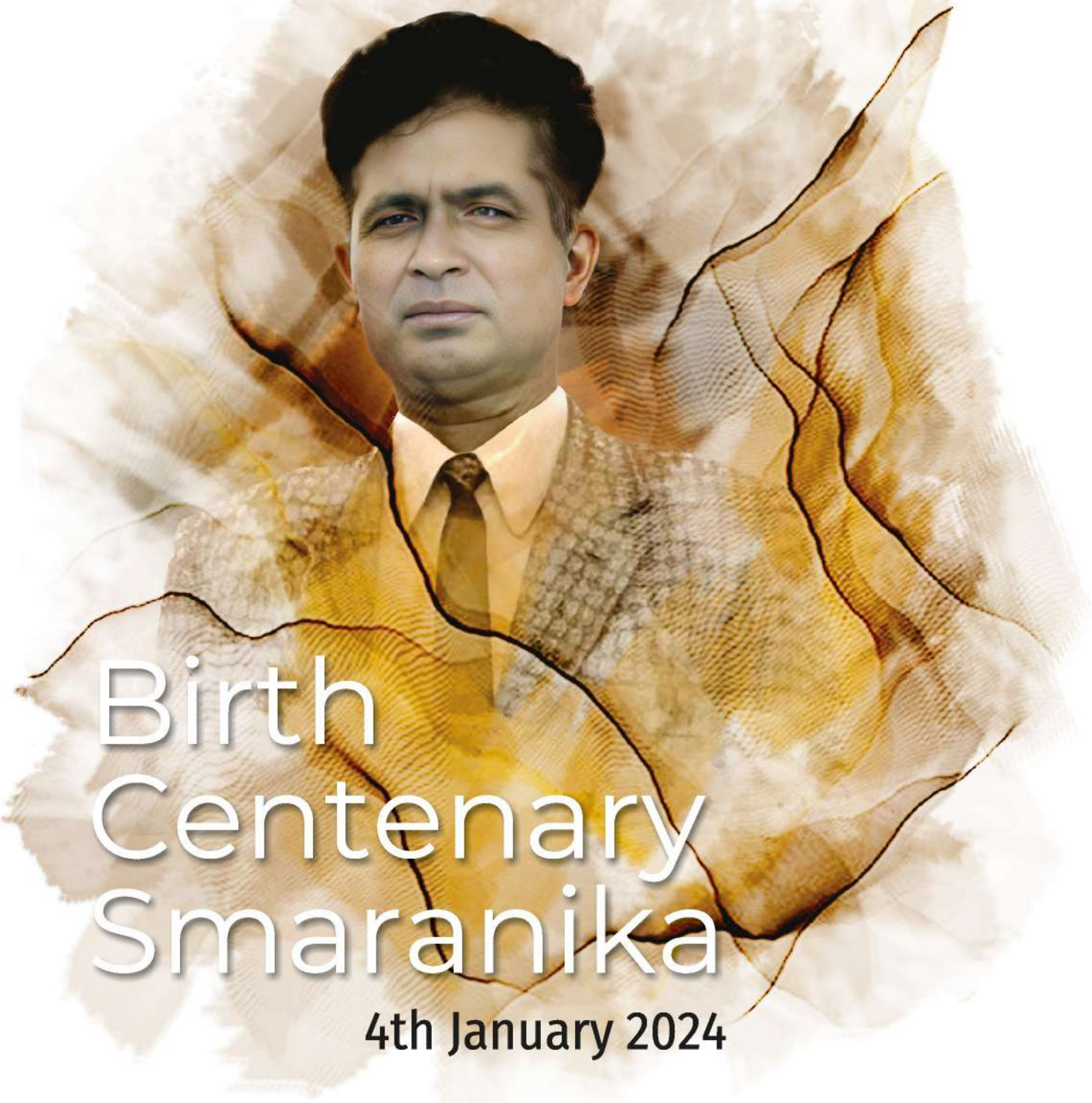
Mahendrayana



Birth Centenary Smaranika

4th January 2024

Prof. (Dr.) Mahendra Kumar Rout

Brandeis University

Barry B. Snider
Charles A. Breskin
Professor of Chemistry

Department of Chemistry
MS 015
Waltham, Massachusetts
02454-9110

781-736-2550
781-736-2516 Fax
e-mail: snider@brandeis.edu
http://www.brandeis.edu/chemistry/faculty/snider.html

October 10, 2023

Professor Rupasree Ragini Das, President,
Orissa Chemical Society

Professor Shashadhar Samal, Secretary
Mahendra Kumar Rout Birth Centenary Celebration Committee

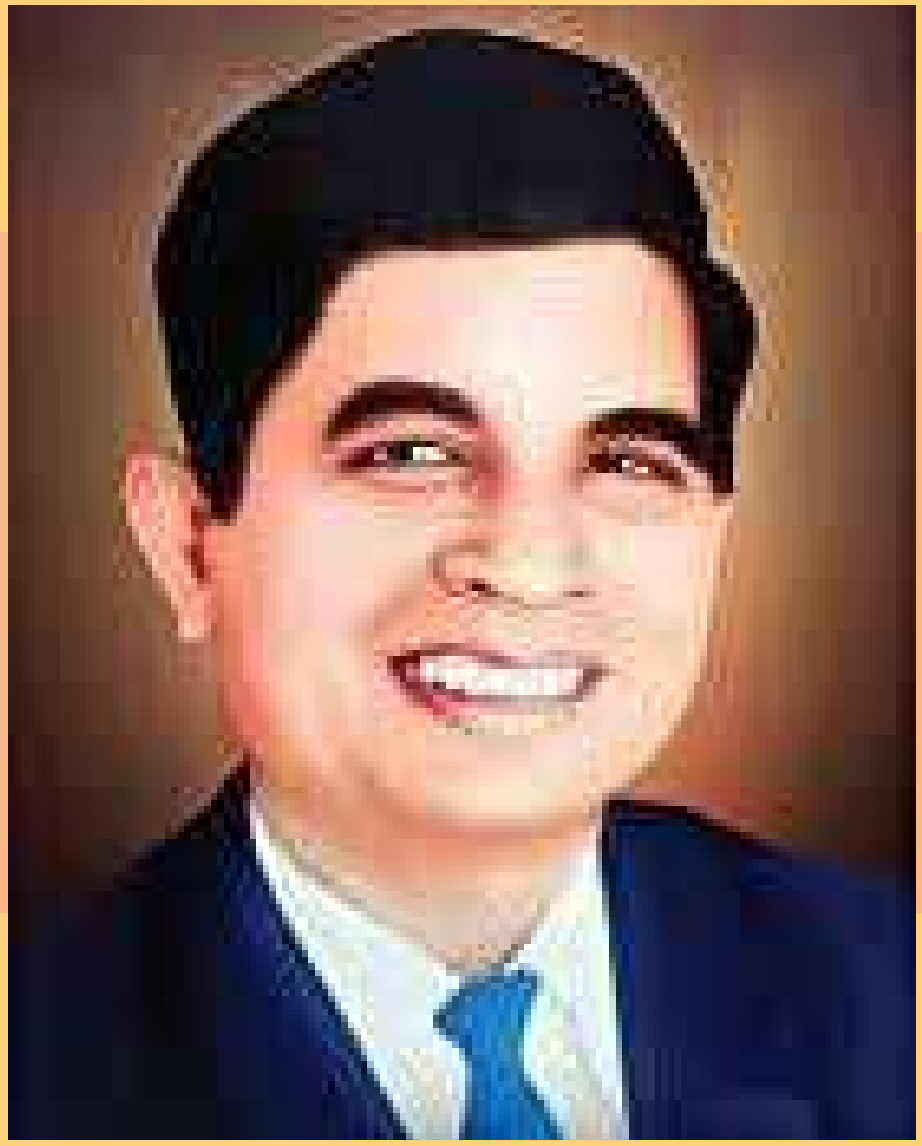
Dear Professors Das and Samal,

I wish to extend my sincere congratulations and best wishes for the Mahendrayana, a souvenir to be published to help celebrate the centenary of the birth of the late Prof. Mahendra Kumar Rout who performed collaborative research with Prof. Harold Conroy in the Dept of Chemistry, Brandeis University, Waltham, MA, USA in 1956. Professor Rout's work with Professor Conroy on the structure of aspidospermine, which was published in the preeminent chemistry journal, *Journal of the American Chemical Society,* was an important contribution to the organic chemistry literature and was also important as an early research contribution from Brandeis University, which was founded in 1948. Professor Rout had a remarkable career, with over 200 publications and service in many leadership positions including the founding president of the Orissa Chemical Society, that is well worth celebrating and I am glad that the Brandeis University Chemistry Department could contribute in a small way to his accomplishments.

I wish you a successful birth centenary celebration on January 4, 2024 at the Ravenshaw University, India.

Sincerely,

Barry B. Snider
Department of Chemistry



Prof. (Dr.) Mahendra Kumar Rout

04.01.1924 – 07.02.1990

Published by:
Secretary,
Prof. Mahendra Kumar Rout Birth Centenary
Celebration Committee (MKRCC)
Department of Chemistry,
Ravenshaw University, Cuttack-753003
Phone: 9938854038

Date of Publication: **4th January, 2024**

Design, Layout & Printing:
Print-Tech Offset Pvt. Ltd.
F-66/1 & F-66/2, Chandaka Industrial area
P.O. - KIIT, Bhubaneswar-751024, Odisha

Smt. Droupadi Murmu
President of India

राष्ट्रपति
भारत गणतंत्र
PRESIDENT
REPUBLIC OF INDIA

MESSAGE

I am happy to learn that the Orissa Chemical Society is organising birth centenary celebrations of late Professor Mahendra Kumar Rout on 4th January 2024. A souvenir titled 'MAHENDRAYANA' is being published to mark the occasion.

Professor Mahendra Kumar Rout was the architect of advanced research and teaching in the field of chemical sciences in Odisha. He was also the founder President of the Orissa Chemical Society. Prof Rout will be long remembered for his passion for science and innovation and his contributions as an eminent scientist, teacher, and academician.

On this occasion, I extend my warm greetings and felicitations to the organisers and participants and wish the event every success.

(Droupadi Murmu)

New Delhi
December 13, 2023

ରଘୁବର ଦାସ
ରାଜ୍ୟପାଳ, ଓଡ଼ିଶା
रघुवर दास
राज्यपाल, ओड़िशा
Raghubar Das
Governor, Odisha

ରାଜ ଭବନ
ଭୁବନେଶ୍ୱର-୭୫୧୦୦୮
राज भवन
भुबनेश्वर-७५१००८
RAJ BHAVAN
BHUBANESWAR–751008

December 12, 2023

MESSAGE

I am glad to know that Post Graduate Department of Chemistry, Ravenshaw University, Cuttack is holding Prof. Mahendra Kumar Rout Birth Centenary Celebration (MKRCC) on January 04, 2024 followed by the 37th Annual Conference of the Orissa Chemical Society (OCS) on January 5-6, 2024 and a National Seminar on the topic 'Molecules to Materials 2024'. A souvenir named '**MAHENDRAYANA**' is also being published to mark the occasion.

Prof. Mahendra Kumar Rout was a scientist of great caliber and at the same time a visionary academic administrator who had contributed at the highest level with remarkable integrity and passion. As Founder President, Prof. Rout had guided Orissa Chemical Society to new heights. He will always be remembered in perpetuity for his brilliant work that ushered in a new generation of scientists and research scholars. The centenary celebration provides an opportunity to commemorate his legacy. The annual conference of OCS and national seminar would be scientifically enriching for the participants. I believe that the souvenir would be a fitting tribute to Prof. Rout's eternal memory.

I wish the occasion and publication all success.

(Raghubar Das)

Tel.: 91-674-2536111 / 2536222, Fax : 91-674-2536582, E-mail : govodisha@nic.in, Website : www.rajbhavanodisha.gov.in

अर्जुन मुंडा
ARJUN MUNDA

आज़ादी का अमृत महोत्सव

सत्यमेव जयते

मंत्री
जनजातीय कार्य मंत्रालय एवं
कृषि एवं किसान कल्याण मंत्रालय
भारत सरकार
MINISTER
MINISTRY OF TRIBAL AFFAIRS AND
MINISTRY OF AGRICULTURE &
FARMERS WELFARE
GOVERNMENT OF INDIA

MESSAGE

This is the matter of great pleasure the Odisha Chemical Society and Ravenshaw University are bringing out a Sourvenir "MAHENDRAYANA" in memory of Professor Mahendra Kumar Rout. He is well-known across disciplines as an affectionate teacher, researcher of repute and efficient administrator. Throughout his academic and administrative career, he exhibited creativity and exvellence besides being the Founder President of the Orissa Chemical Sociarty (OCS). I am delighted to note that the OCS is celebrating the Birth Centenary Year of Prof. Rout from 04.01.2023 to 04.01.2024.

The National Seminar on the topic **'Molecules to Materials 2024'** on the occasion is expected to be very useful. I convey to organizers of the Centenary Celebrations and the National Seminar every success.

Jai Hind!!!

(ARJUN MUNDA)

New Delhi,
29.12.2023

- **Tribal Affairs Minister Office:** 751, A Wing, Shastri Bhawan, New Delhi-110001.
  Tel. : 011-23381499, 23388482, 23070577 (Fax), **Web Portal :** https://tribal.nic.in
- **Agriculture & Farmers Welfare Minister Office:** 120, Krishi Bhawan, New Delhi-110001.
  Tel. : 011-23383370, 23782594, 23073789, 23782691 (Fax), **Web Portal :** https://agricoop.gov.in
  E-mail : arjun.munda@gov.in

धर्मेन्द्र प्रधान
ଧର୍ମେନ୍ଦ୍ର ପ୍ରଧାନ
Dharmendra Pradhan

सत्यमेव जयते

आज़ादी का अमृत महोत्सव

मंत्री
शिक्षा; कौशल विकास
और उद्यमशीलता
भारत सरकार

Minister
Education; Skill Development
& Entrepreneurship
Government of India

MESSAGE

I am happy to know that the Post Graduate Department of Chemistry, Ravenshaw University, Cuttack is organising the centenary celebration of Prof. Mahendra Kumar Rout, an illustrious teacher of the Department and the founder President of the Orissa Chemical Society and to commemorate the occasion, a souvenir titled 'MAHENDRAYANA' is being brought out. I am also happy that the 37th Annual Conference of the Society is also being held along with a National Seminar on the theme 'Molecules to Materials 2024'.

The stellar contributions of Prof. Mahendra Kumar Rout in shaping the destinies of generations of students of then Ravenshaw College have been well-acknowledged. His pioneering role in the establishment of the Orissa Chemical Society and its further emergence as a professional body in the field of chemical science speaks eloquently about his contributions as a leader and an institution builder.

The centenary celebrations of Prof. Mahendra Kumar Rout present excellent opportunities to his wide circle of colleagues, friends and students to perpetuate his shining legacy and recount his deep and abiding commitment to excellence in education and research.

I wish the centenary celebrations all success.

(Dharmendra Pradhan)

सबको शिक्षा, अच्छी शिक्षा

स्वच्छ भारत

कौशल भारत, कुशल भारत

MOE - Room No. 301, 'C' Wing, 3rd Floor, Shastri Bhavan, New Delhi-110 001, Phone : 91-11-23782387, Fax : 91-11-23382365
MSDE - Room No. 516, 5th Floor, Shram Shakti Bhawan, Rafi Marg, New Delhi-110001, Phone : 91-11-23465810, Fax : 011-23465825
E-mail : minister.sm@gov.in, minister-msde@gov.in

SHRI ASHOK CHANDRA PANDA
MINISTER
Science & Technology, Public Enterprises,
Social Security & Empowerment of
Persons with Disability

D.O. No. 952 /M(STPESSEPD),
BHUBANESWAR
Date 03.10.2023

MESSAGE

It makes me happy to learn that Post Post Graduate Department of Chemistry, Ravenshaw University is organizing a national Seminar on "Molecules to Materials 2024" on 5-6th January 2024 to mark the 37th Annual Conference of the Orissa Chemical Society. The event is planned as a befitting tribute to Professor Mahendra Kumar Rout, distinguished educationist and Former Principal of Ravenshaw College.

I hope, the participants in the National Seminar through elaborate discussions, deliberations and presentations will open up meaningful avenues for more development in the field of Chemistry.

I wish the National Seminar a success.

(Ashok Chandra Panda)

ATANU SABYASACHI NAYAK
MINISTER
Food Supplies & Consumer Welfare
Co-operation, Higher Education
Odisha

Telephone : Office : (0674)-2536931
E-mail : atanusabyasachinayak@gmail.com
ministerfscwc@gmail.com

D.O. No. ...../MFSCWCHE.

BHUBANESWAR

Date 30-09-2023

MESSAGE

Professor Mahendra Kumar Rout was well-known across disciplines as an affectionate teacher, researcher of repute and efficient administrator. He held various positions such as Professor and Head of the Chemistry department, Principal, Director of Public Instructions, Vice-Chancellor, Chairman of the State Pollution Control Board and Chairman of Banking Service Recruitment Board. In every position he served, he demonstrated extreme dedication and efficiency. He had an unassuming, humble, charismatic and mesmerizing personality that endeared him across generations of his students and colleagues.

I am delighted to note that the Orissa Chemical Society (OCS) is observing the Birth Centenary Year of Prof. rout from 04.01.2023 to 04.01.2024. For this purpose, Prof. Mahendra Kumar Rout Birth Centenary Celebration (MKRCC) Committee, comprising some senior members across diverse disciplines has planned various events spread throughout the Year.

I am delighted to learn that the Post Graduate Department of Chemistry, Ravenshaw University is organising this historic Centenary Celebration on the 4th of January, 2024. For the Centenary Celebration, a souvenir named "MAHENDRAYANA" is being published. The Department is also organising the 37th Annual Conference of the Orissa Chemical Society on 5-6th January, 2024. A National Seminar on the topic "Molecules to Materials 2024" is planned.

I convey to the organizers of the Centenary Celebration, the 37th Annual Conference of the Orissa Chemical Society and the National Seminar my best wishes for a great celebration.

Atanu 30.9.23

(Atanu Sabyasachi Nayak)

RAVENSHAW UNIVERSITY

Prof. Sanjay K. Nayak
Ph.D, Ph.D (Engg.), D.Sc
Vice-Chancellor

Dated: 22nd December 2023

MESSAGE

Professor Mahendra Kumar Rout was well-known as an internationally acclaimed scientist and a celebrated teacher. As early as the 1950s, he pioneered advanced research and teaching and built the discipline of Chemical Science in Odisha on a firm foundation. He was very popular for his dedication to teaching and his love for his students. As an accomplished academician and academic administrator, coupled with his unassuming, humble, charismatic, mesmerizing personality, he owns the hearts of myriads of his students and colleagues and fondly remembered today.

I am happy to learn that the Orissa Chemical Society is celebrating the Birth Centenary Year of Prof. Rout from 04.01.2023 to 04.1.2024. Prof. Mahendra Kumar Rout Birth Centenary Celebration (MKRCC) Committee, comprising some distinguished persons of the state, is observing the celebration with various events spread throughout the Centenary Year. For the centenary celebration on 4th January 2024, a souvenir named 'MAHENDRAYANA' is being published. The souvenir will be a repository of Prof. Rout's diverse accomplishments.

The Post Graduate Department of Chemistry, Ravenshaw University, Cuttack is organizing the Centenary Celebration on the 4th of January 2024. I am sure, the Centenary Celebration meeting will be a momentous occasion in providing inspiration to young researchers and students.

The Centenary Celebration will be followed by the 37th Annual Conference of the Orissa Chemical Society (OCS) on 5-6th January 2024. A National Seminar on the topic 'Molecules to Materials 2024' is also planned on the occasion that will be an interdisciplinary platform for academicians and scientists to deliberate on the frontiers of Chemical Science research.

I convey my best wishes and greetings to all members of the MKRCC Committee, the Members of the OCS, and the Post Graduate Department of Chemistry, Ravenshaw University, Cuttack, for publication of the Souvenir 'MAHENDRAYANA', and organization of the 37th Annual Orissa Chemical Society conference along with the National Seminar.

(SANJAY K. NAYAK)
Patron, MKRCC

Ravenshaw University, Cuttack-753003, Odisha (India)
www.ravenshawuniversity.ac.in
Email: vc@ravenshawuniversity.ac.in, drsknayak@gmail.com

Estd. 1917
पटना विश्वविद्यालय
100 years of EXCELLENCE

OFFICE OF THE VICE CHANCELLOR
PATNA UNIVERSITY
PATNA - 800 005, BIHAR (INDIA)

Tel. 0612 - 2670352
Fax 0612 - 2670877
Email : vcpatnauniversity@yahoo.com
vcpatnauniversity1917@gmail.com

MESSAGE

I am delighted to note that the Orissa Chemical Society (OCS) is observing the Birth Centenary Year of Prof. Mahendra Kumar Rout from 04.01.2023 to 04.01.2024. For this purpose, Prof. Mahendra Kumar Rout Birth Centenary Celebration (MKRCC) Committee, comprising some senior members across diverse disciplines, has planned various events spread throughout the year.

Prof. Rout's association with Patna University dates back to 1938. He passed the Matriculation Examination with a First Class from Patna University this year. He did his I.Sc. and B.Sc.(Hons.) from Ravenshaw College, which was affiliated with Patna University. He completed his M.Sc. from Patna University. Soon after passing his M.Sc., he joined Ravenshaw College as a lecturer when Prof. Balabhadra Prasad (who later became the Vice-Chancellor of Patna University, 1957-1960) was the Head of the Department. Prof Rout held various positions, such as Professor and Head of the Chemistry Department, Principal, Director of Public Instructions, Vice-Chancellor, Chairman of the State Pollution Control Board, and Chairman of Banking Service Recruitment Board.

The Post Graduate Department of Chemistry, Ravenshaw University is organizing this historic Centenary Celebration on the 4th of January 2024. For the centenary celebration, a souvenir named '**MAHENDRAYANA**' is being published. The Department is also organizing the 37th Annual Conference of the Orissa Chemical Society on 5-6th January 2024. A National Seminar on the topic '**Molecules to Materials 2024**' is planned.

I convey to the organizers of the Centenary Celebration, the 37th Annual Conference of the Orissa Chemical Society, and the National Seminar my best wishes.

R Sinha
12.12.2023
VICE-CHANCELLOR

X

Prof. (Dr.) Prabhat K. Misra
CHAIRMAN - MKRCC

MESSAGE

It is a rare moment at this stage of my life when I am writing a message for the Birth Centenary of Prof. Mahendra Kumar Rout, whom I know from my childhood, and then as my teacher, as 'Sir'.

The Centenary Celebration year started on the 4th of January 2023 at Ravenshaw University followed by a series of events in different locations of the state. I record my sincere appreciation to the organizers who observed the centenary year conducting seminars and conferences, and in the process have enlivened the memories of Prof. Rout. The centenary celebration year culminates on the 4th of January 2024 here at Ravenshaw University and will be witnessed live by his myriad of students, colleagues, and admirers.

I record my deep sense of appreciation to Prof. Sanjay K. Nayak, Hon'ble Vice Chancellor of Ravenshaw University and Patron of the Centenary Celebration, the Advisory Body, the Members of the Prof. Mahendra Kumar Rout Birth Centenary Celebration Committee, the Orissa Chemical Society, the donors and sponsors, the Department of Chemistry, Ravenshaw University, and all others for their collective endeavour for a successful centenary celebration. The MKRCC Committee is bringing out a souvenir, appropriately named 'MAHENDRAYANA' that will serve as a repository of Prof. Rout's many-faceted contributions, and a source of inspiration for the future generation.

I am sure, the event will remain forever recorded in history and will be remembered by generations of Prof. Rout's students and colleagues, and people who knew him and loved him with respect.

Dated : 18th December 2023

(Prabhat Kumar Misra)

ORISSA CHEMICAL SOCIETY

Regd. No. 18990/28-87/XXVII-22/87 of 1987 – 1988
Website: https://www.orchemsoc.in
Email: info@ocs.org.in

Professor Rupasree Ragini Das
President,
Orissa Chemical Society

Message

Some are born great, some achieve greatness. Professor Mahendra Kumar Rout Rout whose birth centenary is being observed from 4th January 2023 to 4th January 2024 comes in that category because of his pioneering research work in the frontier areas like dyes, polymer, quantum mechanics, reaction mechanism and environmental studies. He also showed his administrative skills as Principal of premier institutions like Ravenshaw, Khallikote and G. M. college. He served as Vice-Chancellor of Utkal University, Director of Higher Education and Chairman of Odisha State Pollution Control Board. He was an iconic figure, a visionary and a multi-dimensional personality. His scientific research had much impact on study of science and acted as inspiration for his students and scientific community as a whole.

As recognition of his reformational abilities in education, Government of India had sent him along with six other academicians to the United States to visit colleges and universities there to imbibe the core values of education and to prepare a report to design policy decisions for implementation in India in order to improve the quality of education. He did it with a missionary zeal.

As a former student of this great celebrity, I pay my humble obeisance and profound respect to him on the occasion of publication of Mahendrayana.

Dated : 18th December 2023

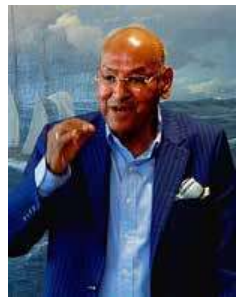
Rupasree Ragini Das

ADVISORY BODY

Prof. M. K. Rout Birth Centenary Celebration*

(* Not arranged with regard to any preference)

Justice Shri Gopal Ballav Pattanaik



Hon'ble Justice Shri Gopala Ballav Patnaik was born on 19th December 1937. He was enrolled as an advocate on 28th February 1962. He practiced in civil, criminal, constitutional, and company cases in Orissa High Court and appeared in some cases in the Supreme Court. Appointed Standing Counsel for State Government from 1st March 1971, Additional Government Advocate from 19th July 1974, and worked as Government Advocate for more than four years. He served as the Judge of Orissa High Court from 1.6.1983 - 18.5.1995 and elevated as the Chief Justice of Patna High Court on 19.5.1995, Judge of Supreme Court of India from 9.11.1995 and became the 32nd Chief Justice of India on 8.11.2002.

Justice Shri Dipak Misra

Hon'ble Justice Shri Dipak Misra was born on 3rd October 1953. He was enrolled as an Advocate on 14th February 1977 and practiced in constitutional, civil, criminal, revenue, service, and sales tax matters in the Orissa High Court and the Service Tribunal. He was appointed as an Additional Judge of the Orissa High Court on 17th January 1996 and transferred to the Madhya Pradesh High Court on 03rd March 1997. He became a permanent Judge on 19th December 1997. Justice Misra assumed charge of the office of Chief Justice, Patna High Court on 23rd December 2009 and charge of the office of the Chief Justice of Delhi High Court on 24th May 2010. Elevated as a Judge, Supreme Court of India w.e.f. 10.10.2011 and appointed as the 45th Chief Justice of India on 28.08.2017.

Justice Shri A. Suryanarayan Naidu

Hon'ble Justice Shri A. Suryanarayan Naidu was born on 5th July 1948 at Armstrong Road, Puri. He passed Matriculation from Puri Zilla School, graduated from Bhadrak College, and did his LL.B. Degree from M.S. Law College, Cuttack. He joined the Bar in the year 1973 and started practice in Orissa High Court on the Civil, criminal, constitutional, and service side. He was appointed as Additional Government Advocate for the State of Orissa in 1988-89, and elevated to the Bench of the Orissa High Court as a judge (29.9.2000 - 4.7.2010). He served as a Judicial Member of the National Green Tribunal and was the Acting Chairperson of the Tribunal.

Justice Shri Madan Mohan Das

Hon'ble Justice Shri Madan Mohan Das was born on 5.2.1952. He belongs to a family of Lawyers and is the son of Shree Madhabananda Das, a renowned Senior Lawyer of Orissa High Court. He passed the HSC Examination in 1967 and completed his Graduation from Ravenshaw College, Cuttack with Chemistry Honours in 1971. He passed M.A. in Public Administration from Utkal University, Bhubaneswar, and completed his LL.B. Degree from M.S. Law College. He joined the Bar in 1974. During his practice as an Advocate, he conducted many important civil, criminal, and constitutional matters in different courts. He was a retainer of the State Bank of India and other Nationalised Banks for many years. He was also actively associated with many social, philanthropic, and spiritual organizations. By the time he was appointed as a Judge of the High Court of Orissa, he completed a long 29 years of practice at the Bar. He served as Judge of Orissa High Court from 20.11.2003 - 04.02.2014.

Justice Shri Arijit Pasayat

Hon'ble Justice Shri Arijit Pasayat was born on 10 May 1944. We was enrolled as an Advocate on 10-10-1968. He practiced in taxation, commercial, and constitutional matters. He completed Articleship in Chartered Accountancy and passed Intermediate Chartered Accountancy Examination. He served as the Judge of Orissa High Court from 20.3.1989 to 19.9.1999, was elevated as the Chief Justice of Kerala High Court on 20.9.1999, and Chief Justice of Delhi High Court on 10.5.2000 and was elevated as Judge of the Supreme Court of India on 19.10.2001.

Justice Shri Ananga Kumar Patnaik

Hon'ble Justice Shri Ananga Kumar Patnaik was born on June 3, 1949. He was enrolled as an Advocate with the Orissa Bar Council, Cuttack on March 28, 1974. He served as the Judge of Orissa High Court from 13.1.1994 - 6.2.1994 & 15.4.2002 - 13.3.2005 and as Judge of Gauhati High Court from 7.2.1994. He was Elevated as the Chief Justice of Chhattisgarh High Court on 14.3.2005. He assumed charge as Chief Justice of the Madhya Pradesh High Court on 02.10.2005 and was appointed as Judge, Supreme Court of India, on 17.11.2009.

Justice Shri Manoranjan Mohanty

Justice Shri Manoranjan Mohanty, a Senior Advocate and Lawyer, and Life Member of the High Court Bar Association, Odisha, after spending 25-years in the Bar as an Advocate in Orissa High Court, served as Standing Counsel in OHC, Addl. Govt. Advocate in OHC, Legal Advisor to OPSC and, finally, warranted as Judge in the year 2002 and posted as a Judicial Member of the Hon'ble Central Administrative Tribunal at Cuttack and, later, posted as Vice-Chairman of the said Hon'ble Tribunal at Ahmadabad, at Calcutta, at Guwahati & at Jabalpur. On his retirement, he is, presently, the President of Gandhi Peace Foundation.

Prof.(Dr.) Prativa Ray

Prof. (Dr.) Pratibha Ray was born on 21 January 1944. She started her professional career as a school teacher, and later, for thirty years, she taught in various government colleges in Odisha. She has guided doctoral research and has published many research articles. She took voluntary retirement as a Professor of Education from the State Government Service and joined as a Member, Public Service Commission of Odisha. She is a well-known academic and writer of Odia-language novels and short stories. Her first novel Barsha Basanta Baishakha (1974) was a best seller. For her contribution to Odia literature, she got Odisha Sahitya Academi Award (1985) for the novel Sheelapadma. For the novel Yajnaseni, she got Sarala Award (1990) and Moortidevi Award (1991). She was the first woman to win the Moortidevi Award. For her contribution to Literature and Education, she was awarded Padma Shri in 2007 and the Jnanpith Award in 2011. She was awarded the Padma Bhushan for literature and education in 2022.

Dr.(Mrs.) Priyambada Mohanty Hejmadi

Dr.(Mrs.) Priyambada Mohanty Hejmadi was born 18 November 1939. She is a scientist, academician, and an Indian classical dancer of Odissi, an art writer, and a biologist. She obtained a doctoral degree in zoology from the University of Michigan, USA. She is a Fellow of the Indian Academy of Sciences. She has written numerous articles and books such as Odissi: An Indian Classical Dance Form, elaborating on the history and evolution of the Indian classic form of Odissi. She is a recipient of the "Odissi Nrutya Sanman" . The Government of India awarded her the fourth highest civilian award of the Padma Shri in 1998 for her contributions to the fields of science and technology.

Dr. Shyamamani Devi

Dr. Shyamamani Devi was born in 1938. She is an Odissi classical music vocalist composer, known for her popular renditions of classical Odissi music, such as Odissi, Chhanda, and Champu. She is also known for her renditions of light music such as traditional Odia folk music and adhunika songs. At the age of 12 in 1950, she began singing at All India Radio Cuttack. She has won many awards, such as Odisha Sangeet Natak Akademi Award (1994), the Lifetime Achievement award from Chandigarh University (2004), Honorary Doctorate from Utkal University of Culture (2012), Guru Singhari Samman by Guru Gopal Panda Odissi Academy (2014), Guru Sahadev Padhi Memorial Samman (2016), Guru Kelucharan Mohapatra Award by Srjan (2017), Deba Prasad Das Samman by Guru Debaprasad Das Foundation (2018), Kabi Samrat Upendra Bhanja Award (2019) and in 2022, she was awarded the Padma Shri for he contributions to Odissi music.

Prof. (Dr.) Debakanta Mishra

Dr. Debakanta Mishra, Professor of Physics was born on 5 March 1939. He is a well-known writer. He obtained M.Sc. degree in Physics and D. Litt. from Utkal University. He served various govt. colleges of the state. For more than two decades he taught at Ravenshaw College. He was Deputy Director (Science); Vice- Principal, Ravenshaw College, Cuttack; Secretary, Board of Secondary Education, Odisha; Principal, Govt. College, Rourkela; Vice-Chairman, Council of Higher Secondary Education, Odisha; Vice-President, Board of Secondary Education, Odisha; President, Board of Secondary Education, Odisha and after retirement, he joined as President of Odisha Bigyan Academy. He has written large numbers of Popular Science Books (in Odia & English), Children Literature, Science Fiction, and Textbooks and has translated many books into Odia language. He has received many awards and accolades during his long professional career such as the Odisha Sahitya Academy Award 1985, Bisuba Puraskar of Prajatantra Prachar Samiti 1975, Pranakrushna Parija Popular Science Award of Utkal Sahitya Samaja 1994, Bhubaneswar Pustak Mela Puraskar 2004 and Rajdhani Pustak Mela Puraskar 2007.

Prof. (Dr.) Damodar Acharya

Prof. Damodar Acharya served as the director of IIT Kharagpur from 2007 to 2012. The government nominated Prof Acharya as a director on the central board of the Reserve Bank of India in October 2012. Professor Acharya has about 32 years of diversified experience - twenty-seven years of teaching and research experience at IIT Kharagpur, and five years of experience in academic administration as Vice-Chancellor, Biju Patnaik University of Technology, Rourkela, and as Chairman of the All India Council of Technical Education.

Shri Rasa Behari Behera

Shri Rasa Behari Behera was born at Mahichala Village, Dharmagarh Taluk, Kalahandi District on August 12, 1938. He had education at B. M. High School, Bhawanipatna, Khallikote College, Berhampur, and M.S. Law College, Cuttack. Literatuer, Samajsebi, agriculturist and journalist, Editor, Sagar (a literary magazine); associated with the Indian National Congress all along, was General Secretary, Orissa Pradesh Congress Committee from 1978; Chairman, Bhawanipatna Municipality 1973-77; Member, Orissa Legislative Assembly, 1977-80; and Secretary, O.L.A. He was elected to the Assembly from the Koksara Assembly segment (1973-1977, 1985-1990) as an INC candidate. He was Minister of Agriculture, Cooperative and Handloom from 1986 to 1989. He was also a Member of Lok Sabha from 1980 to 1984 from Kalahandi Parliamentary Constituency.

Prof. Madhusudan Pati

Eminent litterateur Prof. Madhusudan Pati, retired Professor of English (Sambalpur University) and distinguished critic and translator, has been honored with the highest and most coveted 'Atibadi Sahitya Jagannath Das Samman' for the year 2015 by Odisha Sahitya Akademi for his translating Gangadhar Meher's epic Odia poems Tapaswini and Pranaya Ballari into English. He has translated Alfred Lord Tennyson's In Memoriam into Odia.

Prof. Madhab Chandra Dash

Prof. Madhab Chandra Dash was born in 1939 in Puri, He is well-known as an ecologist and environmental biologist. He was a former Vice Chancellor of Sambalpur University (2001–2004), a past Chairman of the Orissa State Pollution Control Board (1997–2001), and a former member of the Central Pollution Control Board, New Delhi. He became a full professor in 1975 and was the Head of the Department from 1974 until 1987. He was awarded by the State Government of Orissa in 1991 its highest scientific honor, the Samanta Chandrasekhar Award, for his seminal contributions to life sciences research. He was a former Member of the National Expert Committee for Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) of Mining Projects (1995–1997) of the Ministry of Environment & Forests, Government of India, New Delhi. From 2002 until 2005, he was the Chairman of the National Steering Committee for Tropical Soil Biology and Fertility programs.

Dr. Sahedev Sahoo, IAS (Retd.)

Dr. Sahadev Sahoo was the former Chief Secretary of Govt. of Odisha and Former Vice Chancellor of OUAT, Bhubaneswar (Oct 1963 - July 1964). He completed his M.A. (Pol. Sc.) (1963) from Allahabad University with a first class. He was a Lecturer in International Affairs at Varanasi Hindu University, Pradhyapak in Public Administration, Viswabharati University, Shantiniketan. He served in the Indian Administrative Service (05.07.1964 to 31.10.2000), Odisha Cadre, and held various posts under the Government of Odisha and India. Dr. Sahoo is a professional member of the All India Management Association, New Delhi. He has received training in Project Management, Leadership, Disaster Preparedness & Recovery Management, (Oxford Polytechnic, U.K.) 'Information Technology in Government', etc. He is also a writer and columnist with publications in Odia newspapers. He has travelled widely across many Asian countries, Scandinavian countries, the European Union, the UK, and the USA. He has been honored with many awards and accolades for his outstanding works.

Dr. Ashok Kumar Mahapatra

Doctor Ashok Kumar Mahapatra was born on 29 December 1952. He served as the Chief of the Neurosciences Centre at All India Institute of Medical Sciences (New Delhi). Dr. Mahapatra led one of the most successful separation surgeries in the world when he and his team successfully separated conjoined twins from Kandhamal (Odisha) – Jaga and Kalia. He served as the Director of Netaji Subhas Chandra Bose AIIMS in Bhubaneswar from 2012 till 2016. He was one of the founding Directors of AIIMS, BBSR.

Shri Devadas Chhotray, IAS (Retd.)

Shri Devdas Chhotray, born on 25th November 1946, is well-known as an author, administrator and academician. His work consists of poetry, short stories, lyrics, musicals, and screenplays. He was educated at Ravenshaw College and Cornell University. He joined the Indian Administrative Service in 1971. In 2006 he became the first Vice-Chancellor of Ravenshaw University. He was Director of the Orissa Film Development Corporation from 1983–89 and 1996–98, Chairman of the Publications Committee for the fifth International Children's Film Festival in 1987, and Vice-President of the Governing Council of the Film and Television Institute of India in Pune from 1999–2001. He has written screenplays for feature films in Oriya. One film, Indradhanura Chhai (Shadows of the Rainbow) was screened at the Cannes Film Festival in 1995. He has received the Prajatantra Bisuv Milan and Utkal Samaj Centenary (Gangadhar Meher Samman) Awards, the Odisha Excellence Award 2018, and the prestigious Sahitya Bharati Samman 2021.

Prof. Baishnab C. Tripathy

Prof. Baishnab Charan Tripathy, earned his BSc and MSc degrees with a Botany major from Utkal University, after which he joined Jawaharlal Nehru University in the Schools of Life Sciences and Environmental for his Ph.D. He studied and worked at Ohio State University, Columbus (1981-83) as a post-doctoral researcher. Subsequently, he moved to the University of Illinois, Urbana-Champaign (1984-87). Dr. Tripathy joined as an Assistant Professor in the School of Life Sciences, Jawaharlal Nehru University, New Delhi, where he started his photobiology laboratory and was subsequently promoted to Associate Professor and Professor. On deputation from JNU, in 2011, Professor Tripathy joined as Vice-Chancellor of Ravenshaw University, Cuttack, Odisha. Upon completion of his 3-year tenure as VC, he joined Jawaharlal Nehru University and served as the Dean, the School of Life Sciences, JNU. He has authored over 100 research articles and patents, and 3 books published by Springer, and is on the editorial board of the journal "Horticulture, Environment and Biotechnology". He has so far mentored 27 PhD students. H is a fellow of the Indian National Science Academy in 2005. He is also a National Academy of Sciences and National Academy of Agricultural Sciences fellow. He is the recipient of the JC Bose National Fellowship of Govt. of India. He was NASA/NRC Senior Fellowship, Kennedy Space Center, USA, and recipient of the Rockefeller Foundation Biotechnology Career Award, USA, Samant Chandra Shekhar Award in Science, Gold medal for outstanding contribution to science by Srivastav Foundation, Lucknow, Professor P. Parija Samman, etc.

Prof. Prakash C. Sarangi

Prof. Prakash C. Sarangi has an MA degree from Delhi University and a Ph.D. from the University of Rochester, NY. He was the Vice-Chancellor of Ravenshaw University, Cuttack, Professor of Political Science and Pro-Vice-Chancellor at the University of Hyderabad, an ICSSR Senior Fellow, Visiting Professor at the Southern Methodist University, Dallas, Senior Academic Consultant at the ICSSR among other assignments. His awards include a Fulbright Fellowship at the University of Wisconsin-Madison, Linnaeus Palme Fellowship at the University of Uppsala, and Baden-Wurttemberg Fellowship at the University of Heidelberg. Prof. Sarangi's academic interests are democratic theory and practice, India's political economy, and its impact on democratic politics and institutions. His publications include Essays on India's Political Economy and Liberal Theories of State: Contemporary Perspectives.

Prof. Ishan Kumar Patro

Prof. Ishan Patro was born on 27th June 1960 in Gwalior, Madhya Pradesh. He was Vice-Chancellor, Ravenshaw University, Cuttack from 31.12. 2017 to 30.12.2020. Twenty-nine students have obtained their PhD Degrees working under his supervision. He has published 98 research papers. He has also carried out post-doctoral studies at the Neurochemical Pathology Unit, New Castle as a Biotechnology Overseas Associate (1996-1997) and at 1st Institute of Anatomy, University of Cologne, Germany (2000-2001) as INSA–DFG Exchange of Scientist Fellow. He was a visiting lecturer in the MRC Neurochemical Pathology Unit, School of Neuroscience & Psychiatry, University of Newcastle upon Tyne, Newcastle, (1996-1997) USA. He is a Fellow of the National Academy of Sciences, India (FNASc), Fellow of the Collegium of Internationale Neuro-Psychopharmacologicum (FCINP), Fellow of the Indian Academy of Neurosciences (FIAN), and honorary National Fellow of the Zoological Society, Kolkata. He is a Member of the Editorial Board of various Journals, viz. Proceedings of National Academy of Sciences (India), published by NASI through Springer-Nature; 'Ageing & Society' published by Association of Gerontology (India) and Calcutta Metropolitan Institute of Gerontology. Presently he is working as Dean, Faculty of Life Sciences, Jiwaji University, Gwalior. He is also the Coordinator & Head, School of Studies in Neuroscience & Head, School of Zoology, Jiwaji University.

Prof. Satyakam Mishra

Prof. Satyakam Mishra, former Director of Higher Education, Odisha and Chairman of Odisha Public Service Commission, was a Ravenshavian. He taught in the postgraduate department of Economics of Ravenshaw College and Gangadhar Meher College, Sambalpur for quite a long period. He was awarded Ph.D. by Utkal University for his research on fisheries in Odisha. Several students have been awarded Ph.D.s in Economics and Business Management under his guidance. In the later part of his career, he held some administrative positions in the Government of Odisha. He was entrusted with the responsibility of setting up the administrative structure of the newly created Ravenshaw University first as OSD and then as Registrar of the new university. He had done pioneering works in the field of secondary and primary education in the state in the capacity of the President of the Board of Secondary Education, Odisha, and Director of Teacher Education and SCERT, Odisha. He was a member of the National Council for Teacher Education, Eastern Region. After retirement, he keeps himself engaged in various social and cultural activities. He is the Chairman of Ravenshaw University Development Trust and Secretary of Aastha Alok, a charitable trust functioning at Cuttack. He writes columns in Odia dailies and participates in television discussions on issues related to education and development.

Prof.(Dr.) Mahendra Kumar Rout
Birth Centenary Celebration Committee*

PATRON

Prof. S. K. Nayak
Vice-Chancellor
Ravenshaw University

ADVISORY BODY

Justice Shri Gopala Ballhab Patnaik

Justice Shri Dipak Misra

Justice A. Suryanarayan Naidu

Justice Madan Mohan Das

Dr.(Mrs.) Prativa Ray

Dr.(Mrs.) Priyambada Mohanty Hejmadi

Smt. Shyamamani Devi

Dr. Debakanta Mishra

Dr. Damodar Acharya

Shri Sahadev Sahu

Justice Shri Arjit Pashayat

Dr. Ashok Kumar Mohapatra

Justice Shri Manoranjan Mohanty

Justice Shri Ananga Patnaik

Shri Devadas Chhotray

Prof. Baishnab C. Tripathy

Prof. Prakash C. Sarangi

Prof. Ishan Kumar Patro

Prof. Satyakam Mishra

Prof. M. C. Dash

Prof M. S. Pati

Sri Ras Behari Behera

CHAIRMAN

Prof. P. K. Misra
Phone: +91-9437314765

SECRETARY

Dr. Shashadhar Samal
Phone: +91-9938854038
Email: samal_s@live.com

MEMBERS

Prof. P. B. Tripathy
91-8480342363

Prof. G. B. Behera
91-8144354411, 91-9437224570

Prof. A. C. Dash
91-8847880019

Prof. (Mrs.) Subasini Lenka
91-9861422222

Prof. R. K. Satapathy
91-8249467090

Dr. C. R. Mishra
91-9338204993

Prof. S. P. Rout
91-8144817546

Dr. Deva Narayan Pattanayak
1-408-221-7871

Prof. Satyaban Jena
91-9937482929

Prof. (Mrs.) Smruti Prava Das
91 9938440949

EX-OFFICIO MEMBERS

RU HOD Chemistry

OCS President

OCS Secretary-cum-Treasurer

(OCS Homepage www.orchemsoc.in for contact details)

WORKING COMMITTEE

Prof. P. K. Misra
Prof. G. B. Behera
Prof. S. P. Rout
Dr. C. R. Mishra
Dr. Shashadhar Samal
Prof. Satyaban Jena
Prof. Asutosh Samantray
Dr. Sarat Ch. Das
Dr. Pramod Kumar Prusty
Prof. Priyaranjan Mohapatra
Dr. Debasis Mohanty
Dr. K. S. K. Bharadwaj

SOUVENIR COMMITTEE

Dr. Rajendra Narayan Das
Dr. Subasini Lenka
Dr. Nishikanta Kar
Dr. C. R. Mishra

ACADEMIC COMMITTEE

Prof. G. B. Behera
Prof. A. C. Dash
Prof. Satyaban Jena

DOCUMENTARY COMMITTEE

Prof. P. K. Misra
Dr. C. R. Mishra
Prof. S. P. Rout
Prof. A. K. Patnaik

FINANCE COMMITTEE

Prof. P. K. Misra
Dr. S. Samal
Dr. R. R. Das
Dr. S. C. Das
Dr. D. Mohanty

FELICITATION/HONOR COMMITTEE

Prof. P. K. Misra
Prof. P. B. Tripathy
Prof. A. C. Das
Dr. S. Lenka

** Names are not arranged as per seniority*

"कर्मण्येवाधिकारस्ते मा फलेषु कदाचन।"

Prof. (Dr.) Mahendra Kumar Rout Birth Centenary Celebration Committee

Prof. (Dr.) Sanjay K. Nayak

Vice Chancellor, Ravenshaw University
PATRON

Prof. (Dr.) Sanjay K. Nayak,former Director General of CIPET, has 30 years of expertise in Teaching, Research, and Technical Consultancy. He holds dual Ph.D. Degree, both in Science & Engineering, and also conferred with D.Sc. Degree. Presently he is the Vice-Chancellor of Ravenshaw University.

Prof. (Dr.) Prabhat K.Misra

OCS President 1997
CHAIRMAN - MKRCC

Prof. Prabhat K. Misra, Ph.D. in Chemistry from Utkal University, retired Professor of Chemistry & Principal, Ravenshaw College, Cuttack, D.Sc. Honoris Causa, Ravenshaw University, President, Board of Secondary Education, Odisha, President, Rotary Club of Cuttack, President, Odisha Cricket Association, Vice-President, Board of Control for Cricket in India (BCCI).

Prof. (Dr.) Shashadhar Samal

OCS President 2020, 2021
SECRETARY - MKRCC

Prof. (Dr.) Shashadhar Samal, D.Sc. and Ph.D. in Chemistry from Utkal University, Invited Professor, GIST, and Research Professor,POSTECH, South Korea, former Reader in Chemistry, Ravenshaw College, Cuttack, retired Principal, S. B. R. Govt. Women's College, Berhampur.

MEMBERS - MKRCC

Dr. Prana Bandhu Tripathy

OCS President 2001

Dr. Prana Bandhu Tripathy, Ph.D. in Chemistry, Post-Doctoral Research Work at Washington State University, USA, Reader in Chemistry at B.J.B. College, Bhubaneswar, Deputy Director, Odisha, Principal Scientific Officer, and Joint Director, UGC, New Delhi.

Prof. (Dr.) Gopabandhu Behera

OCS President 1999

Prof. (Dr.) Gopabandhu Behera, Ph.D. and D.Sc. in Chemistry, Fulbright Scholar, USA, visited the University of Florida, and the University of California. Former Professor and Head of the Department of Chemistry, Sambalpur University, Jyoti Vihar, Burla.

Prof. (Dr.) Anadi Charan Dash,F.A.Sc.

OCS President 2011

Prof. (Dr.) Anadi Charan Dash, Former Professor of Chemistry, Utkal University, Vani Vihar, Bhubaneswar, Ph.D. in Chemistry; CSIR Emeritus Scientist, Visiting Honorary Professor of Chemistry, NISER, Bhubaneswar.

MEMBERS - MKRCC

Prof. (Dr.) Subasini Lenka

OCS President 2013

Prof. (Dr.) SubasiniLenka did her Ph.D. and D.Sc. in Polymer Chemistry from Ravenshaw College, Cuttack, and post-doctoral research work as a JSPS Fellow at Tokyo University of Agriculture & Technology, Japan, at the National Institute of Sericulture & Entomological Science, Tsukuba, Japan, and in Texdaco Inc. R&D, USA.

Prof. (Dr.) Rajani K. Satapathy

OCS President 2004

Prof. (Dr.) Rajani KantaSatapathy, Ph.D. in Chemistry, received NCC Signal Corps Training and served as the Commanding Officer of 1st Odisha Signal Coy NCC, administering the unit comprising both Civil and Military Staff, was President of Rotary Club of Cuttack Midtown, teacher of chemistry, researcher, social worker, sportsman and administrator.

Dr.Chitta Ranjan Mishra

OCS President 2014

Dr. Chitta Ranjan Mishra, Ph.D. in Chemistry from the University of Calcutta, Post Doctorate from IISc, Bangalore, D.Sc. in Aluminium Technology from International University of Contemporary Studies, Washington DC, USA, Distinguished Scientist, NALCO, Popular Science Writer, a regular columnist in science & technology in leading newspapers and periodicals.

Prof. (Dr.) Swoyam Prakash Rout

Prof. (Dr.) Swoyam Prakash Rout, Ph.D. in Chemistry, D.Sc. in Environmental Chemistry, Fullbright Scholar, Center for Macromolecular Science, University of Florida, USA, and Commonwealth Academic Staff Fellow,Department of Inorganic, Physical & Industrial Chemistry, University of Liverpool, UK,Fellow of the Royal Society of Chemistry & MACS, former Professor of Chemistry, Utkal University, Vani Vihar, Bhubaneswar.

Dr. Deva Narayan Pattanayak

Dr. Deva Narayan Pattanayak, Ph.D. in Physics from the University of Rochester, NY, held postdoctoral positions at the University of Toronto and the City College of the City University of New York, worked at Rockwell International, CA, GE Corporate Research and Development, NY,held adjunct Professor position, University of Pennsylvania, PA,retired from Vishay, Santa Clara, CA as Senior Director.

Prof. (Dr.) Satyaban Jena

OCS President 2016

Prof. (Dr.) Satyaban Jena, Ph.D. in Chemistry, Utkal University, post-doctoral fellow, University of Leeds, U.K. and Maxwell's Institute, U.K. former Professor & Head of Chemistry Department, Utkal University, Vani Vihar, Bhubaneswar.

MEMBERS - MKRCC

Prof. (Dr.) Smruti Prava Das

Prof. (Dr.) Smruti Prava Das, Ph.D. in Chemistry from Utkal University, former Professor and Head of the Chemistry Department, Ravenshaw University, Chairman P. G. Council, presently Visiting Professor, Ravenshaw University, Cuttack.

Dr. Rajendra Narayan Das

Dr. Rajendra Naryan Das, an Engineer in Metallurgy, built his academic profile in Germany.For 62 years he hasbeen residing in Germany, well known for his love for Odisha and the Odia language, and writes on leading Odia News Papers on topical issues.

Dr. Nishikanta Kar

Dr. Nishikanta Kar, Ph.D. in Chemistry from Utkal University, retired Reader in Chemistry, Stewart Science College, Cuttack.

Prof. (Dr.) Asutosh Samantray

OCS President 2018

Prof.(Dr.)AsutoshSamantaray, Ph.D. in Chemistry from Utkal University, co-authored three Chemistry Text Books, former Professor at the College of Basic Science & Humanities under Orissa University of Agriculture Technology (OUAT), Bhubaneswar, at present doing social service in his home district, Jagatsinghpur, Odisha.

Prof. (Dr.) Sarat Ch. Das

OCS President 2017

Prof. (Dr.) Sarat Chandra Das, Ph.D. in Chemistry from Utkal University, author of Odia scientific and social articles in reputed magazines, a programmer for AIR Cuttack, has visited the USA & UK, runs an English medium school in his village and looking after the research activities at Institute of Pharmacy and Technology, Salipur, Odisha.

Prof. (Dr.) Ajay K. Patnaik

OCS President 2019

Prof (Dr.) Ajaya Kumar Patnaik, Ph.D. in Chemistry from Utkal University, former Professor of Chemistry, taught at Bhadrak College, Bhadrak; Khallikote College, Berhampur; Utkal University; Ravenshaw College, and Ravenshaw University. Cuttack.

MEMBERS - MKRCC

Dr. Pramode Kumar Prusty

Dr. Pramode Kumar Prusty, Ph.D. in Chemistryfrom Utkal University, did M.Sc. in Chemistry from Ravenshaw College, M.Sc. in Environment Resource Management at Salford University, UK, did higher research there, served as a scientist at Odisha State Pollution Control Board, from where he retired as Chief Scientist.Post-retirement, he joined the State Consumer Redressal Forum, Odisha, where he is continuing.

Prof. (Dr.) Priya Ranjan Mohapatra

Professor of Chemistry, VSSUT, Burla

Prof. (Dr.) Priya Ranjan Mohapatra, Ph.D.in Chemistry from Utkal University, did researchat Gwangju Institute of Science and Technology (GIST), and as a BK21 Fellow at Chonnam National University, South Korea, served Silicon Institute of Technology, and then Veer Surendra Sai University of Technology, Burla, where he is presently a Professor of Chemistry.

Dr. K. S. K. Bharadwaj

Associate Professor of Chemistry, Ravenshaw University, Cuttack

Dr. Kumar S. K. Varadwaj, Ph.D. in Chemistry from IIT, Kharagpur, Senior Research Fellow of CSIR in IIT Kharagpur, a BK21 Fellow at Korea Advanced Institute of Science and Technology (KAIST), South Korea, did postdoctoral research at Hokkaido University, Japan. He is an Associate Professor of Chemistry at Ravenshaw University, Cuttack.

EX-OFFICIO MEMBERS - MKRCC

Dr. Sabita Nayak

Head, Department of Chemistry, Ravenshaw University, Cuttack

Dr.SabitaNayak, Associate Professor of Chemistry, Ravenshaw University, Cuttack, did her Ph.D. in Chemistry from NCL, Pune, worked as a Research Associate in Chembiotek, Pharma Ltd, Pune, postdoctoral work at University of Southwestern Medical Research Center, Dallas, Texas, USA.

Prof. (Dr.) Rupasree Ragini Das

PRESIDENT, OCS

Prof. (Dr.) Rupasree Ragini Das, Ph.D.in Chemistry from Utkal University, post-doctoral work in GIST, South Korea, Principal Scientist at Samsung Advanced Institute of Technology, Suwon, South Korea, retired from Ravenshaw College, presently anAdjunctFaculty in the Department of Chemistry, Odisha University of Technology & Research, Bhubaneswar.

Dr. Debasis Mohanty

Secretary-cum-Treasurer, OCS

Dr. Debasis Mohanty, Ph.D. in Chemistry from Utkal University, Reader and Head, Post Graduate Department of Chemistry, Dhenkanal Autonomous College, popular science writer, researcher. Actively involved in academic administration.

Orissa Chemical Society

EXECUTIVE COMMITTEE - 2023

Prof. Rupasree Ragini Das
President
Phone: +91-7978813944
ocsindia.president@gmail.com
rupasree.ragini@gmail.com

Prof. Smrutiprava Das
Vice-President
Phone: +91-9437604667

Prof. Amaresh Mishra
Vice-President
Phone: +91-9438044602

Prof. Bamakanta Garnaik
Vice-President
Phone: +91-97771 07130

Dr. Debasis Mohanty
Secretary-cum-Treasurer
Phone: +91-9861391190
ocsindia.secretary@gmail.com
maildebasismohanty@gmail.com

Dr. Sasmita Panda
Joint Secretary
Phone: +91-9861926286

Dr. Bigyan Ranjan Jali
Joint Secretary
Phone: +91-9937995381

Prof. Rita Das
Member

Dr. Anita Pati
Member

Dr. Sridhar Sanyasi
Member

Dr. Sidhharth Bharadwaj
Member

Dr. Ajay K. Pradhan
Member

Prof. A. N. Acharya
Member

Prof. Priya R. Mohapatra
Member

Sri Prabhat K. Swain
Member

Prof. Sarat K. Swain
Member
(President's Nominee)

Department of Chemistry
Ravenshaw University

FACULTY WITH SPECIALIZATION

Prof. (Dr.) Sanjay Kumar Nayak
Vice Chancellor
Polymer Chemistry

Prof. (Dr.)SmrutiPrava Das
Plasma Chemistry
Ph.D: Utkal University

Prof. Ajay Kumar Pattnaik
Physical Chemistry
Ph.D: Utkal University

Dr. Sabita Nayak
Associate Professor
HOD Chemistry
Organic Synthesis
Ph.D: NCL, Pune

Dr. K.S.K. Varadwaj
Associate Professor
Material Chemistry
Ph.D: IIT, Kharagpur

Dr. Purnendu Parhi
Associate Professor
Material Chemistry
Ph.D: IIT, Delhi

Dr. Jaya Prakash Das
Associate Professor
Organic Synthesis
Ph.D: IIT, Kharagpur

Dr. Bairagi C. Mallick
Associate Professor
Bio-Physical Chemistry
PhD: IIT, Bombay

Dr. Seetaram Mohapara
Assistant Professor
Organic Synthesis
Ph.D: NCL, Pune

Dr. RashmiRekha Satapathy
Assistant Professor
Organic Synthesis
Ph.D: IIT, Kanpur

Dr. Prangya Paramita Das
Inorganic Chemistry
Ph.D: ISM Dhanbad

Subhransu Sekhar Pati
Organic Synthesis
Ph.D: Ravenshaw University

Dr.Subhransu Subhasis Bhoi
Physical Chemistry
Ph.D: Bordeaux University, France

Dr. Sandip Padhiari
Nano-Chemistry
Ph.D: NIT, Rourkela

Dr. Rojalin Pradhan
Computational Chemistry
Ph.D: Sambalpur University

SUPPORTING STAFF

Dr. Jitendra Ketan Swain
Demonstrator

Purnachandra Dehuri
Lab Attendant

Ashok Kumar Barik
Lab Attendant

Lokanatha Pradhan
Attendant

Sahadeba Rout
Lab Attendant

Tapan Nayak
Sweeper

Siba Naik
Sweeper

Prof. Dr. Mahendra Kumar Rout
Birth Centenary Smaranika
MAHENDRAYANA

MEMBERS OF THE EDITORIAL BOARD

EDITOR-IN-CHIEF

Dr. Chitta Ranjan Mishra
Eminent Chemical Scientist, Technologist & Author
&
Former President, Orissa Chemical Socity
Email: crmishra49@yahoo.in

EDITORIAL ADVISOR

Dr. Rajendra Narayan Das
Eminent Metallurgist, Reasearcher & Author
Email: drrajendradas.germany@gmail.com

EDITOR

Dr.(Mrs.) Subasini Lenka
Eminent Polymor Scientist & Author
and
Former Reader in Chemistry,
Ravenshaw College
Former President, Orissa Chemical Socity
Email: subasinilenka650@gmail.com

EDITOR

Dr. Nishikanta Kar
Former Reader & Head
Dept. Of Chemistry
Stewart Science College, Cuttack
Email: banipressctc@gmail.com

EDITOR

Prof. (Dr.) Shashadhar Samal
Eminent Polymer Scientist
Former President, OCS (2020, 2021)
and
Secretary - MKRCC
Email: samal_s@live.com

Editorial

It was my good fortune to be a part of Prof. Mahendra Kumar Rout Birth Centenary Celebration Committee (MKRCC) and Member of the Editorial Board of the Souvenir MAHENDRAYANA, which is being released today to mark the Life of a Karmayogi, who became a Great Scientific Legend in his lifetime. Prof. Mahendra Kumar Rout was a World Famous Chemical Scientist, Environmentalist, Eminent Educationist, Distinguished Educational Administrator, Outstanding Researcher of International Repute and above all a Charismatic Human Being with Extraordinary Magnetic Personality. To commemorate his Outstanding Contributions to the field of Chemical Sciences, yearlong Birth Centenary Celebration commenced on 4th January 2023 at Ravenshaw University, Cuttack under the dynamic leadership of Prof. Sanjay Kumar Nayak, Vice - Chancellor of Ravenshaw University & Patron, MKRCC & Prof. Prabhat Kumar Misra, Chairman, MKRCC & Former Principal of Ravenshaw College. Department of Chemistry, Ravenshaw University became the Host Organization and Nerve Centre of the Birth Centenary Celebration and organized the event under the aegis of Orissa Chemical Society.

MKRCC constituted a Souvenir Committee comprising Eminent Metallurgist & Author Dr. Rajendra Narayan Das from Germany; Dr. (Mrs.) Subasini Lenka, Former Reader in Chemistry, Ravenshaw College & Dr. Nishikanta Kar, Former Reader in Chemistry, Stewart Science College, Cuttack and myself with the responsibilities of editing the Souvenir MAHENDRAYANA. The Souvenir Committee deliberated at length and advice from all quarters were entertained. I am grateful to all my co-editors for their unstinted support, cooperation & goodwill as and when required. Cooperation received from Dr. Rajendra Narayan Das from Germany, to whom I fondly call 'Rajendra Bhaina', is gratefully acknowledged. Cooperation received from family members of Prof. M.K. Rout especially Prof. S.P. Rout, Former Professor of Chemistry, Utkal University & Son of Prof. M.K. Rout is gratefully acknowledged. He was kind enough to furnish me as much information as possible as and when required to facilitate the Souvenir work. I am also grateful to Dr. Deva Narayan Pattanayak, Son-in-Law of Prof. M.K. Rout, who stays in USA, to provide some of their family photographs besides contributing an article for MAHENDRAYANA. Some of the family photographs received from Prof. Ajay Kumar Patnaik, Former Prof. of Chemistry is also gratefully acknowledged.

Cooperation received from Prof. Shashadhar Samal, Secretary, MKRCC is outstanding and praiseworthy. He was the center pillar of all activities and was the source of all information embodied in the Souvenir MAHENDRAYANA. He provided me great support & cooperation day in & day out and without him MAHENDRAYAN would not have seen the light of the day. Cooperation received from all Members of the Department of Chemistry, Ravenshaw University; Members of Prof. Mahendra Kumar Rout Birth Centenary Celebration Committee and Members of Orissa Chemical Society are gratefully acknowledged. My sincere thanks to our overseas alumni members who have shown great interest in the Birth Centenary Celebration of Prof. Rout & contributed articles for MAHENDRAYANA which were included under the Chapter 'Voices from Overseas'. Thanks are due to Dr. Sarat Chandra Das, Former President, OCS, who during his stay in USA acted as the interface for contacting our overseas alumni members for contributing articles for MAHENDRAYANA. My thanks are due to the Elite Members of the Advisory Body of MKRCC for contributing some articles for MAHENDRAYANA besides guidance as and when required.

I will fail in my duty if I do not mention the name of my Revered Teacher Prof. Prabhat Kumar Misra, Chairman, MKRCC and Former Principal, Ravenshaw College for his love and affection, constant guidance & blessings without which MAHENDRAYANA would not have been a reality. He was the Leader of the team and source of all inspiration & dynamism which drove us forward to accomplish the job amidst various ups & downs.

The job was hard pressed. Time was running out. I had to sit in the Printing Press practically daily. Typing, proof correction, editing, composing, lay out & designing etc were a too difficult task to accomplish. However, with the constant cooperation of the Printing Press Personnel particularly Sri Brundaban Behera, Director is commendable & praiseworthy. He was a constant source of encouragement during course of the publication. Thanks to all his team members at Print Tech Offset Private Limited, Bhubaneswar for their constant help and cooperation. Cooperation received from all quarters is gratefully acknowledged.

The Editorial Board acknowledge with thanks the cooperation received from Prof. Barry B. Snider, Chair, Department of Chemistry, Brandeis University , USA for his Congratulatory Message acknowledging the accomplishments of Prof. Mahendra Kumar Rout in the field of Chemistry and wishing success of the Birth Centenary Celebrations. ■■■

Dr. Chitta Ranjan Mishra
Editor-in-Chief

A Brief Report on MKRCC Timeline of Events

Prof. Shashadhar Samal, Ph.D., D.Sc.
Secretary, MKRCC
Email: samal_s@live.com
Phone: +91-9938854038

It was a cold December evening in 2019. In the Orissa Chemical Society General Body Meeting held at VSSUT, Burla (26th December 2019), it is resolved that '*For celebration of Prof. M. K. Rout birth centenary a new committee may be constituted by the new President in consultation with the family members of late Prof. M. K. Rout*'. As per the GB resolutions, in the OCS Executive Committee meeting held at the Odisha University of Technology and Research (then CET), Bhubaneswar on 1st February 2020, a Centenary Celebration Committee was formed with Prof. Prabhat Kumar Misra as the Chairman. It was decided that the Committee would meet in the Department of Chemistry, Ravenshaw University, Cuttack as and when needed.

In the latter half of the year, COVID-19 had firmly taken root in India, making any physical meeting practically impossible. On 8th November 2020, a virtual meeting was held. Here, it was decided that the OCS President and OCS Secretary-cum-Treasurer would remain as *ex-officio* members of the Committee. In this meeting, Prof. Gopabandhu Behera proposed that I be the Secretary of the Prof. M. K. Rout Centenary Celebration (MKRCC) Committee. Before I could react to the proposal it was approved. I was then the President of OCS, and I had little scope to say no.

The MKRCC committee couldn't meet in person, as the second wave of COVID-19 was taking its toll. Still, some steps were initiated. On the OCS website, several pages were newly added exclusively for MKRCC. An article titled "PROFESSOR MAHENDRA KUMAR ROUT: AN INSTITUTION" written by Prof. G. B. Behera was added to the website. It is heartening to note that this article was printed in the form of a handout by Shri Manoranjan Mohanty, an honorable member of the MKRCC Advisory Body. This handout was circulated to the participants of seminars and conferences conducted in different parts of the state.

The OCS approached the bank to open a separate account for the MKRCC, but the bank declined stating that for a Society there cannot be more than one SB account. For this, on the OCS website, provisions were made to have a listing of all donations made to OCS on the MKRCC head for everyone to see. Several sub-committees were formed, like the Souvenir Committee and Academic Committee. We had a vision document at hand with clear resolutions and recommendations.

I recall the suggestions, some of which were emotionally orchestrated. Others suggested we plan for achievable goals. Prof. Rajani Kanta Satapathy closed the debate stating that '*let us dream, there is nothing wrong in dreaming*'. This vision document is a mix of our dream and reality.

One evening I received a call from Dr. Rajendra Narayan Das from Germany. He suggested that the souvenir that will be brought out be named 'MAHENDRAYANA'. It will be a repository of information on Prof. Rout's academic and administrative activities. Copies of the souvenir should be preserved and given to the best chemistry students every year.

Vision Document

SUGGESTIONS of MKRCC Committee (APPROVED by the OCS EC)

1. Prof. M. K. Rout Birth Centenary Celebration (MKRCC) will be observed in January 2023, with a series of meetings spread over the year. The first Centenary Celebration meeting (Inaugural Function) will be held at Ravenshaw University, followed by meetings at Khallikote University, Gangadhar Meher University, and Bhadrak Autonomous College. Attempts may be made to organize three international conferences in these institutions. These, however, will depend on the financial position after the inaugural meeting at Ravenshaw University.
2. A celebrated scientist of international fame will be invited to inaugurate the first meeting.
3. Patna University will be informed of Prof. M. K. Rout Birth Centenary Celebration with a request to record the event by adopting a resolution in the Syndicate. Further, the Vice-Chancellor of the University will be requested to grace the inaugural meeting as the Guest of Honour.
4. Indian Chemical Society will be requested to bring out Prof. M. K. Rout Birth Centenary Year Special Issue of the Journal of Indian Chemical Society. There may be a financial aspect to publishing the Special Issue, which will be ascertained first.
5. A list of publications of Prof. Rout with abstracts of the papers, wherever available, and the names of the Ph.D. scholars and brief biographies of the scholars will be compiled and included in the Souvenir.
6. A collected volume of Prof. M. K. Rout Memorial lectures delivered at the OCS Annual Meetings will be prepared and included in the Souvenir.
7. A professional company will make a documentary of 15-30 minutes duration portraying the life and academic/administrative activities of Prof. Rout for presentation in the inaugural meeting.
8. The State Pollution Control Board will be contacted to host/support a special conference as a part of MKRCC in the area of Environmental Science (Pollution, Effect on Biodiversity, Pollution Mitigation, etc.). It was suggested to write to the Govt. with arguments to name the Pollution Control Board in the name of Prof. M. K. Rout. If necessary, the Committee may approach the honorable Chief Minister.
9. The Government of Odisha, the State, and Central Government funding agencies may be contacted to extend support to the centenary celebration.
10. A list of students of Prof. Rout in Odisha and outside the state and country, specifically those residing in the USA, be prepared. Dr. Deva Narayan Pattanayak (USA) is requested to provide a list of the students (not only the Ph.D. scholars) of Prof. Rout residing in the USA. They will be requested to contribute to the success of the Birth Centenary Celebration generously.
11. The MKRCC shall be organized by the MKRCC committee (MKRCCC). All contributions will be made to the OCS under an MKRCC Head of Account. For each head of expenditure, the budget will be fixed by the Finance Committee. At the end of the celebration, an audit must be made, which shall be presented to OCS after the due approval of MKRCCC. The President of OCS will preside over the meetings.

Since then, the Committee has strived hard to meet most of the above goals. New sub-committees were formed, and some new members were inducted. Letters were sent far wide, including overseas. Some responded with encouragement and promises of support. It was decided to convene a meeting for MKRCC only after the collection of some seed money (about 2 lakh rupees). Way back in April 2021, a letter seeking donations to MKRCC was sent. In this letter, a relevant paragraph reads, "*No program would succeed without the required financial support. All the Members of the OCS, specifically the scholars and students of Prof. Rout, and everyone who has been directly or indirectly influenced by Prof. Rout's unassuming, humble, charismatic, and mesmerizing personality, are requested to contribute to this prestigious OCS event generously".* By then COVID-19 had an overwhelming global presence. Expected financial support did not come through. In the absence of any seed money, it was not possible to go ahead with any preparations worth mentioning. Some donations were received, but nowhere close to 2 lakh rupees. The first donation was made by Prof. Balaram Sahoo. That led others to follow suit. We were hopeful that after the pandemic, the scenario would change.

The pandemic slowly receded. We could reach out to more people. Despite these developments, no significant progress could be made in 2022. Then there was a new ray of hope. On 18th December 2022, it was resolved in the OCS GB meeting held at Utkal University, Vani Vihar that "*The proposal submitted by Ravenshaw University to conduct the 37th Annual Conference at Ravenshaw University was approved. The proposal to conduct the MKRC celebration will be decided in the next EC meeting.*"

The 4th of January was the 99th Birthday of Prof. Rout. It was too early for the OCS to convene its EC meeting. Still, on this day Ravenshaw University observed the birthday with enthusiasm and zeal. It was a great beginning for the Centenary Celebration Year. Organized at short notice, the Department of Chemistry and OCS, inspired by the dynamism of Honourable Vice-Chancellor, Prof. Sanjay Kumar Nayak, conducted the 99th Birthday in style.

The OCS in its EC meeting held on 5th February 2023 at the Department of Chemistry, Ravenshaw University, resolved that "*both the MKRCC and OCS Annual Conference 2023 will be blended into one event and it will be held on 4-6 January 2024*".

Following this resolution, we had a series of meetings with the Members of Staff of the Chemistry Department and the OCS. The Chairman of MKRCC contacted distinguished personalities of the state to constitute an 'ADVISORY BODY'. After getting their consent, a full list of the Advisory Body members took shape. In the meantime, donations to MKRCC came, largely because of the efforts of Prof. Prabhat Kumar Misra, Chairman, MKRCC as well as other senior members, like Dr. Pranabandhu Tripathy, Prof. Gopabandhu Behera, Prof. Anadi Charan Das, Dr. Chitta Ranjan Mishra, Dr. Subasini Lenka, Prof. Rupasree Ragini Das. Friends and colleagues like Dr. Sudhansu Sekhar Tripathy, Dr. Deva Naryan Pattanayak, Prof. Swoyam Prakash Rout, Prof. Amar K. Mohanty and Prof. Manju Mishra, among others, not only generously donated but also mobilized donors at home and overseas. Soon a sum of about five lakh was accumulated on the MKRCC head of account as of April 2023.

A meeting of the MKRCC Committee was held on 16th April 2023 in CLT1, Ravenshaw University, Cuttack. Addressing the Committee,

Prof. Sanjay K. Nayak, Hon'ble Vice-Chancellor, Ravenshaw University, stated that there will be some renovation work in the department before the Centenary Celebration. The research culture is being restored despite the faculty crunch. It will be our collective effort to bring back the old glories of the Chemistry Department. There was discussion on free treatment in the campus hospital being relocated to the then residence of Prof. Rout and a proposal for a postage stamp in the name of Prof. Rout. He concluded his address with an appeal to all to come together, extend all support and cooperation, and celebrate the great occasion together. Indeed, the university got a facelift. The Department of Chemistry had its share of renovation. The good old CLT1 is now majestically transformed.

Several resolutions were adopted in the above meeting, such as the Chemistry Department writing to Ravenshaw University administration to make available the Seven-Pillar Conference complex for the MKRCC celebration. A sub-committee is formed to decide the manner and scope of felicitation/honor in the inaugural meeting. A Finance Committee comprising of (a) President and Secretary-cum-Treasurer, OCS (b) Chairman and Secretary of MKRCC, and (c) Dr. Sarat Chandra Das is formed, who would take all decisions regarding the management of contributions received on MKRCC head of account. A committee for producing a documentary on Prof. Rout was formed, and Prof. Ajay Kumar Patnaik was entrusted to be an anchor person for producing the movie.

Following this, different colleges, universities, and institutes were contacted to celebrate the centenary year organizing seminars and conferences. Here is a list of such events that were successfully conducted. In all these meetings the handout on Prof. Rout is distributed to the students. Senior members of the MKRCC, such as Prof. Balaram Sahoo, Prof. Prabhat Kumar Misra, Prof. Pranabandhu Tripathy, Prof. G. B. Behera, Prof. A. C. Dash, Dr. Subasini Lenka, Prof. S. P. Rout, among others, who addressed the participants recounting the memories of Prof. Rout. The Members of the OCS Executive Committee, President and Secretary, OCS, former OCS Presidents, and Secretaries played pivotal roles in organizing these meetings.

1. 4th January 2024: MKRCC Event (99th Birthday Celebration) – Chemistry Department, Ravenshaw University.
2. 11th and 12th April 2023: MKRCC Event - VSSUT, Burla.
3. 13th April 2023 : MKRCC Event - P.G. Department of Chemistry, Dhenkanal Autonomous College, Dhenkanal.
4. 27th and 28th May 2023: MKRCC Event - Department of Chemistry, Maharaja Sriram Chandra Bhanjadeo University, Baripada.
5. 15th October 2023: 27th OCS Regional Conference, Khariar Degree College, Khariar.
6. 11th November 2023: MKRCC Event - Mohan Subudhi College, Badamba.
7. 18th and 19th November 2023: P.G. Department of Chemistry, Dhenkanal Autonomous College, Dhenkanal.
8. 2nd December 2023 : MKRCC Event – Utkal University, Vani Vihar.
9. 4th December 2023: 3rd OCS One-Day Extended Lecture Series, KIIT University,
10. 15th December 2023: 4th OCS One-Day Extended Lecture Series, Odisha University of Technology and Research, Bhubaneswar.

These meetings were a clear demonstration of the solidarity of the chemistry fraternity and their resolve to celebrate the Centenary Year with a sense of purpose. Experts carrying out research on the frontiers of chemical science from national and state institutes and universities were invited to share their work with the participants. Several debates were conducted on curriculum development, sustainability, and ways to bridge the gap between state- and central-funded institutions, universities, and colleges providing PG teaching in Chemistry.

While these meetings were being organized, great strides were made in building up MAHENDRAYANA. The academic and administrative footprints of Prof. Rout were meticulously collected and incorporated. A graphic display of Prof. Rout's presence in diverse domains is built up. Articles on Prof. Rout from admirers and from those who loved and respected him kept coming from in-house and overseas. I take this opportunity to thank them all. Through their articles, they have resurrected the memories of Prof. Rout. I must thank Prof. Bijay Kumar Mishra and Prof. Himansu S. Biswal for contributing scientific articles covering the research fields of Prof. Rout. My gracious thanks to Prof. Swoyam Prakash Rout for providing materials depicting the academic and administrative profiles of Prof. Mahendra Kumar Rout. Reproducing these historic documents involved laboriously reviving hundreds of worn-out pages. The more I delved into the life and time of Prof. Rout, the more I learned about him. The hard work was worth it, as the materials would have been lost forever. The MAHENDRAYANA took the desired shape, and with the magic editing hands of Dr. Chitta Ranjan Mishra, Editor-in-Chief, the souvenir, I am sure will be a valuable asset and a pride possession. The Editorial Board deserves our respect, praise, and thanks.

Like everyone, I had a flavor of the great man, right from the day I joined Ravenshaw College as a student in 1973. Throughout my MSc days and thereafter, I had glimpses now and then of his unique style of teaching and research. Little did I know that his strongly interactive classes would have such a lasting effect on me that I would resolve to see his reflections in my life. It got deeply rooted in my mind to publish research work in high-impact journals like JACS, and in some way, I succeeded in that. Apart from academic training, Prof. Rout uses to discuss in class his style of administration. I learned from him that delaying any decision in administration is detrimental to the system. He resolves complex issues in his style of decision-making '*then and there*'.

Though we came some distance in enlivening the memory of Prof. Rout, it is only a small step forward. During the last three years, I have interacted with a diverse group of people and some wonderful individuals. The coherent voice I hear is that Prof. Rout cannot be kept confined to the Chemistry fraternity alone, nor can he be kept within the realm of an institution or organization. The ideals that Prof. Rout professed and practiced are far beyond these set boundaries.

The discipline of Chemistry deals with matter living and non-living. This discipline has myriads of intersections with other science streams that make the subject more fascinating. These days, it is increasingly being felt that science learning and practice should have a holistic approach. The ideal way for Chemical Science to be diverse and multi-disciplinary, a dedicated institution such as 'Advanced Institute of Chemical Sciences' is need of the hour. Hope, someday Odisha will come up with such an institution, and if we can do so, that will be our real tribute to Prof. Rout.

In playing a role in MKRCC, I sought help and support from many individuals. It is their love for Prof. Rout that help came pouring in. I take this occasion to convey my thanks to one and all with a deep sense of gratitude. Of particular mention is the endearing help and support of Prof. Sanjay Kumar Nayak, Honourable Vice-Chancellor, of Ravenshaw University, who is also the Patron of the Centenary Celebration. On behalf of the MKRCC Committee, I convey my heartfelt thanks to him. My sincere thanks to Prof. Prabhat Kumar Misra, Chairman, MKRCC. In the last year, there was not a single day when I did not call him. At this stage in his life, he has the vigor and will to contribute to a great cause. Thanks are due to the Members of the MKRCC and MKRCC Advisory Body, the OCS, the past Presidents and Secretaries of the OCS, the authorities of Ravenshaw University for their support, the Department of Chemistry, Ravenshaw University, individuals and institutions who donated for the cause, deserve our sincere thanks. Of particular mention are those who organized seminars and conferences in the Centenary Celebration year. Their dedicated hard work leading to successful MKRCC events is a step forward for further activities in the future. In bringing these happenings to the notice of the general public, the media played a pivotal role. Their timely coverage of these MKRCC and OCS events encouraged us to do more. I thank them all for their generous help.

Today, on this auspicious occasion, I must thank the distinguished guests and invitees for accepting our invitation. Of particular mention are Prof. Swaminathan Sivaram and Prof. Ganapati D. Yadav. They readily accepted our invitation to be with us. Their very presence inspires us and we look forward to listening to their words of wisdom. Today, we are also felicitating two of our ambassadors of science, Prof. Jyotirmayee Dash and Dr. Jyotirmayee Mohanty. Both of them have demonstrated their scientific acumen with excellent research work which led them to win coveted honors and accolades. I thank them for accepting our invitation. I am deeply indebted to Prof. Gopabandhu Behera, who is a loving student of Prof. Rout and he will give us an outline of Prof. Rout's many-faceted personality. I also thank the President of Orissa Chemical Society, Prof. Rupasree Ragini Das, as well as Dr. Debasis Mohanty, Secretary OCS, and all the Members of the Executive Committee for being instrumental in organizing as many as ten MKRCC-OCS events in the Centenary Year covering different corners of the state. All these would not have been possible without the guidance of Prof. Prabhat Kumar Misra, Chairman of the MKRCC Committee. His Himalayan presence is just enough. I thank you Sir for everything. Lastly, I must thank once again Prof. Sanjay Kumar Nayak, Honourable Vice Chancellor and PATRON of the MKRCC-OCS event. He stood by our side rock-solid and assured us, steered us clear from troubled waters. With his endearing help and support, I am sure, the Centenary Celebration will be a grand success.

I am aware of the fact that in the process of playing our role, the MKRCC Committee might not have met all expectations. The limited physical resources came into play often, but we had to move on. In doing so, I always kept remembering the famous inscription in I. L. Finar Organic Chemistry Book and I quote: ***"A man would do nothing if he waited until he could do it so well that no one could find fault"*** – John Henry Newman.

Let us join hands and enjoy the 100th Birthday celebration of Prof. Mahendra Kumar Rout, the legend. ■■■

Dedicated in Memory of ...

Late Laxmidhar Rout and Late Suryamani Rout
Beloved Father & Mother of Prof. Mahendra Kumar Rout

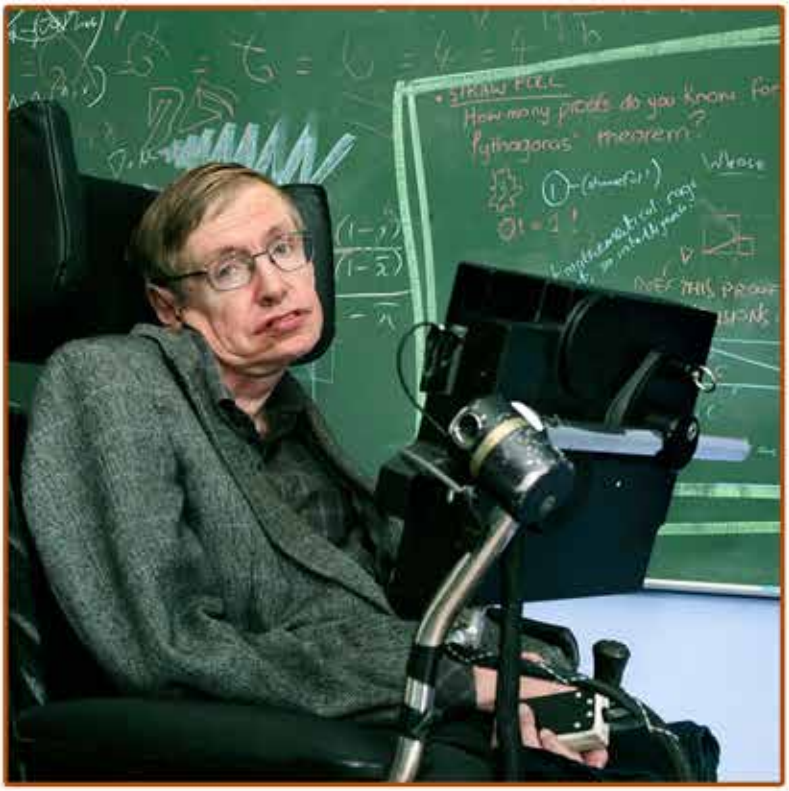
CONTENTS

ଓଡ଼ିଆ ବିଭାଗ

ENGLISH SECTION

VOICES FROM OVERSEAS

***



“Science is not only a disciple of reason but also one of romance and passion.”

– Stephen Hawking

DISTINGUISHED GUESTS

Padma Shri Swaminathan Sivaram

Honorary Professor Emeritus and INSA Emeritus Scientist,
Indian Institute of Science Education and Research, IISER
Pune, 411008

Padma Shri Ganapati D. Yadav

National Science Chair (SERB/GOI)
Emeritus Professor of Eminence
Former Vice Chancellor
Institute of Chemical Technology, Mumbai

Bio-Sketch

Padma Shri Swaminathan Sivaram

Dr. Sivaram is a Professor Emeritus at the Indian Institute of Science Education and Research (IISER), Pune. Dr. Sivaram is a polymer chemist by profession and a former Director of the CSIR – National Chemical Laboratory, Pune (2002-10), Shanti Swarup Bhatnagar Fellow of CSIR (2010-2015) and J. C. Bose Fellow of the Department of Science and Technology (2006-2014). From 1973 to 1988, Dr. Sivaram was associated with the Indian Petrochemicals Corporation Limited and helped build the first petrochemicals and polymer industrial R&D Centre at Vadodara, India. He moved to CSIR -NCL in 1989 as the head of the Polymer Science and Engineering Division.

Dr. Sivaram is a highly decorated scientist for his contributions to S&T as well as institution building in India. He was conferred the coveted civilian honor, Padma Shri by the President of India in 2006. He is a recipient of the Gold Medal of the Chemical Research Society of India for his life-time achievements in chemistry (2019) and the International Award for distinguished contributions to polymer science, awarded by the Society of Polymer Science, Japan (2017). The Institute of Polymer Science, University of Akron honored him with the H.A. Morton Distinguished Professorship in 2006. Purdue University conferred on him a degree of Doctor of Science (h. C) in 2010 in recognition of his exceptional merit and attainment. IIT-Kanpur bestowed on him the distinguished alumnus award in 1998. He is an elected Fellow of all the learned academies of science and engineering in India as well as The World Academy of Sciences, Trieste, Italy.

Dr. Sivaram earned his B. Sc. degree in Chemistry from Madras Christian College (1965) and M.Sc. From the Indian Institute of Technology, Kanpur (1967). He earned a Ph.D. in Chemistry (mentored by Nobel Laureate Professor H. C. Brown) from Purdue University, W. Lafayette, Indiana, USA. He was a Research Associate at the Institute of Polymer Science, The University of Akron, Ohio, USA (Professor J.P. Kennedy).

He was a founder Chairman and director of Venture Centre, A Section 8 not-for-profit company, Pune one of the first science driven technology business incubators established in India in 2004. He is also a founder Director of AIC-Society for Entrepreneurial Education and Development and I-HUB Quantum Technology Foundation, both located within IISER, Pune. He is a technical consultant and scientific advisor to several Indian companies and serves or has served on the Board of Directors of many leading Indian companies dealing with chemicals and materials

Dr. Sivaram 's research interest concerns polymer synthesis, porous polymers, biodegradable polymers, organic-inorganic hybrids, and structure-property relationship in polymers. This apart, he is deeply interested in subjects related to sustainability, sustainable materials and energy technology and policies, history of science and technology as well as understanding the inter-play of science, technology, society, and public policies.

Dr Sivaram is currently leading a Think-Tank on defining India's road map to net-zero for four key hard-to-abate sector of industry as well as an Indo-British study group for creating a "Virtual Critical Minerals Supply Chain Observatory."

He has authored close to two hundred and fifty papers in peer-reviewed journals, edited two books and authored one book. He is cited as an inventor in fifty-one issued US and European patents as well as fifty-two Indian patents. He has supervised the doctoral thesis of about forty-five students and mentored over fifteen post-doctoral fellows in a research career spanning fifty years. ■■■

SUSTAINABILITY AND CIRCULARITY: IMPERATIVES FOR CHEMISTRY

Dr. S. Sivaram
Honorary Professor Emeritus and INSA Emeritus Scientist,
Indian Institute of Science Education and Research,
Pune, 411008
www.swaminathansivaram.in

ABSTRACT

The future of a sustainable civilization rests on three pillars, namely, energy-materials, ecology-environment, and equity-social justice. The present economy remains dependent on a massive inward flow of energy and matter derived from natural resources followed by a reverse flow of economically spent matter back to the ecosphere. Sustainability problems are determined largely by these economy-ecosphere material flows. The flow of materials and energy through society is an integral, but poorly visible, element of global sustainability agenda. Given that the primary activities of chemistry are to analyse, synthesize, and transform matter the practice of chemistry has a great deal to contribute to sustainability science, which in turn, will play an increasingly important role in reshaping the practice of chemistry. Success in integrating sustainability considerations into the practice of chemistry requires a better understanding of the molecular basis of sustainability of earth and societal systems, embedding systems thinking as well as build circularity in the practice of chemistry.

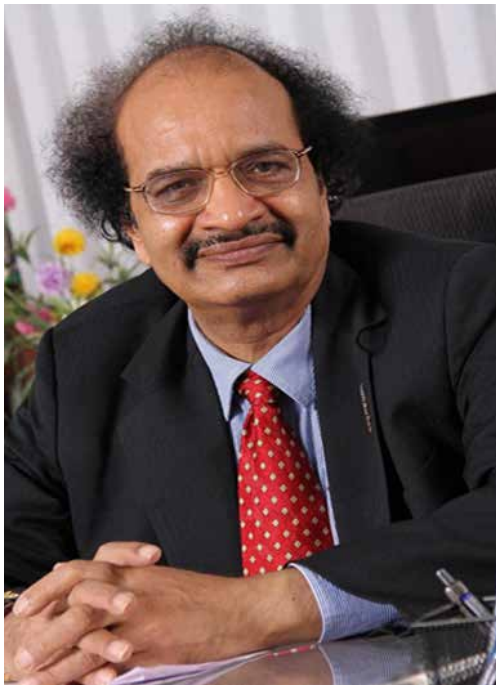
The tenets of sustainability teach us that before we make critical decisions about our future, we apply *"cautionary principle*" and think about *"unintended consequences."* Human intervention in a complex system tends to create unanticipated and often undesirable outcomes and most technologies have negative consequences that are unpredictable. Therefore, before we introduce new chemistries and technologies, we need to think of the *unintended consequences*, which may show up only after several decades. Furthermore, many new solutions, have the potential for causing harm when extensive scientific knowledge on the subject is lacking. In such cases we need to apply *cautionary principles*, meaning, step back, pause, think, and review before jumping into new solutions.

In this lecture, I will focus principally on materials criticality as a core issue in the proposed transition to low carbon technologies and the challenges in building circularity in our materials consumption. Decarbonization is at the core of the global strategy for mitigating the adverse effect of climate change. In this context it is interesting to ask where will the future carbon come from in a rapidly decarbonizing world.

I will highlight these problems with some specific examples. Key technologies as well as challenges in achieving resource efficiencies of materials through circularity as well as emerging alternative technologies will be discussed. I will also examine how we can ward off the "rebound effect" (or more popularly known as Jevon's Paradox).

Since a core element of addressing sustainability challenges requires attention to the material basis of our society, a new paradigm for the practice of chemistry is needed. If chemistry increasingly direct its strengths to contributing to a sustainable civilization, it will become more interesting and compelling to people, and may lose its "dark and toxic" image. It will then become more worthy of public support and spawn exciting economic enterprises that nurture sustainability.

Humans in this "complex" adaptive eco-system can control almost nothing, yet, have the power of technology to influence everything. Our responsibility to the future demands that we leave behind well-thought-out solutions that generations yet unborn will not live to regret. ■■■



Bio-Sketch

Padma Shri Ganapati D. Yadav

B. Chem. Eng. Ph.D. (Tech), D.Sc. (Hon. Causa, DYPU Kolhapur), D. Eng. (Hon. Causa, NIT-Agartala) USNAE, FTWAS, FNA, FASc, FANSc, FNAE, FRSC (UK), FIE (India), FISTE FIChemE (UK), FIIChE, FICS

NATIONAL SCIENCE CHAIIR (SERB/DIST,GOI)
EMERITUS PROFESSOR OF EMINENCE

Former J.C. Bose National Fellow (Govt. of India)

Former Vice Chancellor and R.T. Mody Distinguished Professor and

Tata Chemicals, Darbari Seth Distinguished Professor of Innovation and Leadership

INSTITUTE OF CHEMICAL TECHNOLOGY MUMBAI

Padmashri Awardee (2016)

Conjoint Professor, University of New Castle, Australia

Adjunct Professor, University of Saskatchewan, Saskatoon, Canada

Former Adjunct Professor, RMIT University, Melbourne, Australia

Founding Chair, ACS India International Chemical Sciences Chapter

President, Maharashtra Academy of Sciences

President, India Chemical Society

Former President, Catalysis Society of India

Former President, Indian Institute of Chemical Engineers

Council Member, Indian National Science Academy (2019-21)

Elected to the US National Academy of Engineering (2022)

In top 0.2% of researchers in Physical Chemistry in the World, No.1 in India & at No.66 in the world during both years (Stanford Uni Surveys of Nov-2020 and 2021)

505 peer reviewed papers, 115 granted patents, 850+ Lectures/seminars/orations Over 125 honours, accolades, distinctions, fellowships, editorships

Guidance of 107 Ph Ds, 135 Masters and 47 Post – docs as a single supervisor (National record for any engineering professor)

h index of 64, i10 index of 317, 15500+ciations

2 Honorary Doctorates : NIT Agartala and DYPU Kolhapur

Independent Director 5 public limited companies and consultant to industry for past 40 years Metamorphosed ICT Mumbai as VC for 10.5 years

Professor Ganapati D. Yadav is one of the topmost, highly prolific, and accomplished engineering-scientists in India. He is internationally recognized by many prestigious and rare awards as an academician, researcher and innovator, including his seminal contributions to education, research and innovation in Green Chemistry and Engineering, Catalysis, Chemical Engineering, Energy Engineering, Biotechnology, Nanotechnology, and Development of Clean and Green Technologies. For 10.5 years, he served as the Founding Vice Chancellor and R.T. Mody Distinguished Professor, and Tata Chemicals Darbari Seth Distinguished Professor of Leadership and Innovation at the Institute of Chemical Technology (ICT), Mumbai, which is a Deemed-to-be-University having Elite Status and Centre of Excellence given by State Assembly on par with IITs/IISc/IISERs. He currently holds the titles of Emeritus Professor of Eminence and J.C. Bose National Fellow in ICT. He serves as the Adjunct Professor at University of Saskatchewan, Canada, RMIT University, Melbourne, Australia and Conjoint Professor, University of New Castle, Australia. He was conferred Padma Shri, the fourth highest civilian honour, by the President of India in 2016 for his outstanding contributions to Science and Engineering. He has been recipient of two honorary doctorates: D. Sc. (Hon. Causa, DYPU) and D. Eng. (Hon. Causa, NIT Agartala). As the Vice Chancellor he created many records.

He is now selected as the National Science Chair (Mode I) by the Science & Engineering Research Board of the Department of Science & Technology, Govt. of India, which is a very prestigious national honour.

He was elected to the US National Academy of Engineering on Feb. 9, 2022, which is a rare honour. In the November 2020 and 2021 surveys of Stanford University, where Indian scientists in top 2% of those in the World are honoured, Professor Yadav is number one in India in Physical Chemistry which is within 0.2% of the world scientists and is ranked at 66, for both years which is remarkable. He is a chemical engineer, but his research is in the field of catalysis science and engineering which is counted as part of physical chemistry.

His research productivity is phenomenal with supervision of 107 Doctoral and 135 Masters Theses, which is the first record in ICT and for any Engineering Professor in India. Besides, he has supervised 47 post-doctoral fellows, several summer fellows and research staff. He has published 498 original research papers, 115 granted national and PCT patents, 8 new patent applications; 3 books; h-index of 64, i10 index of 316; 15,500+ citations in journals, patents, books, and monographs, and 850+ specials lectures/orations/seminars over the years. He is still actively involved in guiding 15 doctoral students, patenting, publishing, consulting, and transferring technologies to industry.

Under his dynamic leadership, ICT made phenomenal progress having been declared as Category I institute, having started 23 new academic programmes, 5 new Departments and several Centres of Excellence, and establishment of two off-campuses in Bhubaneswar with total support of IOCL and Marathwada with total support of Govt. of Maharashtra, and collected phenomenal funds. The ICT is listed in top 100 institutes in the Developing World by Times Higher Education Ranking in 2019. The Atal Innovation Ranking of MHRD has placed ICT as number 1 among Govt. funded Universities. He has personally won over 125 national and international honours, awards, fellowships, editorships, and several Life Time Achievement Awards by prestigious industrial organizations; For instance, Zaheer Husain Medal of the Indian National Science Academy, Jai Krishna Memorial Award of the Indian National Academy of Engineering among many others. He is an elected Fellow of Indian National Science Academy, Indian Academy of Sciences, National Academy of Sciences, India, Indian National Academy of Engineering as well as The World Academy of Sciences, Trieste (TWAS).

He is a Fellow of Royal Society of Chemistry, UK, Institution of Chemical Engineers, UK, Indian Institute of Chemical Engineers, Indian Chemical Society, and Indian Society for Technical Education, among others. He is currently the President of the Indian Chemical Society and Editor-in-Chief, Journal of the ICS being published by Elsevier.

The American Chemical Society (ACS) published a Festschrift (special issue) of Industrial and Engineering Chemistry Research (2014) in his honour. He is the Founder President ACS India International Chapter. He is on editorial boards of prestigious journals like: ACS Sustainable Chemistry & Engineering, Green Chemistry, Applied Catalysis A: Gen, Journal of Molecular Catalysis A: Chem., Catalysis Communications, International Journal of Chemical Reactor Engineering, Clean Technologies and Environmental Policy, Current Catalysis, etc. He is the Founding Editor-in-Chief of Catalysis in Green Chemistry & Engineering (2017, Begell House, USA). He has been a member or has chaired several national and international committees of MHRD, DST, DBT, UGC, AICTE, CSIR, the PSA's on Green Chemistry, the Planning Commission's Pan India S&T Committee, and the Government of Maharashtra's Rajiv Gandhi S&T Commission Peers Group. He was Chairman, Research Council, CSIR-CSMCRI, member of RC of IICT Hyderabad and NIIST Trivandrum. He has served as a Chairman/member of Selection Committees of directors of many CSIR labs. He serves as Independent Director, on five renowned limited companies: Aarti Industries Ltd, Godrej Industries Ltd, Meghmani Organics Ltd, and Bhageria Chemicals Ltd, and Clean Science and Technology Ltd.

He is also a member of Apex Council of Indian Oil R&D; Expert Advisory Committee, ONGC Energy Centre (OEC); Glexcon India Advisory Board on Process Safety and the Governing Council DBT-IndianOil Energy Centre, and member of the DBT-Pan IIT Centre for Bioenergy. He is Chairman of DST's National Expert Advisory Committee on Innovation, Incubation and Technology Enterprise, member of Advisory and Screening Committee of the Common Research and Technology Development Hubs of DSIR, Chairman, PAC of International Programmes in Chemical Sciences and Engineering, DST and Chairman, Expert Committee, Waste Management Technology, DST. He is a member of the Maharashtra Govt's Expert Committee on implementation of the National Education Policy (NEP 2020).

He had the honour of addressing 3 Convocations of renowned universities in India. He is fond of literature, etymology, and Sanskrit. The ICT's University song is written by him. There are over 60 video clips covering his biography (both English & Marathi), lectures, panel discussions, interviews on TV on YouTube. https://www.youtube.com/playlist?list=PLclyJH91-TwvTScCVrcih3nrrPGgf8U8R ■■■

The Net Zero Goal & Sustainability: Green Hydrogen Technologies, CO_2 Refineries, Biomass Valorization &Waste Plastic Recycling

Ganapati D. Yadav
National Science Chair (SERB/GOI)
Emeritus Professor of Eminence
Former Vice Chancellor
Institute of Chemical Technology, Mumbai
Email: gd.yadav@ictmumbai.edu.in; gdyadav@gmail.com

ABSTRACT

The net zero goal by 2050 is a cherished dream of all world economies. In achieving the 49000 TWh of energy by 2050 will have 73% of its contribution from renewables. In that hydrogen will have a share of 25%. The new trinity for science will be solar, wind and hydrogen. The leading economies of the world should go for production of green hydrogen in pursuit of the Net Zero goal of the Paris Agreement of 2015. Hydrogen is best suited for converting any biomass and carbon dioxide emanated from different sources, into fuels and chemicals. Hydrogen will also lead, on its own as energy source, to the carbon negative scenario in conjunction with other renewable non-carbon sources such as solar, wind, tidal, geothermal, nuclear or the like. Hydrogenation of biomass leads to many valuable products. So, tomorrow's refineries will be literally carbon dioxide refineries- converting it into hydrocarbons, methanol, dimethyl ether (DME), formic acid, alcohols, syn gas, electricity, hydrogen vehicles, fuel cells, ammonia, and fertilizers, etc. using hydrogen which should be obtained from water splitting. DME is the best replacement for diesel and LPG and the same infrastructure could be utilized. That will lead to carbon-negative economy bringing down the temperature of the globe below 1.5°C. Today's crude oil-based economy for the manufacture of fuels, chemicals and materials will not have a sustainable future. Faced with the twin challenges of sustaining socioeconomic development and shrinking the environmental footprint of chemicals and fuels manufacturing, a major emphasis is on either converting biomass into low-value, high-volume biofuels or refining it into a wide spectrum of products. Using carbon for fuel is a flawed approach and unlikely to achieve any nation's socioeconomic or environmental targets. In controlling CO_2 emissions, hydrogen will play a critical role. Hydrogen is best suited for converting waste biomass and carbon dioxide emanated from different sources, whether fossil or biomass into fuels and chemicals as well as it will also lead, on its own as energy source, to the carbon negative scenario in conjunction with other renewable non-carbon sources. This new paradigm for production of fuels and chemicals not only offers the greatest monetization potential for biomass and shale gas, but it could also scale down output and improve the atom and energy economies of oil refineries. There is also a need to rethink on the ban on single use plastic (SUP) and a new policy is required to encourage general public to pay a deposit on every single article irrespective of size and get it refunded when it is returned which will allow segregation at source. Several hydrogenation reactions can be used to depolymerize or to make fuels from waste plastic and the nasty atoms in the plastic such as Cl, S, N can be converted into HCl, H_2S and NH_3 and absorbed. Waste plastic is a great source of fuel and chemicals. ■■■

Orissa Chemical Society Annual Conferences 1986-2022

ORISSA CHEMICAL SOCIETY
(ANNUAL CONFERENCES: 1986-2022)

Sl. No.	YEAR (DATE)	VENUE	PRESIDENT	SECRETARY	DEDICATION
1	1986 (June 28, 29)	Ravenshaw College, Cuttack	Prof. Mahendra Kumar Rout	Dr. K. C. Satpathy	-
2	1988 (Jan 25, 26)	P. N. College, Khurda	Prof. Mahendra Kumar Rout	Dr. K. C. Satpathy	-
3	1989 (March 26, 27)	Khallikote College, Berhampur	Prof. Mahendra Kumar Rout	Prof. P. K. Misra	-
4	1990 (May 4, 5)	Vani Vihar, Bhubaneswar	Prof. R. K. Nanda	Prof. P. K. Misra	-
5	1991 (Nov 30, Dec 1)	Jyoti Vihar, Burla	Prof. S. C. Padhy	Prof. A. Nayak	-
6	1993 (Feb 20, 21)	BJB College, Bhubaneswar	Prof. S. N. Mohapatra	Prof. A. Nayak	-
7	1993 (Dec 11, 12)	REC, Rourkela	Prof. B. Nayak	Prof. V. Chaktavorty	-
8	1994 (Dec 10, 11)	Jyoti Vihar, Burla	Prof. B. Dash	Dr. R. K. Behera	-
9	1996 (Feb 9, 10)	Vani Vihar, Bhubaneswar	Prof. H. K. Pujari	Dr. R. K. Behera	-
10	1997 (Jan 11, 12)	Ravenshaw College, Cuttack	Prof. B. Sahoo	Dr. Shashadhar Samal	Prof. Mahendra Kumar Rout
11	1997 (Dec 13, 14)	Govt. College, Rourkela	Prof. P. K. Misra	Dr. Shashadhar Samal	-
12	1998 (Dec 19, 20)	NIST, Berhampur	Prof. P. K. Jesthi	Dr. S. S. Tripathy	Prof. Dayanidhi Patnaik
13	1999 (Dec 19, 20)	SCS College, Puri	Prof. G. Behera	Dr. B. K. Mishra	Prof. B. Prasad
14	2000 (Dec 16, 17)	Govt. College, Bhawanipatna	Prof. N. C. Naik	Dr. B. K. Mishra	Prof. S. R. Mohanty
15	2001 (Dec 22, 23)	BJB College, Bhubaneswar	Prof. P. B. Tripathy	Prof. S. Jena	Prof. P. B. Das
16	2002 (Dec 21, 22)	Khallikote College, Berhampur	Prof. D. P. Das	Prof. S. Jena	Prof. K. K. Patnaik

17	2003 (Dec 20, 21)	FM College, Balasore	Prof. G. Sahu	Dr. S. C. Das	Prof. D. Mishra
18	2004 (Dec 25, 26)	OUAT, Bhubaneswar	Prof. R. K. Satpathy	Dr. S. C. Das	Prof. S. K. Mukherjee
19	2005 (Dec 23, 24)	Jyoti Vihar, Burla	Prof. R. P. Dwivedi	Dr. C. Patra	Prof. R. C. Tripathy
20	2006 (Dec 16, 17)	NIST, Berhampur	Prof. C. R. Das	Dr. A. Samantray	Prof. L. Mishra
21	2007 (Dec 22, 23)	OEC, Bhubaneswar	Prof. K. C. Satpathy	Dr. A. Samantray	Prof. P. K. Das
22	2008 (Dec 27, 28)	North Orissa University, Baripada	Prof. L. N. Patnaik	Dr. A. K. Padhy	Prof. P. C. Brahma
23	2009 (Dec 19, 20)	NIT, Rourkela	Prof. C. S. Panda	Dr. P. K. Dash	Prof. Ch. B. N. Nanda
24	2010 (Dec 25, 26)	Apex, Pahal, Bhubaneswar	Prof. R. N. Patel	Dr. P. K. Dash	Prof. C. N. Nanda
25	2011 (Dec 24-26) (SILVER JUBILEE)	Jyoti Vihar, Burla	Prof. A. C. Dash	Dr. A. K. Behera	Prof. G. Sahu
26	2012 (Dec 8, 9)	Ravenshaw University, Cuttack	Prof. B. Behera	Dr. A. K. Behera	Prof. A. S. Mitra
27	2013 (Dec 14, 15)	Modern Engineering and Management Studies, Balasore.	Dr.(Mrs) Subasini Lenka	Prof. S. K. Swain	-
28	2014 (Dec 13, 14)	U. N. College of Science and Technology, Adaspur. Cuttack.	Dr. C. R. Mishra	Prof. S. K. Swain	Prof. R. C. Acharya Prof Sarbeswar Guru
29	2015 (Dec 24, 25)	IGIT, Saranga, Dhenkanal	Prof. Bijay K. Mishra	Prof. S. K. Swain	Prof. K. C. Dash Prof. N. B. Banarjee
30	2016 (Dec 24, 25)	KIIT University, Bhubaneswar	Prof. Satyaban Jena	Dr. Asit Parija	Prof. H. K. Pujari Prof. K. C. Satpathy Prof. B. Nayak Prof. R. N. Patel Prof. Sunakar Panda Prof. A. K. Panda

31	2017 (Dec 23, 24)	Centurion University of Technology	Dr. Sarat Chandra Das	Dr. Asit Parija	Prof. Durga Prasanna Das
32	2018 (Dec 18, 19)	NIST, Berhampur	Prof. Asutosh Samantaray	Sri Pravat Kumar Swain	Prof. R. K. Nanda Prof. N. C. Naik
33	2019 (Dec 24, 25)	Veer Surendra Sai University of Technology, Burla	Prof. Ajaya Kumar Patnaik	Sri Pravat Kumar Swain	Prof. Lalit Narayan Patnaik
34	2020 Postponed due to COVID-19	OCS ONE-DAY Extended Lecture Series and OCS-INDUSTRY Interface Meet were held online.	Prof. Shashadhar Samal	Dr. Priyaranjan Mohapatra	-
35	2021 (Dec 18, 19)	Maharaja Sriram Chandra Bhanja Deo University, Baripada	Prof. Shashadhar Samal	Dr. Priyaranjan Mohapatra	Prof. Sukumar Aditya Prof. Sarat Chandra Padhi Prof. Chitta Ranjan Das Prof. Bhaskar Dash Prof. Pradipta Kumar Jesthi
36	2022 (Dec 18, 19)	Vani Vihar, Bhubaneswar	Prof. Surendra Nath Mohanty	Dr. Debasis Mohanty	Prof. S. N. Mohapatra Prof. Duryodhan Mangaraj Prof. Indu Bhusan Mishra

Prof. Mahendra Kumar Rout
Memorial Lecture

Delivered in the Orissa Chemical Society Annual Conferences since 1992

PROF. MAHENDRA KUMAR ROUT MEMORIAL LECTURE

Delivered in the OCS Annual Conferences since 1992

Prof. Mahendra Kumar Rout Memorial Lecture was instituted in 1992 by the Orissa Chemical Society in fond memory of Prof. Rout, the Founder President of the OCS. The Memorial Lecture is delivered by distinguished professionals in the field of Chemistry during the Annual Conference of OCS every year. The following is the list of the Memorial Lectures presented at the Annual OCS Conferences since 1992 with photocopies of some selected lectures.

Year	Memorial Lecture Speaker	Topic of the Lecture
2022	Prof. A. K. Sahoo School of Chemistry University of Hyderabad	Three Component Dicarbofunctionalization of Unsymmetrical Alkynes
2021	Prof. Swaminathan Sivaram, Former Director, National Chemical Laboratory, Pune, Honorary Professor Emeritus and INSA Emeritus Scientist, IISER, Pune and Honorary Professor, IISER, Kolkata.	The Future of Chemistry
2020	Postponed due to COVID19	-
2019	Prof. Dilip K. Maiti, FRS, Catalysis and Materials Division, University of Calcutta, Kolkata 700009	Diverse Organic Synthesis, Functional Materials for Nanoelectronics, Sensors and Smart Devices
2018	Prof. B. K. Patel, Department of Chemistry, IIT Guwahati.	Designing of a Multifunctional AIEEgens via Ru(II) Catalysed Directed Oxidative Annulations
2017	Prof. Pradeep Kumar Tripathi, Division of Organic Chemistry, CSIR-NCL, Pune 411008.	Enantioselective Total Synthesis Biologically Active Natural Products
2016	Prof. Ganesh Pandey, Center for Biomedical Research, SGPGIMS Campus, Lucknow 226014.	C(sp3)-H and C(sp2)-H functionalization by Visible Light Photoredox Catalysis
2015		
2014	Prof. Subrat Ghosh Indian Association for Cultivation of Science, Jadavpur, Calcutta	Domino ring opening – ring closing metathesis rapid access to complex molecular structure
2013		
2012	Prof. Alok R. Ray, Center for Biomedical Engineering, IIT Delhi.	Materials Used in Human Medicine and Surgery

2011	Prof. S. Chandrasekharan, Dept of Organic Chemistry, IISc, Bangalore.	Tandem Ring Opening-Cyclization of Vinylcyclopropanes and Vinylcyclobutanes: A Facile Synthesis of Chiral Bicyclic Amidines
2010	Prof. Amar Nath Maitra, University of Delhi	Nanotechnology and nanobiotechnology
2009	Prof. T. Pathak, Kharagpur	
2008	Prof J. K. Ray, Kharagpur	
2007	Prof. N. Basak, Kharagpur	
2006	Prof. Subrata Ghose	
2005	Prof. B. C. Ranu	
2004	Prof. Sukumar Maiti	
2003	Prof. T. K. Sircar	
2002	Prof. R.V. Venkateswara, Calcutta	
2001	Prof. P. A. Nadar	
2000	Prof. S. K. Talapatra, Calcutta	
1999	Prof A. S. R. Anjenaillu, Andra University	
1998	Prof. H. K. Pujari	
1997	Prof. D. Mangaraj, USA	
1996	Prof. B. Nayak, IIT, Kharagpur	
1995	Prof. D. P. Chakravorty, Calcutta	
1994	Prof. N. K. Roy, Delhi	
1993	Prof. S. Aditya, Calcutta	
1992	Prof. H. K. Pujari, Kurukshetra	

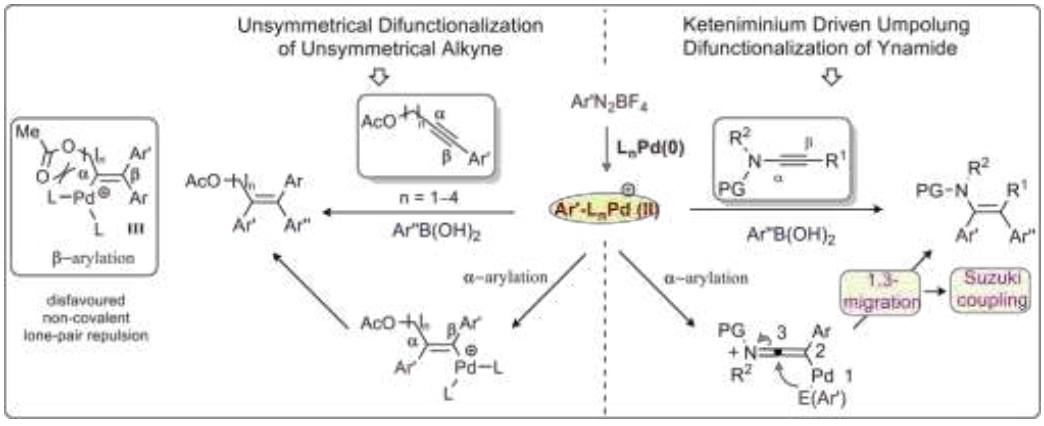
36th Annual Conference, December 18-19, 2022
Department of Chemistry, Utkal University, Vani Vihar, Bhubaneswar 751004

Prof. M. K. Rout Memorial Lecture

Three Component Dicarbofunctionalization of Unsymmetrical Alkynes

Akhila K. Sahoo
School of Chemistry University of Hyderabad
Email: akhilchemistry12@gmail.comakssc@uohyd.ac.in

Presented here is the discovery of a regio- and stereoselective *syn*-1,2-dicarbofuctionalizationof unsymmetrical internal alkynes. A cationic Pd-catalyzed three-component coupling of aryl diazonium salts and aryl boronicacids (orolefins) with unsymmetrical alkynes enables access to tetra-substituted unsymmetrical olefins. Density functional theory (DFT) studies rationalize the selectivity of the reaction. Synthetic versatility of the carboxylate and amino bearing highly-substituted olefinsis also presented.



References and Notes:

1. Dutta,S.;Yang,S.;Vanjari,R.;Mallick,R.K.;Gandon,V.;Sahoo,A.K.*Angew.Chem.Int. Ed.* 2020, *59,*10785 –10790.
2. Vanjari,R.; Dutta, S.;Yang, S.; Gandon,V.; Sahoo, A.K. *Org. Lett*.2022, *24*, 1524.
3. Dutta,S.;Shandilya,S.;Yang,S.;Gogoi,M.K.;Gandon,V.;Sahoo,A.K.*NatureCommunication s*,doi.org/10.1038/ s41467-022-28949-7.

35th Annual Conference, December 18-19, 2021
Department of Chemistry, Maharaja Sriram Chandra Bhanjadeo University
Baripada, Odisha 757003

Prof. M.K. Rout Memorial Lecture

THE FUTURE OF CHEMISTRY

Dr. S. Sivaram
Honorary Professor Emeritus and INSA Emeritus Scientist,
Indian Institute of Science Education and Research,
Pune, 411008
www.swaminathansivaram.in

Abstract: Chemistry creates its own objects. This creative power, similar to that of arts, distinguishes it fundamentally from other natural sciences ", a statement attributed to Marcellin Berthelot, one of the greatest chemists known (1827-1907) captures the mission of chemistry so elegantly. Our physical environment, material culture, conceptual systems and manner of living have been or are being changed by chemical science.

Chemistry has always been the earthiest, practical and the most central of the sciences. Its earthiness, its connection to the colors, smells, and sounds of substance and of changes, stretches backward into the mists of alchemy. But its earthiness also extends into the huge, complex business enterprises of our day, in petrochemicals, pharmaceuticals, plastics, advanced materials, agriculture, biotechnology, transportation and electronics.

The discipline of chemistry is in the midst of tectonic change. Our knowledge has infinitely expanded with rapid advances across all disciplines of chemistry. Chemistry underpins the understanding of the world around us. The science of chemistry has made stupendous progress towards understanding and manipulating matter in a manner unforeseen and inconceivable to our ancestors. Chemistry has led to a deep understanding of the molecular basis of our life and mechanism of diseases as well as discovery of therapeutic molecules. Our ability to produce food for the growing human population is another example of the power of chemistry. Inexpensive energy, human mobility and the revolution in computational and communication technologies could not have occurred but for discoveries in chemical science and technology. Chemistry and chemical industry are the single largest contributor to human prosperity post industrial revolution and one of the largest sources of employments for people worldwide.

The rapid integration of chemistry, both, within its own sub disciplines and with other disciplines, such as, biology, computational science, material science and physics is the distinguishing hallmark of twenty first century chemistry. The boundaries between chemistry and other disciplines are becoming fuzzier. The key motivation for this integration is the inability of individual and stand-alone disciplines to provide answers to some of the most emergent and complex problems facing humanity. Chemistry is also moving away progressively from the "reductionist" approach to "systems" approach in search of new solutions. Given that the primary activities of chemistry are to analyse, synthesize, and transform matter the practice of chemistry has a great deal to contribute to sustainability science, which in turn, will play an increasingly important role in reshaping the practice of chemistry. Success in integrating sustainability considerations into the practice of chemistry implies a better understanding of the molecular basis of sustainability of earth and societal systems and embedding systems thinking in the practice of chemistry to consider the complex interplay of chemical process with scientific, societal, and environmental systems.

What then is the future of chemistry in this century? What are the forces that are currently providing impetus to this science? How do we reorganize scientific research for future relevance? How should we reshape chemical education for tomorrow's needs? This lecture will address some of these issues. I will trace the evolution of chemistry from its early origins to present day status and define the scope and breadth of chemistry as a discipline today. Chemistry is also intricately related to society and is perceived as, both, good and bad. There is a need to communicate chemistry to society in a manner that it neither creates a scare in the minds of citizens nor it down plays the ill effects of chemistry on society. In the end science of chemistry can only survive if we as citizens respect it for the good it does to our planet and lives and seek ways to minimize the adverse impact of practice of chemistry on the society.

References

1. Reimagining priorities for chemistry, S.A. Matlin, et.al., *Angew.Chem.Int. Ed*., **2021**, *60*, 2-16
2. Chemistry 2030: A roadmap for a new decade, J.G-Martinez, *Angew. Chem. Int. Ed.,* **2021**, *60*, 4956-4960
3. Future of the chemical science, A. Palermo, Royal Society of Chemistry, UK, 2019
4. Sustainable chemistry: A future guiding principle, K. Kummerer, *Angew. Chem. Int. Ed*., **2017,** *56*, 16420-16421

33rd Annual Conference, December 24-25, 2019
Department of Chemistry, Veer Surendra Sai University of Technology
Burla, Sambalpur 768018

Prof.M.K.Rout Memorial lecture

Diverse Organic Synthesis, Functional Materials for Nanoelectronics, Sensors and Smart Devices

Dilip K. Maiti, *FRS*

Catalysis and Materials Division, University of Calcutta, Kolkata-700009, India

E-mail: dkmchem@caluniv.ac.in

Abstract: My research group is dedicated for diverse synthesis of organic compounds through C-H Activation, Photocatalysis, NHC-Catalysis, Organocatalysis and Dual Catalysis.[1]The organic electronic products are also lighter, more flexible, biodegradable, inexpensive, and ease to purify, fabricating devices and modify electronic environment. Thus, semiconducting, electronic and optoelectronic properties can easily be modified through changing size, shape, chemical structure, morphology and installation of a wide range of functional groups, which in turn generates innovative semiconducting, conducting, photoluminescence, storage, display and chemosensing performances to achieve highly efficient new generation electronic devices.[2] Thus, design and synthesis of new organic compounds as varied probes, their fabricated unidirectional materials and development of especially new chemo sensing property are desirable for achieving sensor devices of ultimate sensitivity.We have developed several organic probes and materials for sensing poisonous gases. phosphates, hydrazines, cyanide, heavy metal ions and other analytes.[3] For instance,fabrication of organic nanofibrils using 3-oxime-4-hydroxy-1,8-naphthalic-nbutylimide (**R1**)-doped polycaprolactone (PCL) electrospun used as a gaseous phosgene-specific sensing device. Herein, the higher surface to volume ratio and innovative properties of the nanofiber mats exhibits diminution of response time in comparison to the composite film of the same materials. Proficient gas penetration confers a fast chemical reaction, which is linear to the phosgene concentration and delivers a very low detection limit of 0.087 ppm. Importantly, LOD of gaseous phosgene in all type of solid-protocols used is far lower than the safety level phosgene concentration to human exposure.[3g]Our designed organic and polymer nanomaterials also capture heavy metals and gases and making our mother nature clean, safe and harmless.[4]

1. (a) R. R. Mondal, S. Khamarui, D. K. Maiti, *Org. Lett.***2017**, *19*, 5964-5967. (b) T. Das, S. Debnath, R. Maiti, and D. K. Maiti, *J. Org. Chem.* **2017**,*82*, 688-700. (c) Tanmay K. Pati,SudiptoDebnath,MrinalkantiKundu,UttamKhamrai,and D. K. Maiti, *Org. Lett.***2018**, *20*,5964-5968. (d) AnirbanKayet, SkAjarul, Sima Paul, and Dilip K. Maiti, *J. Org. Chem.* **2018**,*83*,8401-8411. (e) R. N. Mitra, K. Show, S. Sarkar, and D. K. Maiti, *J. Org. Chem.* **2019**,*84*, 42-52. (f) D. De Joarder, S. Gayen, R. Sarkar, R. Bhattacharya, S. Roy, D. K. Maiti, *J. Org. Chem.* **2019**,*84*,8468-8480. (g) D. Ghosh, R. Nandi, S. Khamarui, S. Ghosh and D. K. Maiti, *ChemCommun.* **2019**, *55*,3883-3887. (h) S. Naskar, S. Roy Chowdhury, S.Mondal, D. K. Maiti,S. Mishra, and I. Das, *Org. Lett.***2019**, *21*, 1578-1582. (i) SkAjarul, AnirbanKayet, Tanmay K. Pati and Dilip K. Maiti, *ChemCommun.* **2019**, *55*, 00-00 (DOI: 10.1039/c9cc07360d).

2. (a) Lee, Y. S. *Self-Assembly and Nanotechnology: A Force Balance Approach*, John Wiley and Son, Inc., Hoboken, New Jersey, 2008; (b) Waser,R.; Masakazu, A. *Nature Mater.* **2007**, *6*, 833; (c) Turner,M.;Golovko1, V. B.;Vaughan,O. P. H.;Abdulkin, P.;Berenguer-Murcia1, A.;Tikhov,M. S.; Johnson,B. F. G.; Lambert, R. M. *Nature***2008**, *454*, 981; (d) Halder, S.;Pandit,P.; Chatterjee, N.; De Joarder, D.;Pramanik, N.; Patra, A.;Maiti, P. K.;Maiti, D. K. *J. Org. Chem.* **2009**, *74*, 8086;(e) Ghosh, S.;Debnath, S.; Das,U. K.;Joarder, D. D.;Maiti,D. K.*Ind. Eng. Chem. Res*.**2017**,*56,* 12056; (f)Maiti, D. K.;Debnath,S.; Nawaz,M.;Dey, B.;Dinda, E.; Roy, D.; Ray, S.; Mallik, A.; Hussain,S. A.*Sc. Rep.* **2017**, *7*, 13308; (g) Panda,T.; Panda,M. K.;Maiti, D. K. *ACS Appl. Mater. Interfaces* **2018**, *10*, 29100-29106.

3. (a) Mahapatra, A. K.;Mondal,S.; Manna, S. K.;Maiti, K.;Maji, R.; Uddin, M. R.;Maiti, D. K. *Dalton Trans.***2015**, *44*, 6490-6501; (b) Paul,S.;Ghoshal,K.; Bhattacharyya, M.;Maiti, D. K. *ACS Omega***2017**, *2*, 8633−8639; (c) Goswami, S.;Naskar, B.;Modak, R.; Drew, M. G. B.;Bauzá,A.;Frontera, A.;Maiti, D. K. *Dalton Trans.***2017**, *46*, 9498-9510; (d) Goswami, S.;Naskar, B.;Modak, R.;Sikdar, Y.;Bauzá,A.;Frontera, A.;Katarkar, A.;Maiti, D. K. *Sensors and Actuators B: Chem.***2017**,*239*, 1194-1204; (e) Naskar,B.;Bauzá, A.;Frontera, A.; Das Mukhopadhyay, C.;Goswami,S.;Maiti, D. K. ***Dalton Trans.*****2018**,***47***, 15907-15916; (f)Paul, S.; Nandi, R.;Ghoshal, K.; Bhattacharyya,M.;Maiti,D. K. *New J. Chem.***2019**, *43*, 3303-3308. (g) Maiti, K.; Ghosh,D.;Maiti, R.; Vyas, V.;Datta, P.; Mandal, D.;Maiti, D. K. *J. Mater. Chem. A* **2019**,7, 1756–1767.

4.. (a) Singha,N. R.;Mahapatra,M.; Dutta,A.; Deb Roy,J. S. ; Das, U.; Banerjee,S.;Dey,S.; Chattopadhyay,P. K.;Maiti, D. K. *Chem. Eur. J.* **2019**, *25*, 00-00 (*https://doi.org/10.1002/chem.201903935*).(b) M.Karmakara, H. Mondal, T. Ghosh, P. K. Chattopadhyayc, N. R. Singha,D. K. Maiti, *Environmental Research*`**2019**, 00-00(https://doi.org/10.1016/j.envres.2019.108839). (c) T. Ghosh, S.Mitra, and D. K. Maiti, *ACS Appl. Nano Materials* **2019**, 00-00.(d) Several unpublished works.

31st Annual Conference, December 23-24, 2017
Department of Chemistry, School of Applied Sciences, Centurion University of Technology and Management, Odisha (Paralakhemundi Campus)

31st Annual Conference of Orissa Chemical Society & National Seminar on Recent Developments and Applications of Functional Materials | 23rd - 24th December 2017

Prof. M. K. Rout Memorial Lecture

Enantioselective Total Synthesis of Biologically Active Natural Products

Pradeep Kumar Tripathi

Division of Organic Chemistry
CSIR-National Chemical Laboratory, Pune- 411008, India
E-mail : pk.tripathi@ncl.res.in

Asymmetric synthesis is one of the most fascinating and important area of research in organic chemistry. The 1, 3-skipped polyol systems with *anti* or *syn*- configuration are structural units of several natural products including clinically valuable polyene macrolide antibiotics.[1] Similarly chiral 1, 3-amino alcohols are interesting structural motifs prevalent in pharmaceutical products and chiral core of numerous reagents and also serve as important chiral auxiliaries and ligands for asymmetric synthesis.

As a part of our research interest in the development of new synthetic methodologies based on organocatalysis, hydrolytic kinetic resolution and asymmetric dihydroxylation and their application to the synthesis of biologically active natural products,[2] we have developed new protocols for the synthesis of *syn*- or *anti*-1,3-polyols,[3a] 1,3-amino alcohols, [3b] 1,3-diamine [3c] and ring system of alkaloids. Using these methodologies, the total synthesis of naturally occurring bioactive molecules such as, **piperidine and pyrrolidine based alkaloids,**[3d-e] and (+)-**petromyroxol** [3f] and **macrolide Sch725674** [3g] etc. has been achieved. The details of these results will be presented.

References:

1. Kumar, P., Tripathi,D., Sharma, B.M., Dwivedi, N. Organic & Biomolecular Chemistry 2017, 733.
2. Kumar, P., Dwivedi, N. Accounts of Chemical Research 2013, 46, 289.
3.. Kumar, P. et al. a) Org. Lett. 2009, 11, 2611. b) Org. Lett. 2010, 12, 2762. c) J. Org. Chem. 2013, 78, 11756 d) Organic & Biomolecular Chemistry 2014, 12, 4454. e) Eur. J. Org. Chem. 2014, 4897. f) RSC Advances 2015, 5, 63311.g) Eur.J. Org.Chem. 2016, 1215.

30th Annual Conference, December 24-25, 2016
Department of Chemistry, School of Applied Sciences, KIIT University
Bhubaneswar 751024

30th Annual Conference of Orissa Chemical Society, December 24-25, 2016

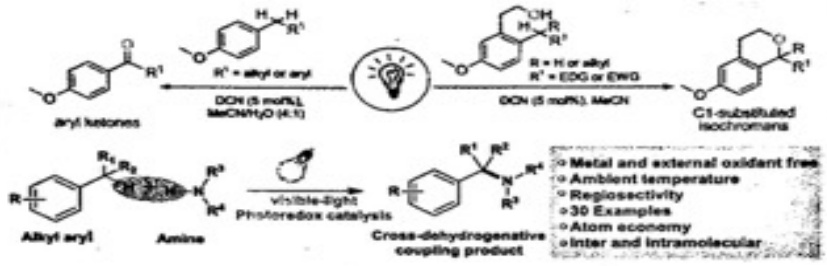
Prof M.K. Rout Memorial Lecture

C(sp^3)-H and C(sp^2)-H functionalization by Visible Light Photoredox Catalysis

Ganesh Pandey
Centre of Biomedical Research, SGPGIMS Campus, Lucknow -226014

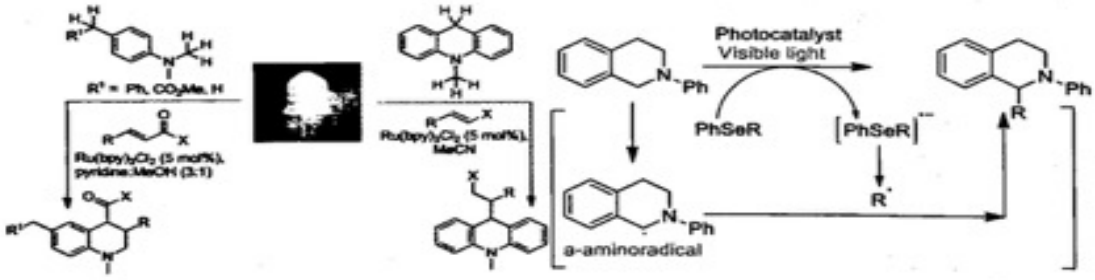
Abstract

Development of conceptually new strategies for the C-N, C-O, and C-C bond formation is of fundamental importance. Among various methods known for these bond forming reactions, direct C-H functionalizationofboth sp^2 as well as sp^3 represents an extremely attractive approach.Herein, I will present a conceptually newapproach for α-C-H alkylation of t-amines and benzylic sp^3 C-H functionalization via visible light photoredox catalysis (Scheme 1)[1a,b]



Scheme 1: Benzylicsp^3C-H functionalization

We have also successfully developed normal anddistal sp^3C-H functionalization of tertiary amines for alkylation reaction(Scheme 2).[2a,b]



Scheme 2: functionalization ofsp^3C- H Functionalization of tertiary amines

References:

1. Pandey, G.; Pal, S.; Laha, R. Angew. Chem. Int. Ed.2013, 52, 5146;b) Pandey, G.;Laha, R.Angew. Chem. Int. Ed,2015, 54, 14875.
2. Pandey, G.; Jadhav, D.; Tiwary, S.; Singh, B.Adv. Synth. Catal.2014,356, 2813 – 2818; b) Pandey G. et al. Org. Lett. 2012, 14, 672-675
3. Pandey et al. J. Org. Chem. 2016, 81, 7161-7171.

26th Annual Conference, December 8-9, 2012
Department of Chemistry, Ravenshaw University, Cuttack 753003

Materials Used in Human Medicine and Surgery

Alok R. Ray
Centre for Biomedical Engineering
Indian Institute of Technology, Delhi
And
All India Institute of Medical Sciences, New Delhi 110 016

The use of both synthetic and natural material in medical and pharmaceutical applications has been successful due to the availability of a wide variety of user specific materials at affordable price. These applications range from catheters to vascular grafts from semiocculusive dressings to mammary implants and from transdermal drug delivery systems to medical patches. Dacron, Lycra, Teflon and Silastic are few examples of familiar trade name polymers that are now clinically accepted biomaterials. Natural polymers like Chitosan, Alginate, Cellulose and their modified products are also used as biomedical materials. A medical grade material has to fulfill some specific requirements which can be divided into four groups: non-toxicity, functionality, sterilizability and biocompatibility. Designing of a new biomedical material requires evaluation of these four parameters.

There are now 2,700 kinds of medical devices and another 2,500 diagnostic products, which utilize synthetic polymers as their principal component. Globally, this market is estimated to be growing at the rate of 7% per annum, where as, the product like drug-eluting Stents have unprecedented growth form $2billion in 2003 to $4 billion in 2004. At present global demand for medical disposable products is forecast to increase 5.5 percent annually to $169 billion in 2014. Major factors driving these growths are a) favorable demographics; b) improvements in healthcare, and c) innovation and improvements in current technologies. Currently, India medical market size is around $1.5 billion and growing at rate of 5.8% annually. Besides local requirements, India has the potential to become major centre to cater needs of the world as these industries are knowledge based and we have the trained manpower capable of manufacturing these types of products and we are already producing most of these polymers in our country.

This presentation examines applications of mainly polymeric materials in human medicine, surgery, tissue engineering, and issues related to the interactions of polymers with living systems and future directions.

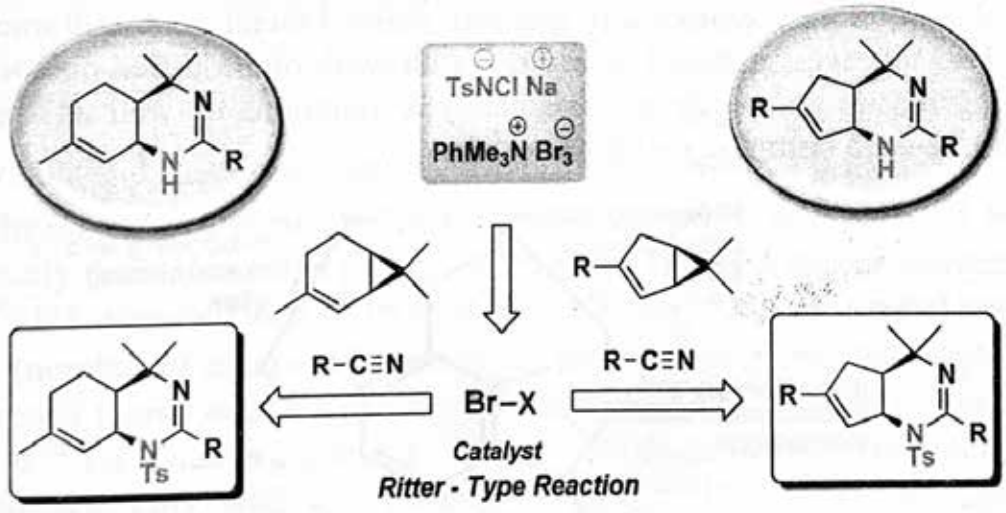
❑❑❑

Silver Jubilee Annual Conference, December 24-26, 2011
School of Chemistry, Sambalpur University, Jyoti Vihar, Burla 768019

Tandem Ring Opening-Cyclization of Vinylcyclopropanes and Vinylcyclobutanes: A Facile Synthesis of Chiral Bicyclic Amidines

S. Chandrasekaran
Department of Organic Chemistry,
Indian Institute of Science, Bangalore -560012
E-mail: scn@orgchem.iisc.ernet.in

Vinylcyclopropanes (VCP) are important synthons in organic synthesis due to the presence of highly strained ring system in conjugation with a carbon-carbon double bond that allows a wide range of reactions. This structural motif is found in numerous naturally occurring optically active compounds that are important intermediates in the biosynthesis of terpenes. Furthermore, these compounds are prone to pyrolysis, electrophilic ring opening and acid-catalyzed rearrangement leading to structurally interesting compounds. In this lecture result of an interesting bromine catalyzed tandem ring opening-cyclization reaction of bicyclic vinylcyclopropanes/vinylcyclobuanes with chloramine-T to furnish chiral bicyclic amidine derivatives in good yield will be presented. A plausible mechanism has been proposed based on the experimental observations and the scope and limitations of this methodology will be discussed.[1]



Reference

1. V. Ganesh, D. S. Kumar, S. Chandrasekaran, *Angew Chem. Int. Ed.* **2011,** *50*, 5878.

6th Annual Conference, February 20 and 21, 1993
Department of Chemistry, B. J. B. College, Bhubaneswar 751014

ML.

Some Aspects of Sensitized Chemical Reactions

Prof. S. Aditya
Calcutta University

Light-induced electron transfer reactions have become an active area of research in Photochemistry. To initiate a photochemical reaction we need a photosensitizer. Although chemists got interested in sensitized reactions around the twenties of this century, the use of chemical sensitizers in photography was known for a long time.

Mercury can sensitize the fluorescence of Thallium. Oxidation of i-propanol in presence of air is sensitized by benzophenone. Dye-sensitized autooxidation is well-known. Transition metal complexes containing ligands such as bipyridyls, phenanthrolines and metalloporphyrins have found to be meterials having potential utility as photosensitizers in inducing chemical reactions.

In general a sensitizer (S) absorbs light energy, interacts with an acceptor (A) / donor (D) and subsequently induces chemical reaction of a substrate (P)

$$S \xrightarrow{h\nu} S^*$$

$$S^* + A \longrightarrow S^+ + A^-$$

$$S^* + D \longrightarrow S^- + D^+$$

and then with the substrate (P)

$$S^+ + P \longrightarrow S + \text{oxidation products of P}$$

$$S^- + P \longrightarrow S + \text{reduction products of P}$$

The main factor that limits the efficiency in homogeneous solution is the thermal reverse electron transfer between the redox products. Studies in organized molecular assemblies such as, micelles, vesicles and microemulsions show some promise in controlling to some extent the light induced charge separation. An alternate approach to this problem is the utilization of samiconductor meterials as light absorbing unit.

Photoreactions between a semiconductor and redox species in solution occur in one direction and are in general not reversible. There are, however, other limitations. Some of these and how dyesensitization has been used in circumventing these difficulties will be addressed.

A Legend in Life Time

Biographical Profile

Brief Biodata of Prof. (Dr.) Mahendra Kumar Rout

1. Birth & Family Structure:	Prof. Mahendra Kumar Rout was born on 4th January 1924 in Bhadrak town to parents Laxmidhar Rout (an Advocate by profession) and Surjyamani Devi. He was married to Savitri Senapati, then a lecturer at Ravenshaw College. They had two children, son Swoyam Prakash Rout, and daughter Anuradha Rout.Prof. Rout's wife Dr. Savitri Rout, an avid Sanskrit scholar, retired as the Principal of Sailabala Women's College in 1985. She passed away on September 23, 2001, after a brief illness. His son Prof. Swoyam Prakash Rout, daughter-in-law Dr. Dipika Patnaik, and their only son Amit Prakash Rout live in their residence at Sahid Nagar, Bhubaneswar. His daughter Prof. Anuradha Rout was married to Dr. Deva Narayan Pattanayak and resided in Saratoga, California, USA. Sadly, she passed away on December 16, 2017, suffering from pancreatic cancer. The couple has two sons, the first son Siddhartha Pattanayak and the second son Dr. Vikram Pattanayak. Siddhartha, his wife Catherine, their son Samar James, and Vikram, his wife Cassandra, son Mendel Kumar and daughter Ilena all live in the Boston area. He spent his childhood at Bhadrak, where his father built a decent house. He had two brothers Manidra Kumar Rout (Deceased 1992), and Jnanendra Kumar Rout (Deceased 1988), and two sisters,Sarat Kumari Debi (Deceased 1992) and Basanta Kumari Dei (Deceased 1986). As a member of the extended family, Prof. Rout stayed at their home on the Pilgrim Road, Cuttack. Subsequently, he resided in Ravenshaw College Professor's quarters before moving into the Principal's bungalow, the building adjacent to the Commerce Block. His residence here bears testimony to his evolving career as a teacher, researcher, and academic administrator. Ravenshaw University is shifting the campus hospital to this historic building, which is now nicely renovated and provided with basic medical facilities and some patient beds. It is being equipped with state-of-the-art medical facilities.
2. Education:	Prof. Rout had his school education at Bhadrak High School. He passed the Matriculation Examination in 1938 in First Class. He did his I.Sc. and B.Sc. at Ravenshaw College, then affiliated with Patna University. After graduation, hedid his M.Sc. in Chemistry at Patna Science College.

3. Academic Qualifications:	For his Ph.D., Prof. Rout did research in Ravenshaw College on 'Antibacterials from Organomercurials' under the guidance of Prof. Guha Sircar and publisheda number of papers in the Journal of Indian Chemical Society. He was awarded Ph.D. degree by Utkal University in1952. Before his Ph.D. work, Dr. Rout did his first research under the guidance of Prof. Balabhadra Prasad, on 'Phosphate Separation'. He was awarded D.Sc. degree by Utkal University in 1959 for his work on drugs, synthetic dyes, and alkaloids. The D.Sc. research was highly commended by Sir Alexander Todd (Nobel Laureate) of Cambridge University, who was one of the examiners of his thesis. He was awarded the degree without any oral examination, as recommended by Sir Todd. Dr. Routis the first recipient of a D.Sc. degree in the Faculty of Science from Utkal University.
4. Professional Positions:	
(i) Lecturer in Chemistry	**1st September1944-June 1955** At this time, the Professor and Head of the Department was Dr. Balabhadra Prasad, and the eminent scientist Dr. Pranakrushna Parija was the Principal of Ravenshaw College.In those years he was awarded Ph.D., the Indian and foreign Ph.D. degrees were not treated at par. Stalwarts like Dr. Rout, Dr. S.Aditya, and others fought for equivalence of foreign and Indian degrees and won the battle. Finally, the State Government declared the Indian and foreign Ph.Ds to be at par, with equal financial benefits.
(ii) Reader in Chemistry	**3rd June 1955-March 1961** In 1956, Dr. Rout was selected by the UGC as one of the six Professors and Readers foradvanced study tour in USA. In USA, he did collaborative research with Prof. Harold Conroy of Brandeis University under the general supervision of Prof. Robert Burns Woodward, Harvard University (Prof. R. B. Woodward received the Nobel Prize in Chemistry in 1965 for synthesis of complex organic molecules). There were two publications from this workin Journal of American Chemical Society on the Alkaloid 'Aspidospermine'. He was first few persons in India to have used NMR spectra and radioactive labeling technique for structure determination. On return to Ravenshaw College, he reoriented the Organic Chemistry syllabus by introducing new concepts of organic reaction mechanism and spectrometric methods of organic molecule structure determination.

(iii) Professor & Head, Department of Chemistry, Ravenshaw College	**30th March 1961–August 1968** In recognition of his research achievements, the Higher Education Department, Government of Odisha created a Special Chair of Professorship for Dr. Rout in the Department of Chemistry at Ravenshaw College, Cuttack. As the Head of the Department, he was instrumental in having the finest teachers of the time and saw to it that best teaching is imparted and advanced research is carried out in the department.
(iv) Principal, G. M. College, Sambalpur	**12th August 1968–July 1970** Gangadhar Meher University was the largest temple of learning in western Odisha. During the two years of his work as the Principal, Prof. Rout streamlined the academic ambience of the College. The College celebrated its Silver Jubilee. Prof. Rout invited Abdul Ghaffar Khan (known as 'Frontier Gandhi' and 'Simanta Gandhi'), the legendary independence activist against British colonial rule in India,and many persons of great eminence to the Silver Jubilee function.
(v) Principal, Khallikote College, Berhampur	**7th July1970–July 1971** Khallikote College, the largest colleges in the Southern Odisha,was a private college then. Student discipline had deteriorated during the period. Prof. Rout was specially deputed by the Government to facilitate takeover of the College by the Govt. Prof. Rout, in spite of the turbulent situation, skilfully facilitated the take-over, streamlined administration and established a vibrant academic atmosphere.
(vi) Principal, Ravenshaw College, Cuttack	**19th July 1971–30th April 1980** Prof. Rout was back in Ravenshaw College, this time as the Principal. Even as the Principal, he continued his passion oftaking classes from First Year Science to Final Year M.Sc. Myriad of his students remember to this day his unique style of teaching. During his tenure as the Principal, the New PG Hostel, foundation stone of which was laid by the then Hon'ble Chief Minister Smt. Nandini Satpathy, was builton record time. Prof. Rout made provision in the existing hostels increasing hostel seats from 600 to 1400. The College Open Air Theatre was built during his tenure. The *Pipli Chandua* covering the entire theatre was a majestic site to be seen. In 1978, Ravenshaw College celebrated the Centenary Year witha Commemorative Postage Stamp that was released on December 24, 1978. Alongside these developments, Prof. Rout was vigorously perusing his research. Those were the days when it was being said that 'light of Chemistry Department never goes out'.

	The historic Kanika Library, the New Library Building, was filled with text books, and had international journals and periodicals adoring the shelves. Lending library and reading room were efficiently functioning for use of students and teachers. Prof. Rout established aculture of teaching and research at par with any advanced institutions of the nation.
(vii) Director of Public Instruction (Higher Education), Odisha (In addition to his duties as the Principal of Ravenshaw College).	**19th November 1976 - 17th February 1977** In this brief spell, he demonstrated his acumen in his typical working style. The DPI office was then functioning in the building in Sachivalaya Marg, Bhubaneswar, presently the Odisha State Archives. In those days the DPI's office was visited by teachers from all over the state. Those coming to the office, particularly from far off places, faced difficulty and often had to stay overnight in the city. Prof. Rout, realising this problem, provided the visitors a sitting place in the entrance hall with enough sofa sets. He removed chairs in front of his desk, as he addresses the office issues right away, and never wastes time in gossiping. From time to time he uses to getting up from his chair, walking up to the waiting visitors in the hall, enquires their problems and resolves those '*then and there*'.
(viii) Vice-Chancellor of Utkal University	In June 1977, Prof. Rout was appointed as the Vice-Chancellor of Utkal University, but he could not be spared by the State Govt.
(ix) Director of Public Instruction, Odisha	**1st May 1980–September1980** During this short period, he regularised appointments of candidates selected by the OPSC for Lectureship. He took steps to restitution of Reader and Professor posts in Government Colleges, which were abolished at that time.
(x) Vice-Chancellor, Utkal University	**14th September 1980 - 13thSeptember 1983** As the Vice-Chancellor of Utkal University, Prof. Rout had to deal with financial matters by recovering the University from a debt situation to a surplus position, streamlined the publication of results on time, constructed Women's Hostel, made provisions for 400 more hostel seats expanding the existing capacity of hostels, constructed the University Open-Air Theatre, and undertook many more developmental activities. In spite of his busy administrative job, he was taking M.Sc. Chemistry class. In those days, his research laboratory in Ravenshaw College was still very vibrant. He found time to come to the laboratory and supervised the progress of his research scholars.

(xi) Chairman, Odisha State Pollution Control Board	**14th September 1983–30th April 1986** The major achievement during his Chairmanship of the Odisha State Pollution Control Board was publication of the book entitled "Control of Pollution in Industries in Odisha" in four volumes – Volumes I, II, III and IV which were all edited by Prof. Rout. These edited volumes are a repository of information relating to industrial pollution and their mitigation. The foundation stone of Board's own six-storied building was laid by the then Hon'ble Chief Minister of Odisha, Shri Janaki Ballav Patnaik. With this, Odisha SPCB was the only Board in country which had its own building. Even the Central Pollution Control Board, New Delhi, established way back in 1974, did not have its own building.Due to efforts of Prof. Rout, in 1986 Utkal University recognised the Board's Laboratory as a Center for Advanced Research.
(xii) Chairman, Banking Service Recruitment Board (BSRB), Ministry of Banking and Finance, Government of India.	**1st May 1986 –30th April 1989** On March 19 and 20, 1987, Prof. Rout conducted an All-India Meeting of the Chairman and Secretaries of the Banking Service Recruitment Board in Bhubaneswar. The BSRB was instrumental in the recruitment of probationary officers and clerical staff in the nationalised banks in the country.
5. Research Activities	
(i) Research Publications	He published more than 250 research papers in cited Indian and foreign journals including several publications in diverse fields, and two Books. One of his publications was in NATURE in 1954 and four research papers in the JACS. Way back in 1953, his initial years of research in Ravenshaw College attracted attention following a publication in the JACS (M. K. Rout and H. K. Pujari, Preparation of 2-substituted 4-methyl 5-carbethoxy thiazoles condensation of ethyl acetoacetate with substituted thioureas, *J. Am. Chem. Soc.*1953, *75*, 4057). With this, Mayurbhanj Chemical Laboratory rose to National fame.
(ii) Areas of Research Interest	(a) Drugs and Biologically Active Compounds (b) Polymethine Dyes (c) Natural Products (d) Studies on Oils (e) Theoretical Investigation of Absorption Spectra of Dyes (f) Kinetic Studies and Structure-Reactivity Relationships, Substitution, Addition, Oxidation Reactions (g) Studies on Polymers and Polymerization (h) Environmental Science

(iii) No. of Ph.Ds Produced	Prof. Rout guided 44 (forty four) scholarsfor their Ph. D. In 1952, Dr. H. K. Pujari and Dr. G. N. Mohapatra started their Ph. D. research under his guidance. They got their Ph.D. in 1956 and 1957, respectively. His last two Ph.D. scholars were Dr. Sanatan Sahoo and Dr. Alaka Patnaik. Despite his illness, he completed their work. He was unable to speak then. Still he gave instructions scribbled on pieces of paper, and saw to it that their thesis worksare done.	
6. Foreign Travel :		
Countries	**Date of Visit**	**Purpose**
(i) USA	1956 October–1957 June	Visiting Professor under the International Exchange Programme – selected by the Govt. of India & UGC.
(ii) USSR	1969 1st April-24th April	Deputed by the Govt. of India to observe research Institutions and Universities in USSR – Visited eighty-eight research Institutions and Universities.
(iii) USA	1977 10th April–10th June	Travelled to the USA in the University Administrators project sponsored by the United States Educational Foundation in India (USEFI) - selected by a Committee of American Educators and representatives of Govt. of India & UGC. The team visited over 100 educational and research institutions in USA. Their report on educational innovations & restructuring of the educational system was submitted to the Govt. ofIndia & USEFI. This report was presented at the Conference of Vice-Chancellors, Secretaries to the State Govt. and DPIs of different States on the 8th August 1977 at the National Staff College, Delhi.
7. Awards , Honours & Accolades :	a) Recipient of Cooper Memorial Medal twice (1964 & 1966) from Institution of Chemists (India) for outstanding research in the field of chemical sciences. b) Sixtieth Birthday Celebration was organized by his students in the Department of Chemistry, Ravenshaw College on February 17, 1984. c) The Indian Chemical Society published a Special Commemoration Volume (December 1984) of the Journal of the Indian Chemical Society in honour of Prof. Rout's Sixtieth Birthday, which was edited by Prof. H. K. Pujari and Prof. G. B. Behera.	

d) Prof. Rout was the Founder President of Orissa Chemical Society, remained as President, OCS, for three terms (1986, 1988, & 1989).The OCS instituted Prof. M. K. Rout Memorial Lecture in 1992, and since then every year a distinguished scholar is invited to present this prestigious lecture in the Annual Conference of the OCS. Prior to OCS Prof. Rout initiated OAAS (Orissa Association for Advancement of Science) in line with AAAS(American Association for Advancement of Science). The idea was to bring all branches to the same table and initiate interdisciplinary research. It continued for 3 years. The first conference was held at Ravenshaw College due to the effort of Prof. Chitrananda Nanda with Prof. Rout as the Founder President.

e) The Odisha State Pollution Control Board holds a Memorial Lecture in his name since 1998. This lecture is being held every year on September 14, the date on which SPCB was founded.

f) The Odisha Bigyan Academy honoured him posthumously in 2007 by awarding him Distinguished Scientist Award for his Life Time Achievements in Chemistry. The award was presented by Hon'ble Naveen Patnaik, Chief Minister of Odisha in July 2008.

g) On January 13, 2008, on the occasion of "One Hundred Years of Chemistry Teaching in Ravenshaw", rich tributes were bestowed on Prof. Rout, for his outstanding contributions to teaching and research.

h) On 28th December 2019, an oil painting of Dr. Rout was unveiled in the Utkal Sahitya Samaj at Banipitha Sriram Chandra Bhaban, Cuttack.

i) Ravenshaw University is shifting the campus hospital to the historic residence building of Prof. Rout. It is renovated and equipped with state-of-the-art medical facilities.

j) Odisha State Pollution Control Board has instituted **Prof. M. K. Rout Pollution Control Excellence Awards 2023** for Industrial Townships in Odisha.

k) The Orissa Chemical Society celebrates the Birth Centenary Year of Prof. Rout from 4th January 2023 to 4th January 2024. A galaxy of distinguished persons constitute Prof. M. K. Rout Birth Centenary Celebration (MKRCC) Committee to carry forward the noble work. Several Universities and Colleges of the State have celebrated the Centenary Year by organizing conferences and seminars. The 100th Birthday of Prof. Rout is being celebrated on 4th January 2024 in the Department of Chemistry, Ravenshaw University, Cuttack, with distinguished personalities and eminent speakers, as well as his students and colleagues from the country and abroad.

8. Death of a Legend:	**On the 7th February 1990 Professor Mahendra Kumar Rout passed away at the age of 66**. He suffered from Amyotrophic Lateral Sclerosis (ALS), also known as Motor Neuron Disease (MND), a rare neurological disease that affects motor neurons (nerve cells in the brain and spinal cord) that control voluntary muscle movement like chewing, walking, and talking. The disease is progressive, and the symptoms get worse over time. ALS has no cure and there is no effective treatment to reverse its progression. In November 1989 he went to USA to his daughter Prof. Anuradha Rout and son-in-law Dr. Deva Narayan Pattanayak for treatment, with hope of a cure. On return from the USA, he wrote an article in a leading Odia News Paper appreciating the Indian Doctorsat par with the American Doctors for accurate diagnosis and treatment. Shortly thereafter, he passed away.
9. Advice to the Future Generations: (Excerpts from his 60th Birthday Celebration Address)	• *" Work hard consistently and devotedly towards your specified goal"* • *"Sustained hard work attracts recognition from most unexpected and sometimes unknown quarters."* • *"One does not face difficulties if one's intentions are honest, even if the action may appear arbitrary."* • *"Have faith in God.Be tolerant and objective. Spell out your goal and work towards it consistently with devotion. Convert your proficiency into efficiency and calamities into opportunities*."

Compiled by

Dr. Shashadhar Samal
Former President,
Orissa Chemical Society
&
Secretary,
Dr. M.K. Rout Birth Centenary Celebrations Committee

Prof. Mahendra Kumar Rout
A Legend in Life Time

EARLY CHILDHOOD

Dr. Mahendra Kumar Rout was a native of Bhadrak town in the erstwhile Balasore district of Odisha. He could not speak until the age of five years and eventually, when he started speaking, he stammered. But that did not become a deterrent in his illustrious career as a renowned Professor, Research Scientist and Administrator. Long after his death, even now, he is remembered as the Best Teacher of Organic Chemistry in the State. Mahendra was an outstanding student while at Bhadrak High School and passed his Matriculation Examination with a high First Class from Patna University in the year 1938. He was awarded the District Scholarship which was a unique honor for him as well as the school. He did his Intermediate Science from Ravenshaw College, Cuttack which was affiliated to Patna University in those days.

FIRST APPOINTMENT AT RAVENSHAW COLLEGE

Soon after completing his M.Sc. degree in Chemistry, he joined as a Lecturer in Chemistry, Ravenshaw College, Cuttack. His Professor and Head of the Department, Dr. Balabhadra Prasad was an avid researcher and advised him that in order to become a good teacher, one has to do good research. He was also inspired by his Principal Dr. Pranakrushna Parija, an eminent scientist who was better known as Parija Saheb.

VISITING SCIENTIST TO USA AND PROMOTION TO READER AND PROFESSOR

In June, 1955 Prof. Rout was promoted to the post of Reader in Chemistry on the basis of an interview conducted by the Odisha Public Service Commission with Professor P.Ray of Calcutta University acting as the subject expert. In 1956 he went to USA as Visiting Fellow on an International Exchange Programme. He did collaborative research with Professor Harold J. Conroy of Brandeis University under the general supervision of Professor Robert B. Woodward of Harvard University, Boston, Massachusetts, USA. Subsequently Prof. Woodward received the Nobel Prize in Chemistry. Dr. Rout's research was on the Synthesis and Structure Elucidation of the alkaloid Aspidospermine. He published three research papers in the Journal of American Chemical Society (JACS). At that time he was one of the first few persons in India to have used Nuclear Magnetic Resonance (NMR) spectra and radioactive technique for structure determination.

Soon after his return to India, Dr. Rout joined his parent position as Reader in Chemistry in Ravenshaw College, Cuttack where he took steps to reorient the Organic Chemistry syllabus by introducing new concepts of organic reaction mechanism.

In 1959, he was awarded the degree of Doctor of Science (DSc) in Chemistry from Utkal University on the basis of his outstanding work on drugs, synthetic dyes and alkaloids. His research was highly commended by Sir Alexander Todd of Cambridge University and Nobel Laureate in Chemistry who was one of the examiners of his thesis. Thus he became the first recipient of DSc degree in Faculty of Science from Utkal University.

In recognition of his research achievements, the Higher Education Department, Government of Odisha created a Special Chair of Professorship for him in the Department of Chemistry at Ravenshaw College. Dr Rout soon assumed charge as Professor and Head of the Department in March 1961.

Prof. Rout was awarded the Cooper Memorial Medal of the Institution of Chemists in 1964 and 1966. He visited almost all parts of the country in connection with various academic programmes.

CHAIRMAN OF THE ODISHA STATE POLLUTION CONTROL BOARD AND CHAIRMAN OF THE BANKING SERVICE RECRUITMENT BOARD

After he relinquished the office of Vice-Chancellor, Utkal University on September 14, 1983, Prof. Rout joined as Chairman of the newly constituted Odisha State Pollution Control Board and continued as such until April 30, 1986. Prof. Rout was the President of the State Bank of India Recruitment Board, Odisha Circle in addition to his assignment as Chairman of the Odisha State Pollution Control Board.

Despite numerous administrative responsibilities during all those years, he was regularly attending to his research work and keeping track of the progress of his research scholars. Forty- five students were awarded PhD degrees from Utkal University by working under his supervision. Prof. Rout's research has been extensively cited in literature, treatises, source books and monographs.

Prof. Rout had a large number of research projects from the University Grants Commission, Council of Scientific and Industrial Research, Board of Scientific and Industrial Research, Odisha, Department of Ocean Development, Government of India and the Central Pollution Control Board.

The Indian Chemical Society published a Special Commemoration Issue of the Journal of the Indian Chemical Society in honour of his Sixtieth Birthday which was a rare honour for a scientist. Incidentally his first research publication had been in the same journal.

The major achievements during his Chairmanship of the Odisha State Pollution Control Board was publishing the book entitled "Control of Pollution in Industries in Odisha" in four volumes – Volumes I, II, III and IV which were all edited by Prof.Rout.

The essential information given in the four books were:

1. Inventory of industries identified, precise status regarding grant of Consent, No-Objection Certificate (NOC) and Environmental Clearance to facilitate follow-up action.
2. Status of pollution in Major Industries; Recommended Measures suggested to the individual industries to control pollution.
3. Progress made by each of the industries in setting up Green Belt- number of trees planted and nurtured. Percentage of area under tree coverage and future program of plantation. Odisha was the first state in the country to declare the plantation of trees as one of the consent conditions.
4. Procedure of applying for Consent, N.O.C. and Environmental Clearance (Environment Impact Assessment Studies)
5. Effluent Standards and Emission Standards for different industries.
6. Environmental guidelines- Siting of Industries.
7. Progress made in on-going research schemes.
8. New research schemes contemplated.
9. Selection procedure for appointment of Environmental Scientists and Engineers and Research Analysts.

10. Observation of Chairman on his visit to the industries.
11. Replies to Assembly and Parliament Questions.
12. Dates of visits of Scientists and Engineers to different industries.

1. Proceedings of various mettings

1. Board Meetings.
2. No-Objection Certificates meetings.
3. Meetings for Environmental Clearance

All these are essential and valuable information which are not generally provided in the Annual Reports of the Board.

1. Construction of the own Building of the Board: The foundation stone of a six- storied building was laid by Hon'ble Janaki Ballav Patnaik, the then Chief Minister of Odisha. The first storey was completed in record time and housed the office and the laboratory. The Odisha State Pollution Control Board was the only Board which had its own building. Even the Central Pollution Control Board, New Delhi did not have its own building although it was established in 1974.
2. Recognition of the Board as Active Centre of Research: Utkal University recognised the Odisha State Pollution Control Board Laboratory as a Centre for Advanced Research from 1986.
3. Odisha was ranked fourth in the country in the percentage of Effluent Treatment Plants (ETPs) installed in the industries although the Board was established only in September 1983.
4. Research Projects: The following research projects were carried out in the Board's laboratory with funds received from the Central Pollution Control Board and the Department of Ocean Development (DOD).

   i) Monitoring of Water Quality of Rivers- Mahanadi, Brahmani and Baitarani.

   ii) Monitoring of Ambient Air Quality in Angul-Talcher Area.

1. Survey of Environmental Pollution in the coastal, inshore and offshore waters in the Bay of Bengal.

Before leaving the Pollution Control Board, Prof. Rout in his book My Reminiscences and Experiences of Orissa State Pollution Control Board had made a fervent appeal to the Hon'ble Governor, Hon'ble Chief Minister, and Hon'ble Forest and Environment Minister in the Government of Odisha to upgrade the Pollution Control Board Laboratory into Environmental Protection Research Laboratory on the lines of the National Environmental Engineering Research Institute (NEERI) at Nagpur.

After a period of more than 28 years, the Government of Odisha established its state –of-the-art Central laboratory in its own building in Chandaka Industrial Estate, Patia, Bhubaneswar to strengthen the analysis and monitoring of the different pollution control activities. The Central laboratory has started functioning from its new building from February 2014. The laboratory is equipped with modern sophisticated instruments for the analysis of water/ waste water, air, soil, hazardous waste and solid samples.

After his stint as Chairman of the Odisha State Pollution Control Board, he was appointed as the Chairman of the Banking Service Recruitment Board (BSRB) by the Ministry of Banking and Finance, Government of India which he joined on May 1, 1986 and continued until April 30, 1989. During his tenure Prof. Rout, conducted an All India Meeting of the Chairman and Secretaries of the Banking Service Recruitment Board in Bhubaneswar on March 19 and 20, 1987. BSRB was instrumental in the recruitment of Probationary Officers and clerical staff in the nationalised banks in the country.

HIGHLIGHTS OF RESEARCH ACTIVITIES

Prof. Mahendra Kumar Rout conducted research in diverse fields in Organic Chemistry, Physical Chemistry, Polymer Chemistry and Environmental Science.

ORGANIC CHEMISTRY

1. Drugs and biologically active compounds – Antispasmodics, Antihistaminics, Amoebicides, Bactericides and Fungicides.
2. Dyes-Polymethine Dyes.

Preparation, Study of sensitising and Dyeing properties. Structure Spectra Correlation and their Chromatographic behaviour.

1. Natural Products

1. Structure of the alkaloid, Aspidospermine which was a challenge to organic chemists during sixties was established by Prof. Rout and Prof. Conroy. One interesting aspect of the work was the use of Nuclear Magnetic Resonance Spectra and radioactive isotope C14 in structural elucidation. This work was done in USA.
2. Isolation and investigation of active products from Pimpinella heyneana. Two well defined coumarins which were identified to be seselin and bergapten have been isolated from Pimpinella heyneana.

STUDIES ON OILS

The following natural facts have been studied under two broad headings:

1. Fatty acids: Composition
2. Glyceride structure

1. Gutriferae family- Garania Xanthochymus seed oil.
2. Leguminosae family

1. Butea frondosa seed oil
2. Caesalpinia bonducella seed oil

(iii) Caesalpinia crista seed oil.

1. Rutacea family

1. Atalantia monophylla root bark oil
2. Atalantia monophylla stem bark oil.

The method employed for the analysis include (besides low pressure, fractionation of methyl ester, urea adduct etc.) same sensitive methods like Thin Layer Chromatography, UV and IR Spectra, Gas Liquid Chromatography (with methyl esters). Minor components were determined with particular care by the technique of expanded GLC.

QUANTUM CHEMISTRY

Quantum mechanical methods were applied to polymethine dyes for study of certain aspects which included

1. Application of Free Electron Molecular Orbital, Hückel Molecular Orbital(HMO) and Valence Bond methods for quantitative treatment of light absorption by symmetrical and unsymmetrical cyanines, merocyanines, symmetrical and unsymmetrical phosphocyanines and merophosphonines.
2. Free Electron and Hückel Molecular orbital treatment of the absorption spectra of dyes containing hetero atom (nitrogen) in the chromophoric chain.

It has been shown from the above investigations that with a judicious choice of certain empirical parameters, these simple quantum mechanical models can give excellent results both qualitative and quantitative. Using a first order perturbation theory, a simple Free Electron (FE) model has been developed for unsymmetrical dyes in which explicit use of any empirical parameters can be avoided. It has been further established that because of the essentiality of some topological basis, both FE and HMO methods would lead to identical results.

Kinetic Studies and Structure- Reactivity Relationship Studies relate to

1. Substitution Reaction
2. Addition Reaction
3. Ester hydrolysis
4. Molecular rearrangement
5. Oxidation reaction and
6. Polymerisation reactions.

In the above reactions, the following aspects have been studied and the results have been used to propose the mechanism of the reaction and the nature of the transition state.

1. Determination of the parameters of the Arrhenius equation and transition state theory.
2. Evaluation of the effects of the substituents on the rate.
3. Applications of Linear Free Energy Relationship (LFER) and study of substituent effects.
4. Solvent effects on reaction rate.

Kinetics of Polymerisation reactions using two different types of initiation processes namely (i) Organic substrate oxidant redox system and (ii) a free radical initiator like AIBN have been studied in presence of a variety of organic substrates like alcohols, sugars, phenols, nitrobenzenes, chalcones, benzaldehydes, acetophenones etc.

The most significant aspect of these investigations is the study of substituent effect basing on the nature of transition state of hydrogen abstraction reactions by free radicals, has been postulated which is further corroborated by other kinetic and thermodynamics results. Using the polymerisation of Acrylonitrile by Toluene-Cerium (IV) redox system as the model reaction, a free radical substituent parameter has been developed, which not only correlates well with other polymerisation and radical reactions, but also shows excellent correlation with a number of other free radical substituent constants reported by other workers.

POLYMER CHEMISTRY

1. Kinetics of Redox Polymerisation involving Manganese (III), Cerium(IV), Vanadium (V), Chromium(VI) etc.

The polymerisation was carried out with different metal ion oxidants, monomers and a wide choice of substrates.

The significance of the use of the metal ion oxidants, monomers and the substrates used has been revealed in the investigations.

1. Retardation Kinetics of AIBN initiated polymerisation.
2. Use of Hammett and Allied Equations for correlating radical reactions.
3. Determination of Monomer Reactivity Ratios.
4. Development of σo scale and comparison of its relative suitability vis-a-vis other existing radical substituent constants.

ENVIRONMENTAL SCIENCE

1. Siting of a Thermal Plant with special reference to Environmental Considerations. A Case Study of Ib Thermal Plant, Chemical Age of India, Vol.36, No 2, 219 (1985).
2. Strategies for Control of Environmental Pollution, International Congress Special Number, Industrial Safety Chronicle, No.XVII, 105, Oct-Dec. 1986.
3. Environment and the Twenty-First Century, Proceedings of the International Seminar on Environmental and Twenty-First Century held at Cuttack from December 12-15, 1986.
4. Proposed Action Programme for Control of Vehicular Pollution in Orissa which will be a menace in the Twenty-First Century, Proceedings of the International Seminar on Environment and Twenty First Century held at Cuttack from December 12-15, 1986.
5. Bhopal Tragedy – Should Pesticide Manufacture based on M.I.C. be banned? Chemical Age of India, 37(12), 339 (1986).
6. Ecology and Wild Life – Status of Wildlife in Orissa, Aqua World, 2(12), 1987.
7. Ecology, Forestry and Status of Forestry in Orissa, Indian J. Environmental Protection, 8, 117, (1988).
8. Conservation of Energy and Measures undertaken by Major Steel Plants for Solid Waste Disposal – A Comparative Study in the book "Environmental Impacts of Industrial and Mining Activities" Edited by L.N. Patnaik, Ashish Publishing House (1990)

Dr. Rout published more than 250 research papers in cited Indian and Foreign journals. One of his publications was published in NATURE in 1954. His publications were in diverse fields like organic chemistry, physical chemistry, physical-organic chemistry, theoretical chemistry, polymer chemistry and environmental science.

BOOKS PUBLISHED

1. THE BHOPAL TRAGEDY- Analysis of Related Issues by Dr. M.K.Rout, Published by Orissa State Pollution Control Board (1985)
2. MY REMINISCENCES AND EXPERIENCES OF ORISSA STATE POLLUTION CONTROL BOARD by Dr. M.K.Rout, Published by the author (1987). ■■■

Source : Internet

Professor Mahendra Kumar Rout: An Institution of Eminence

CHILDHOOD

Born in Bhadrak town, Mahendra Kumar Rout was the youngest son of his parents Late Lakshmidhar Rout and Suryamani Devi. His father was an advocate by profession and was a philanthropic person. For some reason, Mahendra was not able to talk till the age of five years and subsequently stammered while talking. This deficiency bestowed him extrasensory powers in the form of memory and innovative ideas. He passed the Matriculation Examination in 1938 with a First Class from Patna University and obtained a prestigious district fellowship. He did his I.Sc. and B.Sc.(Hons.) from Ravenshaw College, which was affiliated with Patna University then. He completed his M.Sc. from Patna university with late Dasarathi Mishra and late Prasanna Kumar Das.

AS A RESEARCHER

Soon after passing M.Sc., he joined Ravenshaw College as a lecturer when Prof. Balabhadra Prasad, a renowned physical Chemist of India, was the Head of the department. In order to inject a research interest into him, Dr. Prasad asked him to work on methods of phosphate separation, and he published a paper on this theme. He was selected to go abroad twice to carry out his doctoral work, but both times he was disqualified at the final stage by the medical board for he was underweight. Subsequently, he started working for his Ph.D. with Prof S. S. Guhasircar in the field of organo-mercurials and obtained Ph.D. degree in 1952 from Utkal University. After receiving Ph.D., Dr. Rout started his own school of research in the midst of many obstacles of various nature. These unfriendly environments created for him made him strong and determined. His first Ph.D. student was H. K. Pujari, who was a very sincere and committed student. They published their first paper in the Journal of American Chemical Society, the most prestigious chemistry journal of the world, as back as in 1953. This feat made him known and brought prestige to the Chemistry Department throughout the country. He obtained his D.Sc. working independently; the examiner was Sir Alexander Todd, the Nobel Laureate. The work was of such high quality that he was exempted from viva-voce on the recommendation of Prof. Todd and others. Dr. Rout visited USA as a visiting scientist on an International Exchange programme and worked with Prof. Harold J. Conroy within the general supervision of Prof. R. B. Woodward, a giant in Organic Chemistry and a Nobel Laureate. Dr. Rout was the first person in India to have used NMR and Radioactive techniques in structure determination. He did not hesitate to attend classes with undergrads in USA to learn the principles of reaction mechanism, which was an emerging field then. After his return to Odisha, he introduced this subject as a course in M.Sc. for the first time in India. The Journal of Indian Chemical Society published a special volume on the sixtieth birthday of Dr. Rout by modifying the rule not to publish a special volume unless the scientist is 65 years of age. Prof. H. K. Pujari and Prof. G. B. Behera were the joint editors. Till today he is the only chemist from Odisha to have been honored like this. He was engaged in multiple fields of research like Organic Synthesis, Cyanine Dyes (one of the three persons in the country), Studies on Oils, Reaction Mechanism, Quantum Chemistry, Polymer Chemistry, and Environmental Chemistry. His research interest was such that he maintained his research lab at

Ravenshaw with permission from the Government even when he was the Principal of G. M. College and Khallikote College. He also visited the then USSR and delivered seminar talks at the University of Moscow and other universities.

A TEACHER PAR EXCELLENCE

There are several types of teachers. The best teacher is the person who not only teaches well but also inspires the students. Dr. Rout was of this category. His style of teaching was unique. In the past olden days, the Indian tradition of acquiring knowledge was through questioning and answering. Dr. Rout adopted this procedure; as a result, students were developing the faculty of logical thinking. He was also interested in acquainting the students of recent developments in organic chemistry through seminars and by changing the curriculum. Soon after returning from USA, he introduced a course on the reaction mechanism, which gave logic to many reactions. Immediately after Vitamin B12 was synthesized by Woodward after 12 years of sustained work, a seminar was held, and he gave the talk on this molecule. Similarly, Robinson-Woodward controversy in Ajmaline synthesis and many other syntheses were discussed in the seminar. He would invite scientists of different faculty like Agriculture Chemistry, Biochemistry, Pharmaceutical Chemistry, etc., which enabled the students to develop a broader outlook. He was a valued educator. As a Principal in all the major colleges of Odisha, he never failed to take classes at all levels. Even as the Vice-Chancellor of Utkal University, he continued his teaching at M. Sc. level. He used to come to the Department at about 10 am and return home at about 9 pm with intermittent breaks for lunch, evening tea, and walking in the field (after 8 pm) with his research group. He had a very sharp memory. He would remember the names of the students in a big class. Therefore the students were afraid of him.

HUMANISM

Prof. Rout was a very kind person. Anybody in difficulty was able to receive help from him. I remember a bright girl student from Balangir approached him for admission since she was a late applicant for M.Sc. Physics. She was a bright student, and he had to talk to the Principal several times and became successful in giving her admission. Any employee could approach him to solve his financial problems temporarily, and he was ready to help the person. Many a time, when the research students were busy in their experiments, he would order food for all. Occasionally he asks his research students to visit a picture with him, and thus an intimate relationship existed between him and his students. His house, his room, was open to all his students. Many people were approaching him with problems of their family, children irrespective of the course pursued by the student.

AS A PERSON WITH SELF RESPECT

During those days, Ph.D. from abroad was earning six, and an MS from abroad was earning five increments in the Government of Odisha. He was a Ph.D. from Utkal University, and he fought very hard to equalize the status. After a long fight, the degrees were equalized with two increments for Ph.D. only. He was a devoted teacher, a devoted researcher, and a devoted worker. Yet, the Government was not making him a professor, so he pursued and convinced the Government to create a post of second professor in the Department of Chemistry at Ravenshaw College. There are many such instances where the dignity of a teacher was held high. He believed that a teacher is not only to educate the students in a classroom but also to educate society to think about the country and the state.

AS AN EDUCATIONAL ADMINISTRATOR

As the head of the department, he was very particular about the teaching schedule and also about research. The department was open throughout the day and night. The department was vibrating with the pursuit of knowledge. He became Principal of G. M. College, Sambalpur, and organized its Silver Jubilee in which persons of the eminence of 'Simanta Gandhi', Prof. B. D. Nagchoudhury, Member Planning Commission, and many luminaries participated. He then became Principal Khalikote College and became instrumental in handing over the college to the Government. It was an arduous task. As principal of Ravenshaw College, he organized the centenary and made a lot of efforts in bringing out a stamp on this occasion. He visited 100 colleges in the USA in 1977 as a member of a UGC team of six educational administrators of India.

He is the only person to have headed three premiere colleges of Odisha and has left his footprints everywhere. When he was the DPI(HE), the P.S.C. decided to hold a written examination for the post of lecturers for the first and last time. He faced the problem with so much care that no rightful person was harassed. He occupied the chair of Vice- Chancellor of Utkal University and continued to take classes at the M.Sc. level in the university. The University came out from a deficient status to an economically sound status. The fruits of his efforts are visible till now. During his tenure, there was no student problem. He became the Chairman Pollution Control Board and nurtured it like a baby. He was working in all capacity and brought it to a prestigious level. This organization deserves to be named after him. Later the Govt. asked him to chair the Banking Selection Board.

He acted like a teacher to encourage, show compassion, and deal with problems with a positive attitude. Changing the attitude of an erring person instead of punishing him/her was his attitude throughout. He cannot be described in a little space. Prof. B. Prasad started a legacy of research at Ravenshaw College, Prof. Rout carried forward to a great height. Ravenshaw was internationally known because of the teachers in all disciplines. He has been honored by the love of his students and the people in general throughout the state.

OHER ANGLES

He was a good tennis player, used to play with his friend P. K. Das in the tennis courts in front of the college building and also took a keen interest in sports. He was a spiritual person too. Without paying Lord Akhandalamani after bathe would not talk to anybody, nor would he eat anything. He was respected by the chemistry fraternity in particular and science faculties in general throughout the country. His passing away at an early age was a great loss to the country. Even when he was ailing, he did not leave his research students halfway and helped them to submit their thesis. This was the MAN. ■■■

Note: Prof. Mahendra Kumar Rout, a teacher, researcher, academic administrator, social reformer, and philanthropist, will be forever remembered. He touched and transformed so many lives. Anyone who came across Prof. Rout has a story to tell about the unassuming, humble, charismatic, and mesmerizing person he was. Describing Prof. Rout in black and white is a challenging task. When the Orissa Chemical Society intended to post an article on Prof. Rout, we approached one of his very dear students, Prof. Gopabandhu Behera, Professor of Chemistry (Retd.), Sambalpur University. Reading through the article, the memories of Prof. Rout came alive. It is a perfect tribute of a very successful student to his great teacher. Here is a brief introduction of Prof. Gopabandhu Behera:

Prof. (Dr.) Gopabandhu Behera was born in the village Mahichala, P.O. Mahichala in the District of Kalahandi, Odisha, on 3rd February 1939. He completed his B.Sc. (Hons.) in Chemistry from Ravenshaw College, Cuttack, standing First Class First in Utkal University in the year 1958. He did his M.Sc. (Chemistry) from Ravenshaw College in the year 1960 with First Class. He obtained his Ph.D. Degree in Chemistry from Utkal University in the year 1969, working under the guidance of Prof. M. K. Rout. He was awarded D.Sc. Degree in Chemistry from Sambalpur University in the year 1978. He was Lecturer in Chemistry at SCS College, Puri from 1960 to1964; Ravenshaw College, Cuttack, from 1964 to1969; and Sambalpur University from 1969 to 1971. He was Reader in Chemistry at Sambalpur University from 1971 to 1978 and Professor of Chemistry from 1978 to 1999 for a record period of 21 years. He has published 120 research papers in various National & International Journals. He has published a review article in Chemical Reviews (first time from Odisha), which was widely referred through 300 citations. Fifteen research scholars have been awarded Ph.D. Degree in Chemistry from Sambalpur University, working under his able supervision. He has visited USA as a Fulbright Scholar in the year 1985, visited the University of Florida in the year 1990, and the University of California in the year 1992. He was a Life Member of Indian Chemical Society; Orissa Chemical Society; Member, Executive Committee of Indian Society of Surface

Science and Technology (ISSST), and was also its Vice-President; Member Advisory Committee of Regional Science Museum; Pulp & Paper Research Institute; MAPCOST of Madhya Pradesh, and Basic Science Group of DSTE. He has been bestowed with many awards and accolades, such as the V.S.R. Gupta Teacher of the Year Award in the year 1995 by Orissa Chemical Society; Kalahandi Utsav Samman -1999 and Senior Scientist Award by Orissa Bigyan Academy-2011. He is working relentlessly for the popularization of science and regularly contributes articles in various newspapers and magazines for the same. He has written +2 Chemistry Book and +3 Organic Chemistry Book, which are liked by students. He has also written a Book in Odia entitled “Bigyan O Manabika Mulyabodha”. He was a Member of the Syndicate of Sambalpur University; Member of the UGC Visiting Team. He was WODC Member – Appellate Authority for Air Pollution, and Member, Programme Advisory Committee, Doordarshan, Odisha. After retirement, he is associated with many social activities. He was President of the OCS for the year 1999.

Compiled by:

Dr. Shashadhar Samal
Former President
Orissa Chemical Society
&
Secretary,
Dr. M.K. Rout Birth Centenary Celebrations Committee

(Source: https://ocs.org.in/past_president.php)

Research Publications of Prof. Mahendra Kumar Rout

Research Publications of Prof. Mahendra Kumar Rout, D. Sc., Ph. D

PART - I

Drugs and Biologically Active Compounds

1. G. N. Mahapatra and M. K. Rout, Preparation of *N*-substituted 2-aminothiazoles, J. lnd. Chem. Soc. 1953, 30, 398.
2. M. K. Rout and H. K. Pujari, Preparation of 2-substituted 4-methyl 5-carbethoxy thiazoles condensation of ethyl acetoacetate with substituted thioureas, J. Am. Chem. Soc. 1953, 75, 4057.
3. H. K. Pujari and M. K. Rout, Condensation of acetone with substituted thioureas, J. Ind. Chem. Soc. 1954, 31, 257.
4. G. N. Mahapatra and M. K. Rout, Preparation of 2-substituted tetrahydro benzothiazoles, J. Sci. Ind. Res. 1954, 13B, 407.
5. G. N. Mahapatra and M. K. Rout, Preparation of *N*-substituted 2-aminothiazoles - Part III, J. Ind. Chem. Soc. 1954, 31, 933.
6. N. K. Das, G. N. Mahapatra, and M. K. Rout, Thiazole derivatives as possible fungicides - Part I, J. Ind. Chem. Soc. 1955, 32, 55.
7. G. N. Mahapatra and M. K. Rout, Bromination of 2-aminothiazoles and their use as fungicides and bactericides, J. Ind. Chem. Soc. 1955, 33, 327.
8. G. N Mahapatra and M. K. Rout, Preparation of 2-arylamino-4-(2-thienyl)-thiazoles and their azo and mercurated derivatives, J. Ind. Chem. Soc. 1957, 34, 653.
9. H. K. Pujari and M. K. Rout, 2-*p*-Chlorophenylamino-4-thiazolidone and its condensation products, J. Ind. Chem. Soc. 1954, 31, 701.
10. K. C. Dash and M. K. Rout, *p*-Tolyl-isothiohydantoin and some of its derivatives, J. Ind. Chem. Soc.1954, 31, 617.
11. B. Dash and M. K. Rout, Studies on thiazolidones, Part I: α-Naphthylaminothiazolidone and its condensation products, J. Sci. Ind. Res., 1955, 14B, 16.
12. B. Dash and M. K. Rout, 2-α-Naphthylamino 4-thiazolidones and some of its derivatives - Part I, J. Ind. Chem. Soc. 1955, 32, 442.
13. M. K. Rout and G. N. Mahapatra, 2-β-Naphthylamino 4-thiazolidone and its derivatives, J. Am. Chem. Soc. 1955, 77, 2427.
14. H. K. Pujari and M. K. Rout, 5-Aryliden 2-*p*-chlorophenylamino 4-thiazolidone and some of its derivatives, J. Sci. Ind. Res. 1955, 14B, 44.
15. B. K. Patnaik and M. K. Rout, 2-*p*-Bromophenylamino 4-thiazolidone and some of its derivatives, J. Ind. Chem. Soc. 1956, 33, 690.
16. G. N. Mahapatra and M. K. Rout, Preparation of 4-thiazolidones and their 5-(*p*-sulphonamido phenyl) azo derivatives, J. Ind. Chem. Soc. 1956, 33,17.

17. M. K. Rout, B. Padhi, and N. K. Das, Use of mercurated thiazoles as fungistatic agents, Nature 1954, 174, 516.
18. G. N. Mahapatra and M. K. Rout, Mercuration of 2-aryl substituted aminothiazoles, J. Sci. Ind. Res. 1954, 13B, 378.
19. M. K. Rout, Substitution reactions of 2-acetamido thiazoles Part I, J. Ind. Chem. Soc. 1955, 33, 741.
20. G. N. Mahapatra and M. K. Rout, Mercurated derivatives of 2-arylimino-4-thiazodidones, J. Ind. Chem. Soc. 1956, 32, 715.
21. S. S. Guhasircar and M. K. Rout, Preparation of antibacterials from organomercurials -Part V, J. Ind. Chem. Soc. 1952, 29, 669.
22. S. S. Guhasircar and M. K. Rout, Preparation of antibacterials from organomercurials -Part VI, J. Ind. Chem. Soc. 1952, 29, 779.
23. S. S. Guhasircar and M. K. Rout, Preparation of antibacterials from organomercurials -Part VII, J. Ind. Chem. Soc. 1953, 30, 359.
24. S. S. Guhasircar and M. K. Rout, Preparation of antibacterials from organomercurials -Part VIII, J. Ind. Chem. Soc. 1953, 30, 361.
25. S. S. Guhasircar and M. K. Rout, Preparation of antibacterials from organomercurials -Part IX, J. Ind. Chem. Sec. 1953, 30, 364.
26. S. S. Guhasircar and M. K. Rout, Preparation of antibacterials from organomercurials -Part X, J. Ind. Chem. Soc, 1953, 30, 366.
27. S. S. Guhasircar and M. K. Rout, Preparation of antibacterials from organomercurial -Part XI, J. Ind. Chem. Soc, 1953, 30, 435.
28. H. K. Pujari and M. K. Rout, *p*-Tolyl thiohydantoin and its derivatives, J. Ind. Chem. Soc. 1954, 31, 937.
29. M. K. Rout, Thiohydantoins and their derivatives, J. Ind. Chem. Soc. 1958, 35, 287.
30. H. K. Pujari, R. K. Nanda, and M. K. Rout, *N*-*p*-Tolyl rhodanine and its derivatives, J. Sci. Ind. Res. 1955, 143, 13.
31. H. K. Pujari and M. K. Rout, Rhodanine *N*-benzoic and *N*-salicylic acids and their derivatives, J. Ind. Chem. Soc. 1954, 31, 837.
32. M. K. Rout, Rhodanine *N*-salicylic acid and its use in the estimation of thorium, J. Ind. Chem. Soc. 1956, 33, 683.
33. H. K. Pujari and M. K. Rout, Bromination of thiazolidones and rhodanines, J. Sci. Ind. Res. 1955, 148, 398.
34. B. Dash and M. K. Rout, Sulphonamido derivatives of thiazoles, J. Ind. Chem. Soc. 1955, 32, 663.
35. B. K. Patnaik and H. K. Pujari, Preparation of some 5-substituted 2-arylmino-4-thiazolidones, J. Ind. Chem. Soc. 1957, 34, 814.
36. H. K. Pujari and M. K. Rout, Preparation of quinolyl and naphthyl thiopyruvic acids and their corresponding nitriles, J. Ind. Chem. Soc.1955, 82, 431.

37. M. K. Rout, Some thiazolidonyl biguanides, J. Sci. Ind. Res. 1956, 15B, 422.
38. B. K. Patnaik and M. K. Rout, Preparation of 5-amino-2-arylimino-4-thiazolidones, J. Ind. Chem. Soc. 1955, 32, 563.
39. B. Dash and M. K. Rout, Preparation of some thiazole dyes of Doeboner violet type, J. Ind. Chem. Soc. 1955, 33, 385.
40. H. K. Pujari and M. K. Rout, Arsenic derivatives - Part I, J. Sci. Ind. Res. 1955, 14B, 563.
41. K. C. Dash and M. K. Rout, Thiodiazolines - Part I, J. Sci. Ind. Res. 1955, 14B, 98.
42. B. Dash and M. K. Rout, Potential antispasmodics - Part I: Quinolyl thiazoles, J. Sci. Ind. Res. 1957, 16C, 125.
43. P. B. Tripathy, H. K. Pujari, and M. K. Rout, Thiazole derivatives as antispasmodics and antihistaminics - Part III, J. Ind. Chem. Soc. 1958, 35, 407.
44. A. S. Mittra and M. K. Rout, Reaction of aromatic aldehydes with 5-methyl-4-thiazolidones, J. Ind. Chem. Soc. 1959, 36, 723.
45. B. Sahoo, P. B. Tripathy, and M. K. Rout, Antispasmodic compounds - Part IV, J. Ind. Chem. Soc. 1959, 36, 421.
46. B. K. Sabata, P. B. Tripathy, and M. K. Rout, Antispasmodic compounds, J. Inst. Chemists 1960, 32, 147.
47. Synthesis of some thiazole derivatives: Proceedings of the symposium on “Synthetic work on heterocyclic compounds” - Indian Science Congress, Roorkee Session, 1961.
48. A. S. Mitra and M. K. Rout, Tautomeric products of condensation of aromatic aldehydes with pyrazolone, J. Ind. Chem. Soc. 1961, 38, 893.
49. S. Nanda, D. Pati, A. S. Mitra, and M. K. Rout, Tautomeric pyrazolone compounds, J. Ind. Chem. Soc. 1963, 40, 833.
50. R. M. Senapati, K. K. Patnaik, and M. K. Rout, Studies on thiadiazoles, J. Inst. Chemists 1965, 37, 111.
51. P. K. Jesthi, B. K. Sabata, and M. K. Rout, Antispasmodics derived from hydroxy flavones, J. Ind. Chem. Soc. 1965, 42, 105.
52. A. Banerjee, P. L. Nayak, and M. K. Rout, Antispasmodics and antihistaminics derived from hydroxy and aminochalkones, J. Ind. Chem. Soc. 1966, 43, 578.
53. A. K. Panigrahi, P. K. Jesthi, and M. K. Rout, Studies on 4-hydroxy coumarins - Part I, J. Inst. Chemists 1966, XXXVIII, 171,
54. A. K. Panigrahi, P. K. Jesthi, and M. K. Rout, Studies on 4-hydroxy coumarins - Part II, J. Inst. Chemists 1966, XXXVIII, 175.
55. N. Mohanty, P. C. Rath, and M. K. Rout, New therapeutic agents of the quinoline series - Part I, J. Ind. Chem. Soc. 1967, 44, 1001.
56. B. Behera, P. C. Rath, and M. K. Rout, New therapeutic agents of the quinoline series - Part II, J. Ind. Chem. Soc. 1967, 44, 119.

57. A. Nayak, P. K. Jesthi, and M. K. Rout Antispasmodics and antihistaminics derived from amino and hydroxy heterocyclic compounds, J. Inst. Chemists 1968, XL, 109.

58. P. K. Jesthi and M. K. Rout, Antispasmodic compounds, J. Inst. Chemists, 1969, 138.

59. P. L. Nayak, A. K. Panigrahi, and M. K. Rout, Potential antispasmodics derived from hydroxy and amino pyrazolones and isooxazolones, Ind. J. Appl. Chem. 1970, 47, 56.

60. K. K. Mohanty, A. K. Panigrahi, and M. K, Rout, Antiacetylcholines and antihistaminics derived from 3-acetyl coumarin, Ind. J. Pharm. 1970, 32, 133.

61. B. C. Mahanta, A. K. Panigrahi, and M. K. Rout, Antispasmodics and antihistaminics derived from 2-arylimino 4-thiazolidone -1-dioxides, J. Inst. Chemists 1970, XLII, 190.

62. A. K. Panigrahi and M. K. Rout, Arsenophenyl and sulphonamidophenyl derivatives of *N*-arylrhodanines, J. Ind. Chem. Soc. 1970, 47, 665.

63. B. C. Mahanta, A. K. Panigrahi, and M. K. Rout, Arsenophenyl and sulphonamidophenyl derivatives of 2-arylimino-4-thiazolidone-1-dioxide, J. Ind. Chem. Soc. 1970, 47, 707.

64. K. K. Mohanty, A. K. Panigrahi, and M. K. Rout, Antispasmodics and antihistaminics derived from *N*-arylrhodanines, J. Inst. Chemists 1971, XLIII, 109.

65. A. K. Panigrahi and M. K. Rout, Arsenophenyl and sulphonamido phenyl derivatives of substituted chromanones, thiochromanones and thiochromanone-2,4-dione, J. Ind. Chem. Soc. 1972, 49, 23.

66. D. Sarangi, B. Tulsi Das, D. Rout, and M. K. Rout, Studies on local anesthetics, Ind. J. Pharm. 1973, 35, 96.

PART - II

Polymethine Dyes

67. B. K. Patnaik and M. K. Rout, Photographic Sensitizers - Part I: Merocyanines, J. Ind. Chem. Soc. 1957, 34, 543.

68. B. Dash and M. K. Rout, Cyanine dyes - Part I, J. Ind. Chem. Soc. 1957, 505.

69. B. K. Patnaik and M. K. Rout, Merocyanines - Part I, J. Sci. Ind. Res. 1957, 16B, 253.

70. B. K. Patnaik and M. K. Rout, Photographic sensitizers - Part II, Mero and tricarbo cyanins, J. Ind. Chem. Soc. 1958, 35, 511.

71. P. K. Misra, B. K. Patnaik, and M. K. Rout, Merocyanines derived from benzimidazole, J. Ind. Chem. Soc. 1959, 36, 35.

72. P. B. Tripathy and M. K. Rout, Unsymmetrical methincyanines derived from 4-methyl l,3-aryl-l,2-dihydrothiazole 2-thione, J. Ind. Chem. Soc. 1959, 36, 590.

73. B. Dash and M. K. Rout, Unsymmetrical methincyanines derived from quinoline and pyridine, J. Ind. Chem. Soc. 1959, 36, 640.

74. P. B. Tripathy and M. K. Rout, Merocyanines derived from oxazolone, J. Ind. Chem. Soc. 1959, 36, 625.

75. P. B. Tripathy and M. K. Rout, *p*-Dialkylamino styryl dyes derived from 5-arylaminothiazole, J. Ind. Chem. Soc. 1960, 37, 415.

76. B. K. Sabata, B. K. Patnaik, and M. K. Rout, Deviations of merocyanines derived from benzothiazole and substituted rhodanines, J. Ind. Chem. Soc. 1960, 37, 613.

77. B. Dash, B. K. Patnaik, and M. K. Rout, Studies on color and constitution - Part I, J. Ind. Chem. Soc. I960, 37, 603.

78. B. K. Sabata, B. K. Patnaik, and M. K. Rout, Merocyanines derived from pyrazolone, J. Sci. Ind. Res. 1961, 20B, 121.

79. P.B.Tripathy and M.K.Rout, Merocyanines derived from 5-phenylarylino-8-methyl-l,3,4-thiadiazoles, J. Sci. Ind. Res. 1961, 208, 177.

80. Influence of structural changes on absorption in cyanine and merocyanine dyes and their aza analogues - Proceedings, Summer School in Organic Chemistry, Shillong May-June 1961. Organised by Ministry of Scientific Research & Cultural Affairs, Govt. of India.

81. B. K. Sabata, B. K. Patnaik, and M. K. Rout, Studies on Colour and Constitution: Application of Forster's Rule, Acharya P. C. Ray Centenary Volume of Ind. Chem. Soc. 1961, 38, 679.

82. B. K. Sabata, B. K. Patnaik, and M. K. Rout, Merocyanines derived from iso-oxazolones, J. Inst. Chemists 1961, 33, 161.

83. B. K. Sabata and M. K. Rout, Influence of structural changes on absorption in merocyanines, J. Sci. Ind. Res. 1962, 21B, 227.

84. P. B. Tripathy and M. K. Rout, Unsymmetrical cyanine derived from thiazoles and thiadiazoles, J. Ind. Chem. Soc. 1962, 39,103.

85. B. K. Sabata, B. K. Patnaik, and M. K. Rout, Deviations in absorption maxima of merocyanines. derived from benzothiazoles and substituted thiobarbituric acid, J. Soc. Ind. Res. 1962, 21B, 425.

86. M. K. Rout, Influence of structural changes on absorption - Part I, J. Inst. Chemists 1963, 35, 117.

87. A. S. Mitra and M. K. Rout, Infrared spectra of some heterocyclic ketomethylone compounds Part I: Amide - carbonyl - enolic and aromatic band, J. Ind. Chem. Soc. 1963, 40, 993.

88. B. K. Sabata and M. K. Rout, Infrared spectra of coumarins and chalkones, J. Ind. Chem. Soc. 1964, 41,74.

89. N. C. Mishra, K. K. Patnaik, and M. K. Rout, Studies on 4-hydroxy coumarins, J Ind. Chem. Soc. 1971, 48, 25.

90. A. Nayak, P. L. Nayak, B. K. Sabata, and M. K. Rout, Infrared spectra of chalkones derived from hydroxychloroacetophenone, J. Ind. Chem. Soc. 1964, 41, 507.

91. P. C. Rath, P. B. Tripathy, and M. K. Rout, Dimethin and tetramethin merocyanines derived azathiazolone, J. Ind. Chem. Soc. 1964, 41, 107.

92. P. C. Rath, B. K. Sabata, and M. K. Rout, Merocyanines derived from substituted 4-hydroxycoumarins - Part I, J. Ind. Chem. Soc. 1964, 41, 797.

93. P. C. Rath, B. K. Sabata, and M. K. Rout, Merocyanines derived from substituted 4-hyroxy coumarins - Part II, J. Ind. Chem. Soc. 1964, 41, 803.

94. P. C. Rath, B. K. Sabata, and M. K. Rout, Use of 4-hydroxy coumarins in the synthesis of dialkylaminostyryl dyes and merocyanines, Ind. J. Chem. 1965, 3, 78.

95. P. Mohanty, S. P. Panda, B. K. Sabata, and M. K. Rout, Infrared spectra of chalcones derived from nitromethyl A and bromoacetophenones, resacetophenone and phloroacetophenone, Ind. J. Chem. 1965, 3, 121.

96. P. K. Jesthi and M. K. Rout, Merocyanines and *p*-dialkylamino benzylidene compounds derived from 6-bromo-4-hydroxy coumarins, Ind. J. Chem. 1965, 3, 461.

97. Influence of structural changes on absorption: Proceedings of the symposium held at Dept. of Chemical Technology Bombay, Feb. 1965.

98. P. C. Rath, P. K. Jesthi, P. K. Misra, and M. K. Rout, Effect of substituents on absorption in *p*-dialkylaminostyryl and aza analogues derived from 2-methyl 4,5-diarylthiazoles, Ind. J. Chem. 1966, 4, 24.

99. S. B. Mohanty, D. C. Pati, and M. K. Rout, Effect of structural changes in the chromophoric chain in dyes derived from benzthiazoles, Ind. J. Chem. 1968, 6, 136.

100. P. L. Nayak, P. B. Tripathy, and M. K. Rout, Effect of introducing nitrogen atom in chromophoric chain on absorption and dyeing properties of dyes, lnd. J. Chem. 1968, 6, 572.

101. D. C. Pati and M. K. Rout, Effect of structural changes in the chromophoric chain in the dyes derived from benzimidazoles, J. Ind. Chem. Soc. 1968, 45, 425.

102. K. K. Satpathy, A. Nayak, and M. K. Rout, Effect of structural changes on dyes derived from naphthol, J. Ind. Chem. Soc. 1968, 45, 799.

103. B. C. Mahanta, P. L. Nayak, and M. K. Rout, Effect of substituents on absorption of 4-dimethylamino chalkone, J. Inst. Chemists 1970.

104. P. L. Nayak, G. B. Behera, and M. K. Rout, Azamerocyanines derived from substituted chalkones and 2-methyl quinoline, J. Inst. Chemists 1970, 249.

105. P. K. Jesthi and M. K. Rout, Merocyanines derived from 3-naphthyl benzo(f) quinoline, J. Ind. Chem. Soc.1970, 47, 419.

106. G. B. Behera and M. K. Rout, Merocyanines derived from 4,5-dlphenylthiazoles - Part I, J. Ind. Chem. Soc. 1970, 47, 323.

107. K. Parija, A. Nayak, and M. K. Rout, Preparation of azamerocyanines and evaluation of the effect of introduction of nitrogen in the chromophoric chain, J. Ind. Chem. Soc. 1970, 47, 1129.

108. K. Mukherjee, S. Misra, C. S. Panda, G. Behera, and M. K. Rout, Dyes derived from 4,5-diaryl thiazoles, J. Ind. Chem. Soc. 1970, 47, 323.

109. K. Mukharjee, R. C. Parida, A. Nayak, and M. K. Rout, Studies on azacyanines and evaluation of the effect of introduction of nitrogen atoms in chromophoric chain, J. Ind. Chem. Soc. 1970, 47, 1121.

110. S. Lenka, P. L. Nayak, and M. K. Rout, Azamerocyanines - Part II: Some dyes derived from substituted chalkone oximes, J. Inst. Chem. 1970, 42,162.

111. A. Nayak, P. K. Mahapatra, and M. K. Rout, Phosphorus containing polymethin dyes, J. Ind. Chem. Soc. 1971, 48, 29.

112. S. Lenka. P. K. Mahapatra, P. L. Nayak, and M. K. Rout, Merocyanines and styryl dyes derived from 1,2,6,7-dibenzoxanthone - J. Ind. Chem. Soc. 1971, 48, 249.

113. G. B. Behera and M. K. Rout, Merocyanines derived from 4,5-diphenylthiazoles - Part II, J. Inst. Chemists 1972.

114. A. Nayak, P. K. Mahapatra, and M. K. Rout, Merocyanines and styryl dyes derived from chromene, J. Ind. Chem. Soc. 1972, 49.

115. A. K. Bhattamishra, B. C. Mahanta. K. K. Mukherjee, and M. K. Rout, Dyes derived from 5-hydroxy perinaphthinidan-1,3-dione, J. Ind. Chem. Soc. 1973, 50,147.

116. N. Mishra, B. Bhuyan, L. N. Patnaik, and M. K. Rout, Dyes derived from 2-(2-benzoxazolyl)- and 2-(2-benzothiazolyl) malonaldehydes. Ind. J. Chem. 1976, 14B, 806.

PART - III

Natural Products

117. H. Conroy, P. R. Brook, M. K. Rout, and N. Silverman, The structure of aspidospermine, J. Am. Chem. Soc. 1957, 79, 1763.

118. H. Conroy, P. R. Brook, M. K. Rout, and N. Silverman, Aspidospermlne - Part Il: NMR spectra and classical degradations, J. Am. Chem. Soc. 1958, 80, 5172.

119. Application of NMR spectra to structure determination of organic compounds with special reference to the alkaloid aspidospermine - Proceedings, Summer School in Chemistry, 1961. Organized by the Ministry of Scientific Research and Cultural Affairs, Govt. of India

120. M. K. Rout and H. Conroy, Application of $^{14}CH_3I$ NMR in the structural determination of alkaloid aspidospermine: Full paper published in Proceedings of the Symposium on Nuclear and Radiation Chemistry - Special issue of J. Ind. Chem. Soc. 1962, 206.

121. B. K. Sabata, M. K. Rout, and B. K. Barman, Isolation and investigation of active principles from Pimpinella Heyneana, Ind. J. Chem.1963, 1, 279.

PART - IV

Studies on Oils

122. G. B. Behera, B. K. Sabata, and M. K. Rout, Urea adducts of fatty acids of Caesalpinia Bonducella seed oil, Ind. J. Appl. Chem. I960, 23, 221.

123. S. B. Das, K. K. Patnaik, and M. K. Rout, Analysis of the fatty acids of the seed oil Butea Frondsa by urea adduct methods, J. Inst. Chemists 1962, 34, 270.

124. B. K. Sabata and M. K. Rout, Investigation on the oil from the seeds of Gracinia Xanthochymus, J. Inst. Chemists 1963, 35, 193.

125. B. K. Sabata, M. K. Rout, and B. K. Burman, Chemical investigation of Pimpinella Heyneana-Wall, Ind. J. Chem. 1963, 1, 279.

126. K. K. Patnaik and M. K. Rout, Studies on seed oil of Cassia Occidentalis, Ind. J. Appl. Chem. 1971, 34, 291.

PART - V

Theoretical Investigation of Absorption Spectra of Dyes

127. L. N. Patnaik and M. K. Rout, Application of Free Electron Molecular Orbital Model: Absorption frequencies of unsymmetrical phosphocyanines derived from cyclopentadienylene triphenyl phosphorane, Z. Phys. Chemie (Leipzig) 1975, 256, 785.

128. N. Misra, L. N. Patnaik, and M. K. Rout, Calculation on the absorption frequencies of merophosphinines and unsymmetrical phosphocyanines by Free Electron Molecular Orbital Treatment, Ind. J. Chem.1976, l4A, 56.

129. N. Misra, L. N. Patnaik, and M. K. Rout, Hückel Molecular Orbital Calculations on Merophosphinines and Unsymmetrical Phosphoryanines derived from cyclopentadienylene triphenylphosphorane, Ind. J. Chem. 1976, 14A, 334.

130. L. N. Patnaik, P. K. Misra, and M. K. Rout, Application of Free Electron Molecular Orbital Model: Absorption spectra of cyanine dyes, J. Ind. Chem. Soc. 1976, 53, 391.

131. B. Bhuyan, L. N. Patnaik, and M. K. Rout, Application of Free Electron Molecular Orbital Model: Absorption spectra of azacyanines, Z. Phys. Chemie (Leipzig) 1977, 258, 601.

132. N. Misra, L. N. Patnaik, and M. K. Rout, Correlation of lowest HMO transition energies with the electronic absorption frequencies of some organic dye stuffs, Ind. J. Chem. 1977, 15A, 951.

133. N. Misra, L. N. Patnaik, and M. K. Rout, Calculations on the absorption spectra of merocyanines by FEMO method, Acta Chimica (Hungary), 1978, 97, 247.

134. N. Misra, D. Patnaik, L. N. Patnaik, and M. K. Rout, Free Electron Molecular Orbital Treatment of the absorption spectra of chain substituted polymethine dyes, J. Ind. Chem. Soc. 1979, 56, 367.

135. N. Misra, L. N. Patnaik, and M. K. Rout, A correlation of free electron with valence bond parameters, Ind. J. Chem. 1979, 18B, 539.

136. B. V. Alaka, D. Patnaik, and M. K. Rout, Preparation, synthesis and mass spectral studies of nitrophenyl thiazole-triazepine derivatives, J. Ind. Chem. Soc. 1982, LIX, 1168.

PART-VI

Kinetic Studies and Structure-Reactivity Relationships, Substitution, Addition, Oxidation Reactions, etc.

137. Stereospecificity in the rearrangement of amino alcohols - Proceedings of the Seminar on Rearrangement of Alkyl and Cycloalkyl Cations held at University of Delhi, 1965.

138. Kinetics of the reaction between substituted phenacyl bromides and anilines -Proceedings of the Seminar on "Application of physical methods in the study of organic structure" held in Annamalai University, 1966.

139. L. N. Patnaik, P. L. Nayak, and M. K. Rout, Kinetics of bromination of acetophenone Part I, J. Ind. Chem. Soc. 1967, 44, 668.

140. R. K. Mohanty, G. Behera, and M. K. Rout, Kinetics of the reaction between substituted phenacyl bromides an aniline, Ind. J. Chem. 1967, 5, 259.

141. Kinetics of the reaction between substituted phenacyl bromides and substituted anilines: Proceedings of the symposium on 'Reaction Kinetics' Indian Science Congress, 1968.

142. R. Rath, G. B. Behera, and M. K. Rout, Kinetics of the reaction between substituted phenacyl bromides and aniline - Part II, Ind. J. Chem. 1968, 6, 202.

143. R. Rath, G. Behera, and M. K. Rout, Kinetics of reactions in solution - Part I: Separation of polar, steric and resonance effects for the reaction of phenacyl bromide and anilines, Ind. J. Chem.1968, 6, 400.

144. Kinetic of methoxy mercuration of olefins: Proceedings of the Symposium on Reaction Mechanism, Jabalpur University, 1969.

145. J. N. Kar, G. Behera, and M. K. Rout, Metal ion oxidation - Part I: Kinetics of oxidation of atrolactic acid by V(V), J. Ind. Chem. Soc. 1969, 46, 400.

146. D. N. Nanda, P. L. Nayak, and M. K. Rout, Kinetics of base-catalyzed bromination of acetophenone, Ind. J. Chem. 1969, 7, 469.

147. S. Mishra, P. L. Nayak, and M. K. Rout, Applicability of Hammett Equation in iodination of acetophenone, J. Ind. Chem. Soc. 1969, 46, 645.

148. S. Mishra, P. L. Nayak, and M. K. Rout, Kinetics of iodination of acetophenones by conductance method, J. Ind. Chem. Soc. 1969, 46, 1019.

149. S. Mishra, J. N. Kar, G. B. Behera, and M. K. Rout, Reactions in solution - Part I: Separation of inductive, resonance and steric effects in the reactions of phenacyl bromide with aniline in methanol, Ind. J. Chem. 1969, 7, 890.

150. J. N. Kar, G. B. Behera, and M. K. Rout, Kinetics of oxidation of atrolactic acid by ceric salt, J. Ind. Chem. Soc. 1970, 47, 293.

151. N. Rout, P. L. Nayak, and M. K. Rout, Kinetics of bromine addition to chalkones, J. Ind. Chem. Soc. 1970, 47, 217.

152. A. K. Patnaik, P. L. Nayak, and M. K. Rout, Kinetics of methoxy mercuration of chalkones, Ind. J. Chem. 1970, 8, 722.

153. P. L. Nayak and M. K. Rout, Kinetics of base-catalyzed condensation of acetophenones with benzaldehydes, J. Ind. Chem. Soc. 1970, 47, 807.

154. N. Rout, P. L. Nayak, and M. K. Rout, Kinetics of bromine addition to chalkones - Part I, J. Ind. Chem. Soc. 1970, 47, 617.

155. K. K. Satpathy, P. L. Nayak, and M. K. Rout, Kinetics of ester hydrolysis - Part I: A novel feature of pp and p6 relationship, Ind. J. Chem. 1971, 9, 680.

156. K. K. Satpathy, A. K. Patnaik, P. L. Nayak, and M. K. Rout, Kinetics of methoxy mercuration of olefins Part I - Substituted cinnamic acid, J. Ind. Chem. Soc. 1971, 48, 847.

157. Kinetics of methoxy mercuration of olefins - Part 1: Substituted cinnamic acids, J. Ind. Chem. Soc. 1971, 48, 847.

158. K. Mukherjee, J. N. Kar, G. B. Behera, and M. K. Rout, Metal ion oxidation - Part IV: Kinetics of Ce(IV) oxidation of benzyl phenyl glycollic acids, J. Ind. Chem. Soc. 1971, 48, 669.

159. B. K. Chand, J. N. Kar, G. B. Behera, and M. K. Rout, Kinetics of ring opening of epoxides, J. Ind. Chem. Soc. 1971, 48, 867.

160. J. K. Das, G. B. Behera, R. C. Acharya, and M. K. Rout, Reaction of phenylene diamines with phenacyl bromide, Ind. J. Chem. 1971, 9, 917.

161. R. C. Acharya, G. B. Behera, and M. K. Rout, Reaction of phenacyl bromide and phenylene diamines - Part II, J. Ind. Chem. Soc. 1971, 48, 1342.

162. L. N. Patnaik, G. B. Behera, and M. K. Rout, Oxidation of ketones - Part I: Ce(IV) oxidation of acetophenone, Ind. J. Chem. 1971, 9, 432.

163. S. Das, K. K. Satpathy, P. L. Nayak, and M. K. Rout, Kinetics of lead tetraacetate oxidation Part I: Oxidation of substituted phenols, J. Ind. Chem. Soc. 1971, 48, 62.

164. P. L. Nayak and M. K. Rout, Influence of solvent composition on the rates of basic hydrolysis of cinnamic esters, J. Ind. Chem. Soc. 1971, 48,141.

165. P. L. Nayak and M. K. Rout, Kinetics of methoxy mercuration of olefines - Part III, J. Inst. Chemists 1971, 62, 32.

166. K. Mukherjee, J. N. Kar, G. B. Behera, and M. K. Rout, Metal ion oxidation in solution Part III: The oxidation of benzyl phenyl glycollic acids by cerium (IV), J. Ind. Chem. Soc. 1971, 48, 665.

167. K. Mukherjee, J. N. Kar. G. B. Behera, R. C. Acharya, and M. K. Rout, Kinetics of quaternization of *N*,*N*-diethylbenzylamines, Ind. J. Chem. 1971, 9, 947.

168. G. B. Behera, J. N. Kar, R. C. Acharya, and M. K. Rout, Quaternization of thiazoles, J. Org. Chem. 1973, 38, 2164.

169. G. B. Behera, R. C. Acharya, and M. K. Rout., Kinetic reaction of phenacyl bromide with thioureas, Ind. J. Chem. 1973, 11, 81.

170. S. N. Mahapatra, P. K. Mahapatra, P. L. Nayak and M. K. Rout, Kinetics of bromine addition to chalkones - Part II, Linear Free Energy Relationship, J. Ind. Chem. Soc. 1972, 49, 135.

171. P. Mishra, P. L. Nayak, and M. K. Rout, Kinetics of reaction of phenacyl bromide with benzoate ion Bronsted and Hammett correlation, Ind. J. Chem. 1973, 11, 452.

172. B. C. Singh, P. L. Nayak, and M. K. Rout, Kinetics of oxidation of α-picoline by Ce(IV) in acetic acid, Ind. J. Chem. 1974, 12, 421.

173. P. L. Nayak and M. K. Rout, Kinetics of formation of chalkone - Linear Free Energy Relationships, J. Ind. Chem. Soc. 1975, 52, 809.

174. S. B. Mohanty, R. C. Acharya, C. N. Nanda, and M. K. Rout, Kinetics and mechanism of the oxidation of benzoin and its derivatives by Tl(III) in aqueous acetic acid, Ind. J. Chem. 1976, 14A, 42.

175. S. B. Mohanty, R. C. Acharya, C. N. Nanda, and M. K. Rout, Tl(III) oxidation of α-hydroxy acids, J. Ind. Chem. Soc. 1976, 53, 59.

176. B. C. Singh, P. L. Nayak, M. K. Rout, and N. P. Padhi, Oxidation of methyl group: Kinetics of Ce(IV) oxidation of 2-methyl benzothiazole, benzoxazole and benzimidazole in acetic acid-perchloric acid mixtures, J. Ind. Chem. Soc. 1982, LIX, 349.

177. A. R. Roy, B. C. Singh, P. L. Nayak, and M. K. Rout, Kinetics of oxidation of thiohydantoin and rhodanine by cerium (IV) in sulphuric-acetic acid mixture, J. Inorg. Nucl. Chem. 1978, 40, 749.

PART - VII

Studies on Polymers and Polymerization

178. L. N. Patnaik, N. Mallick, A. Rout, and M. K. Rout, Ortho effect and additivity of substituent parameters in the reaction between phenols and poly (vinyl acetate) radicals, J. Macromol. Sci. - Chem. 1979, 13, 183.

179. L. N. Patnaik, M. K. Rout, S. P. Rout, and A. Rout, Rate parameters for transfer reactions of some polymer radicals: in terms of Swain and Lupton's f and r and the unique positional weighting factors of Williams and Norrington, Eur. Polym. J. 1979, 15, 509.

180. R. K. Satapathy, S. N. Patnaik, B. K. Misra, S. P. Rout, and M. K. Rout, Retardation of cerium (IV)-initiated polymerization of acrylonitrile by chalcone, J. Macromol. Sci. - Chem. 1979, 13, 273.

181. S. P. Rout, N. Mallick, A. Rout, and M. K. Rout, Substituent parameters for radical reactions: Cerium (IV)-substituted acetophenones–acrylonitrile system., J. Polym. Sci. – Polym. Chem. Ed. 1979, 17, 3859.

182. B. C. Singh, B. K. Misra, A. Rout, N. Mallick, and M. K. Rout, Kinetics of inhibited or retarded polymerization. Investigations on the cerium(IV)/toluene/acrylonitrile system. Die Makromol. Chem. - Macromol. Chem. Phys. 1979, 180, 953.

183. L. N. Patnaik, M. K. Rout, A. Rout, and S. P. Rout, Substituent effects in polymerization reactions in terms of generalized substituent constants F and R and generalized weighting factors f and r, J. Polym. Sci. – Polym. Chem. Ed. 1980, 18, 47.

184. L. N. Patnaik, R. K. Satapathy, S. N. Patnaik, B. K. Misra, and M. K. Rout, The kinetics of retardation by phenol of the polymerization of acrylonitrile, Eur. Polym. J. 1980, 16, 117.

185. L. N. Patnaik, N. Mallick, M. K. Rout, and S. P. Rout, Substituent effects in some autoxidation and hydrogen abstraction reactions in terms of their Field (F) and Resonance (R) components inclusive of unique positional weighting factors, Can. J. Chem. 1980, 58, 2754.

186. S. N. Patnaik, R. K. Satapathy, N. Mallick, A. Rout, and M. K. Rout, Retardation of cerium(IV)-initiated polymerization of acrylonitrile by cinnamic acid, J. Macromol. Sci. Part A - Chem. 1980, 14, 899.

187. S. P. Rout, A. Rout, B. C. Singh, and M. K. Rout, Substituent parameters for radical reactions cerium(IV)-substituted toluenes-acrylonitrile system, Colloid Polym. Sci. 1980, 258, 949.

188. L. N. Patnaik, S. N. Patnaik, S. P. Rout, and M. K. Rout, Substituent effects in the reaction of phenols with polyacrylonitrile radicals. Eur. Polym. J. 1982, 18, 881.

189. S. N. Patnaik, B. K. Misra, R. K. Satapathy, S. P. Rout, L. N. Patnaik, and M. K. Rout, Substituent effects in the kinetics of polymerization of acrylonitrile retarded by substituted chalcones, J. Macromol. Sci. - Chem. 1983, A19, 123.

190. L. N. Patnaik, N. C. Samal, M. Senapati, S. P. Rout, R. Mishra, and M. K. Rout, Substituent effects in the reaction between acetophenones and polymethyl methacrylate radicals, J. Macromol. Sci. - Chem. 1983, A19, 1061.

191. L. N. Patnaik, N. C. Samal, M. Senapati, R. Mishra, and M. K. Rout, Substituent effects in the reaction between benzaldehydes and polyacrylonitrile radicals, Eur. Polym. J. 1983, 19, 605.

192. N. C. Samal, R. Mishra, M. Senapati, N. C. Nayak, L. N. Patnaik, and M. K. Rout, Polymerization of acrylonitrile initiated by the redox system manganese (III) acetate/ethylene glycol, Die Makromol. Chem. - Macromol. Chem. Phys. 1983, 184, 1121.

193. M. Senapati, N. C. Samal, R. Mishra, S. P. Rout, L. N. Patnaik, and M. K. Rout, Kinetics of polymerization of methyl methacrylate initiated by AIBN in the presence of acetophenone, J. Macromol. Sci. - Chem. 1983, 20, 567.

194. M. Senapati, N. C. Samal, R. Mishra, A. Patnaik, L. N. Patnaik, and M. K. Rout, Effect of glycerol in the polymerization of methyl methacrylate by Mn (III) acetate, J. Macromol. Sci. - Chem. 1983, 20, 557.

195. M. Senapati, N. C. Samal, R. Mishra, B. Tripathy, S. P. Rout, and M. K. Rout, Polymerization of acrylonitrile initiated by a manganese (III) acetate glycerol redox system, J. Polym. Sci. – Polym. Chem. Ed. 1983, 21, 407.

196. L. N. Patnaik, S. P. Rout, N. C. Samal, M. Senapati, R. Mishra, and M. K. Rout, Substituent effects in the reaction between acetophenones and polyacrylonitrile radicals, Colloid Polym. Sci. 1984, 262, 119.

PART - VIII

Environmental Science

1. Siting of a Thermal Plant with special reference to Environmental Considerations. A Case Study of Ib Thermal Plant, Chemical Age of India, Vol.36, No 2, 219 (1985).
2. Strategies for Control of Environmental Pollution, International Congress Special Number, Industrial Safety Chronicle, No.XVII, 105, Oct-Dec. 1986.
3. Environment and the Twenty-First Century, Proceedings of the International Seminar on Environmental and Twenty-First Century held at Cuttack from December 12-15, 1986.
4. Proposed Action Programme for Control of Vehicular Pollution in Orissa which will be a menace in the Twenty-First Century, Proceedings of the International Seminar on Environment and Twenty First Century held at Cuttack from December 12-15, 1986.
5. Bhopal Tragedy – Should Pesticide Manufacture based on MIC be banned? Chemical Age of India, 37(12), 339 (1986).
6. Ecology and Wild Life – Status of Wildlife in Orissa, Aqua World, 2(12), 1987.
7. Ecology, Forestry and Status of Forestry in Orissa, Indian J. Environmental Protection, 8, 117, (1988).
8. Conservation of Energy and Measures undertaken by Major Steel Plants for Solid Waste Disposal – A Comparative Study in the book "Environmental Impacts of Industrial and Mining Activities" Edited by L.N. Patnaik, Ashish Publishing House (1990)

BOOKS

1. THE BHOPAL TRAGEDY- Analysis of Related Issues by Dr. M. K. Rout, Published by Orissa State Pollution Control Board (1985)
2. MY REMINISCENCES AND EXPERIENCES OF ORISSA STATE POLLUTION CONTROL BOARD by Dr. M. K. Rout, Published by the author (1987). ■■■

Five Research Publications of Prof. Mahendra Kumar Rout

Published in the Journal of American Chemical Society & Nature

J. Am. Chem. Soc. 1953, 75, 4057.

[Contribution from the Mayurbhanj Chemical Laboratory, Ravenshaw College]

Preparation of 2-Substituted-4-methyl-5-carbethoxythiazoles. Condensation of Ethyl Acetoacetate with Substituted Thioureas

M. K. Rout and H. K. Pujari

Received February 16, 1953

A number of 2-substituted 4-methyl-5-carbethoxythiazoles and their mercurated derivatives have been prepared for evaluation of their biological activities.

In view of the usefulness of thiazole compounds[1-4] in therapy and for other effects, it was considered worthwhile to initiate investigation of a convenient method for the preparation of 2-aminothiazoles and their N-substituted derivatives.

For the synthesis of these compounds, several methods[5-7] have been used but the method suggested here (a modification of that of Dodson and King[8]) is more convenient and offers the advantage that different substituents, including even hetero rings, can be introduced easily at different positions of the thiazole nucleus, depending on the nature of ketone or ketonic ester taken as the starting material.

The observation of Dodson, Hlavacek and King[8,9] that ketones and ketonic esters react with thioureas in presence of halogens to give 2-aminothiazoles has been examined here as a preparative method for secondary thiazolylamines by condensing ethyl acetoacetate with substituted thioureas in the presence of iodine. The general experimental procedure adopted for the preparation of thiazoles has been illustrated by the synthesis of 2-phenyl-amino-4-methyl-5-carbethoxythiazole.

The thiazole bases have all been mercurated. On mercuration, the acetoxymercuri group enters the phenyl nucleus, since it has been found that 2-amino-4-methyl-5-carbethoxythiazole (in which the aromatic part is absent) does not undergo mercuration under the experimental conditions adopted in the present investigation. On the basis of earlier observations on the mercuration of aromatic amines,[10] it has been assumed that the acetoxymercuri group enters the para position (with respect to -NH group) of the aryl nucleus in the thiazole base and if the para position is blocked, ortho substitution occurs.

Experimental

Substituted Thioureas. The phenyl- and tolylthioureas[11] were prepared by the action of alcoholic ammonia on phenyl and tolyl isothiocyanates.[12] The chlorophenyl-, nitrophenyl-, carboxyphenyl- and naphthylthioureas[13] were obtained by the action of ammonium thiocyanates on the hydrochlorides of the corresponding bases.

Preparation of 2-phenylamino-4-methyl-5-carbethoxythiazo1e. A mixture containing 6.8g. of phenylthiourea (0.045 mole), 2.6 g of ethyl acetoacetate (0.02 mole) and 5.2 g of iodine (0.02 mole) was heated under reflux for 8 hours on a water-bath and again from 12 to 16 hours after removal of the condenser. The period of heating influences the yield of the final product. The crude reaction product was kept in contact with ether, with occasional shaking, for 48 hours (to remove unchanged ketone which otherwise led to a gummy product). Final removal of iodine was effected by treatment with thiosulfate

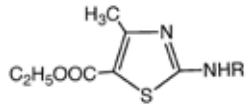
solution. The resulting product which was now nearly colorless was boiled with water and filtered hot. The residue was treated with concentrated ammonia to liberate the base and then filtered. The product was crystallized from 50% alcohol.

In some cases, the residue after boiling with water was gummy. In such cases, longer contacts (for 7 to 8 hours) with concentrated ammonia or even refluxing with concentrated ammonia on a water-bath was necessary. The gummy products hardened up after such treatment with only two or three exceptions. Thiazole bases which still resisted crystallization were obtained crystalline by treating their picrates with lithium hydroxide and extracting with ether.

Thiazoles derived from carboxyphenylthioureas dissolved in ammonium hydroxide. The bases, in such cases, were liberated by treatment with acetic acid.

TABLE I

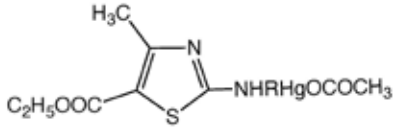
2-ARYLAMINO-4-METHYL-5-CARBETHOXYTHIAZOLE



Compound no.	Nature of substituent, R	Thiazoles M.p., °C.	Yield, %	N, % Calcd.	N, % Found	Picrate derivatives S, % Calcd.	S, % Found	M.p., °C.	Yield, %	S, % Calcd.	S, % Found
1	Phenyl	98	67	10.68	10.42	12.21	11.96	110	89	6.52	6.29
2	*o*-Tolyl	156	54	10.14	9.86	11.59	11.48	121	85	6.34	6.28
3	*p*-Tolyl	82–84	52	10.14	10.01	11.59	11.51	117	89	6.34	6.32
4	*o*-Chlorophenyl	105	42	9.42	9.26	10.77	10.62	120	80	6.10	5.92
5	*m*-Chlorophenyl	142	45	9.42	9.18	10.77	10.55	123	85	6.10	5.89
6	*p*-Chlorophenyl	130	43	9.42	9.20	10.77	10.60	118	82	6.10	5.94
7	*o*-Carboxyphenyl	Above 250	57	9.15	8.98	10.45	10.31	115	84	6.0	5.84
8	*m*-Carboxyphenyl	Above 250	52	9.15	8.96	10.45	10.27	124	82	6.0	5.86
9	*p*-Carboxyphenyl	216–218	50	9.15	8.92	10.45	10.42	119	80	6.0	5.90
10	*m*-Nitrophenyl	158	60	13.67	13.24	10.42	10.25	115	80	5.99	5.86
11	*p*-Nitrophenyl	106	58	13.67	13.34	10.42	10.32	115	75	5.99	5.94
12	α-Naphthyl	122	60	8.97	8.84	10.25	10.08	116	82	5.93	5.82
13	β-Naphthyl	110–112	62	8.97	8.79	10.25	10.15	192	80	5.93	5.91

TABLE II

2-(ACETOXYMERCURI-ARYLAMINO)-4-METHYL-5-CARBETHOXY THIAZOLE



Compound no.	Nature of substituent, R	M.p., °C.	Yield, %	Hg, % Calcd.	Hg, % Found
1	Phenyl	241–243	87	38.46	38.29
2	*o*-Tolyl	Above 260	80	37.31	37.12
3	*p*-Tolyl	Dec. 165	83	37.31	37.09
4	*o*-Chlorophenyl	112	78	36.03	35.92
5	*m*-Chlorophenyl	235	70	36.03	35.90
6	*p*-Chlorophenyl	188	80	36.03	35.94
7	*o*-Carboxyphenyl	Above 260	72	39.68	39.15
8	*p*-Carboxyphenyl	Above 260	75	39.68	39.03
9	*m*-Nitrophenyl	178	72	35.39	35.32
10	*p*-Nitrophenyl	165	70	35.39	35.20
11	α-Naphthyl	154–156	72	35.09	34.92
12	β-Naphthyl	172	70	35.09	34.82

Mercuration of Thiazoles. The thiazole (1 mole) in alcohol-dilute acetic acid solution was treated with an aqueous solution of mercuric acetate **(**1.3 moles) acidified with acetic acid. There was precipitation after some time. The reaction mixture was kept overnight. The precipitate was filtered and purified by repeated washing with hot water, alcohol and very dilute acetic acid.

The properties and analytical data of the resulting thiazoles are given in Table I and those of mercurated thiazoles in Table II.

The Ridenl-Walker Drop Dilution method was used for the comparative antibacterial action. The bactericidal activities change from group to group as follows: chloro > naphthyl > phenyl > tolyl > nitro > carboxy.

The maximum activities noted were 1:4000 in case of unmercurated thiazoles and 1:140,000 in case of mercurated thiazoles. Details of these investigations will be published elsewhere.

References

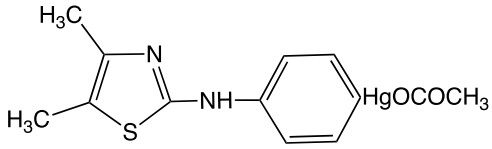
1. L. L. Bambas, THIS JOURNAL, **67**, 671 (1945).
2. M. Schaeffer and J. A. Toomey, *Am. J . Med.,* **6**, 667 (1945).
3. D. Bovet, J. Bablet and J. Fournel, *Ann. Inst. Pasteur,***79**, 105 (1946).
4. C. W. Sondern and P.J. Breivogel, U. S. Patent, 9,440,703 (May 4, 1948)
5. J. T. Gregory and R. A. Mathes, THIS JOURNAL, **74**, 1719 (1952); *ibid.,* **74**, 3867 (1952).
6. I. A. Kaye and C. L. Parris, *ibid.,* **71**, 2271 (1952).
7. C. D. Hurd and H. L. Wehrmeister, *ibid.,* **71**, 4007 (1949).
8. R. M. Dodson and L. C. King, *ibid,* **67***,* 2242 (1945).
9. L. C. King and R. J. Hlavacek, *ibid.,* **73**, 3722 (1950).
10. Newton Friend, "Textbook of Inorganic Chemistry," Vol. XI, Part I, S. S. Guha Sircar and M. K. Rout, *J. Indian Chem. Soc.* **29**, 779 (1952).
11. A. W. Hofmann, *Ber.,* **1**, 201 (1868).
12. F. B. Dains, R. *Q.* Brewster and C. P. Olander. *Org. Synthesis,* **1**, 447 (1921).
13. Ph. De Clermont and E. Wehrlin, *J. Chem. Soc.***1***,* 70 (1877); *Compl. rend.,* **88**, 347 (1900).

N A T U R E September 11, 1954, Vol 174, 516.

Use of Mercurated Thiazoles as Fungistatic Agents

In the course of our studies on methods of synthesis of thiazole derivatives and their possible useful applications, it appeared of interest to examine their fungicidal properties, since these contain in a cyclic ring structure the grouping N-C-S which is present in known fungicides like tetramethyl thiuram disulphide, thioureas and thioacetamide. Some new mercurated derivatives of thiazoles have also been prepared by us, and since mercury is a powerful fungicidal element, phenyl mercuric acetate being actually used for such diseases as apple scab, was considered worth while to test these mercurated thiazoles for their fungicidal action.

The thiazole compounds employed were thirteen new 2-substituted-amino 4-5-dimethyl thiazoles prepared by reaction of ethyl methyl ketone with substituted thioureas in presence of iodine by a modified method already reported by us[1]. These compounds have been mercurated by treatment with mercuric acetate in acetic acid. The position taken up by the acetoxy mercuric group has also been fixed by us[2]. The resulting mercurated thiazoles have been assigned the structure:



All the twenty-six new thiazoles (thirteen unmercurated and the rest mercurated) have been tested. For fungicidal assay, the method of Montgomery and Moore[3] was used. *Alternania polanduii Ayyangar* was used as the fungus indicator.

The unmercurated thiazoles completely inhibited spore germination even at a concentration of 100 parts per million. At 250 p.p.m. the percentage of inhibition was only 25-30 per cent.

The mercurated thiazoles were, however, more powerful, being 100 per cent effective in inhibiting spore germination of the fungus even at a concentration of 2 p.p.m.

Detailed investigations will be published elsewhere.

Thanks are due to the Board of Scientific and Industrial Research, Orissa, for supporting this research with a grant. ■■■

M. K. Rout
H. Pujari
N. K. Das
Department of Chemistry, Ravenshaw College,
and
Department of Botany, Ravenshaw College,
Cuttack 3, Orissa (India).
May 20.

1. Pujari, H. K., and Rout, M. K., *J. Amer. Chem. Soc.*, **75**, 4057 (1953).
2. Pujari, H. K., and Rout, M. K., *J. Ind. Chem. Soc.*, **31**, 257 (1954).
3. Montgomery and Moore, *J. Pomol. and Hort. Sci.*, **15**, 253 (1938).

J. Am. Chem. Soc. 1955, 77, 2427.

[Contribution from the Mayurbhanj Chemical Laboratory, Ravenshaw College, Utkal University]

2-β-Naphthylimino-4-thiazolidone and its Derivatives

M. K. Rout and G. N. Mohapatra

Received August 16, 1954

Abstract. An improved method of synthesis of thiazolidones is illustrated by the preparation of 2-β-naphthylimino-4-thiazolidone. The condensation products of the above thiazolidone with aldehydes and their bromine derivatives also are described. The bromine derivatives have been screened for fungicidal action and the arylidene derivatives for use as analytical reagents.

In view of the close relationship between thiazolidones and thiazoles, the presence of a thiazolidine moiety in Penicillin and the reported use of thiazolidone compounds as anesthetics,[1] anticonvulsants[2] and amebacidal agents,[3] it was of interest to explore newer methods of synthesis of thiazolidones and new applications of them.

Several methods are available for synthesis of thiazolidones.4-6 The present method (illustrated by the preparation of 2-β-naphthylimino-4-thiazoldone) consists of heating arylthiocarbamides with chloroacetic acid in absolute alcohol in the presence of anhydrous sodium acetate and is superior to the method of Desai, Hunter and Koppar,[5] since the procedure adopted here is more rapid and does not involve the isolation of the intermediate substituted formamidinethiolacetic acid which was obtained by Desai and Hunter[6] by a rather prolonged operation. The thiazolidone structure for this compound to the exclusion of a possible thiohydantoin structure has been confirmed by establishing (a) the cyclic nature of the sulfur atom (by heating with mercuric oxide and chloroacetic acid), (b) by testing for the presence of S-CH_2-CO group by Andreasch's test,[6] (c) by boiling with hydrochloric acid and then establishing the structure of the glycolide formed by boiling with hydrochloric acid and then establishing the structure of the glycolide formed by its unambiguous synthesis from chloroacetic acid and β-naphthylthiourethan. When the reaction was carried out in refluxing alcohol, following the method of preparation of the diphenyl analog,[7] a compound fairly soluble in water and acidic in nature was obtained. It was found to be identical with β-naphthylformamidinethiolacetic acid hydrochloride prepared by Desai and Hunters[5] by a different procedure.

The thiazolidone compound thus prepared has been condensed with aldehydes. In view of the fact that closely related compounds like benzylidenerhodanine[8] and 2,5-dimercapto-1,3,4-thiodiazole[9] already have found use as analytical reagents, the thiazolidone compound and its condensation products have been tested for use in this direction. The condensation products with aldehydes are expected to be more effective reagents than the parent thiazolidones in view of the decided superiority of arylidenerhodanine over rhodanine as reagents in inorganic analysis.[10]

On screening the arylidene derivatives for use as analytical reagents, formation of metallic complexes was observed with silver, mercury and copper salts. Conditions of complete precipitation especially *p*H, were then studied with different arylidene derivatives and it was found that the *p*-dimethylaminobenzylidene derivative was more useful than others, effecting complete precipitation of the metal at all *p*H's in the acidic range and was therefore taken up for more detailed investigations. Results indicate that this is a very satisfactory reagent for estimation of silver.

The amount of silver found on ignition in the silver compound on the basis of the proposed structure agrees within 0.2% with the amount of silver added. Details of the analytical tests will be published elsewhere.

Both the thiazolidone compound and its arylidene derivatives also have been brominated in the hope of obtaining very powerful fungicides in view of the established fact that halogens confer fungicidal activity.[11] By undertaking bromination, it was possible also to test the validity of the assumption made by Hunter and co-workers[12] that the keto-enol system present in tetrahydrothiazole derivatives does not take part in the production of the bromine addition compound. Since the assumption was found to be correct in the present case and bromine did not enter the keto-enol system, in order to have brominated thiazolidones (with bromine attached to the nucleus), the arylidene derivatives were treated with bromine. As expected, bromine entered the unsaturated bond, proof for which has been obtained as follows. When the parent aryliminothiazolidone compound after reaction with bromine in chloroform was subsequently treated with sulfurous acid, the original compound was regenerated, thus excluding the possibility of (a) addition of bromine to the phenylimino grouping and (b) attachment of bromine to the aryl nucleus or to the nuclear sulfur atom in the aryliminothiazolidone compound. When, however, the bromine derivative of the arylidenearyliminothiazolidone compound (obtained after treatment with sulfurous acid) was refluxed with alcoholic potassium hydroxide, potassium bromide precipitated, indicating that the bromine was attached to the aliphatic fragment of the molecule. The bromine content also corresponded to the presence of two bromine atoms which therefore must have been added to the unsaturated ethylenic bond.

For assaying fungicidal activity, the method of Montgomery and Moore[13] with slight modifications was used. *Alternania polanduii* Ayyangar was used as the fungus indicator. The thiazolidone compounds completely inhibited spore germination even at a concentration of 50 parts per million. The brominated thiazolidones were, however, more powerful, completely inhibiting spore germination even at a concentration of six to eight parts per million. Details of fungicidal tests will be published elsewhere.

Experimental

2-β-Naphthylimino-4-thiazolidone (I). β-Naphthylthio-4-thiazolthiourea (6.1 g., 0.03 mole) prepared by reaction of 8-naphthylamine hydrochloride with ammonium thiocyanate was heated under reflux with chloroacetic acid (3.0 g., 0.031 mole) in the presence of anhydrous sodium acetate (3.0 g.) and absolute alcohol (25 cc.) on the water-bath for 3 to 4 hours. The reaction mixture was poured into cold water, and the precipitate was washed several times with boiling water to remove sodium acetate, and finally crystallized from alcohol; yield 7g., m.p. 225°.

Anal. Calcd. for $C_{13}H_{10}N_2OS$: C, 64.46; H, 4.13; S, 13.22; N, 11.57. Found: C, 64.12; H, 4.03; S, 13.1; N, 11.37.

2-β-Naphthylimino-5-benzal-4-thiazolidone (II) - The thiazolidone compound (2.3 g. 0.0096 mole) and benzaldehyde (1 g., 0.0095 mole) were refluxed in glacial acetic acid (20 cc.) in the presence of anhydrous sodium acetate (1.5 g.) for 3 hours. The clear solution on dilution with water gave a deep yellow precipitate. After standing overnight, the precipitate was collected, washed well with water and then recrystallized from alcohol: yield 85%, m.p. 321°.

Anal. Calcd. for $C_{20}H_{14}N_2OS$: C, 72.72; H, 4.24; S, 9.69; N, 8.48. Found: C, 72.6; N, 4.1; S, 9.55; N, 8.41. Data on other arylidenethiazolidones are recorded in Table I.

Bromination of II. A solution of 5-benzal-2-β-naphthyl-imino-4-thiazolidone (II) (1 g.) in chloroform

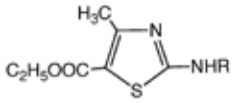
(30 cc.) was treated with bromine (1 cc.) in 4 cc. of chloroform at 0-3° and the mixture was kept in ice for an hour. As no crystallization occurred, the solution was concentrated under reduced pressure at laboratory temperature when a vermillion-colored bromo addition compound **III** was formed. On treatment with sulfurous acid and basification with ammonia, this substance gave the dibromo derivative of 5-benzal-2-β- naphthylimino-4-thiazolidone (IV), m.p. 228°, yield 85%.

Anal. Calcd. for $C_{20}H_{14}N_{20}SBr_2$: Br, 32.65. Found: Br, 32.35.

The labile bromine content in the unstable perbromide compound was estimated by dissolving the bromo addition compound in chloroform, to which a drop or two of acetic acid had been added, and adding a strong aqueous solution of potassium iodide. The iodine liberated on shaking the mixture was titrated with *N/20* thiosulfate. The amount of labile bromine found corresponded to the presence of 2 to 3 atoms of labile bromine in the molecule. Table II describes the properties of bromine derivatives of other thiazolidones.

TABLE I

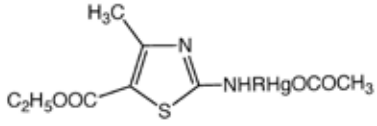
2-ARYLAMINO-4-METHYL-5-CARBETHOXYTHIAZOLE



Compound no.	Nature of substituent, R	Thiazoles M.p., °C.	Yield, %	N, % Calcd.	N, % Found	S, % Calcd.	S, % Found	Picrate derivatives M.p., °C.	Yield, %	S, % Calcd.	S, % Found
1	Phenyl	98	67	10.68	10.42	12.21	11.96	110	89	6.52	6.29
2	*o*-Tolyl	156	54	10.14	9.86	11.59	11.48	121	85	6.34	6.28
3	*p*-Tolyl	82–84	52	10.14	10.01	11.59	11.51	117	89	6.34	6.32
4	*o*-Chlorophenyl	105	42	9.42	9.26	10.77	10.62	120	80	6.10	5.92
5	*m*-Chlorophenyl	142	45	9.42	9.18	10.77	10.55	123	85	6.10	5.89
6	*p*-Chlorophenyl	130	43	9.42	9.20	10.77	10.60	118	82	6.10	5.94
7	*o*-Carboxyphenyl	Above 250	57	9.15	8.98	10.45	10.31	115	84	6.0	5.84
8	*m*-Carboxyphenyl	Above 250	52	9.15	8.96	10.45	10.27	124	82	6.0	5.86
9	*p*-Carboxyphenyl	216–218	50	9.15	8.92	10.45	10.42	119	80	6.0	5.90
10	*m*-Nitrophenyl	158	60	13.67	13.24	10.42	10.25	115	80	5.99	5.86
11	*p*-Nitrophenyl	106	58	13.67	13.34	10.42	10.32	115	75	5.99	5.94
12	α-Naphthyl	122	60	8.97	8.84	10.25	10.08	116	82	5.93	5.82
13	β-Naphthyl	110–112	62	8.97	8.79	10.25	10.15	192	80	5.93	5.91

TABLE II

2-(ACETOXYMERCURI-ARYLAMINO)-4-METHYL-5-CARBETHOXY THIAZOLE



Compound no.	Nature of substituent, R	M.p., °C.	Yield, %	Hg, % Calcd.	Hg, % Found
1	Phenyl	241–243	87	38.46	38.29
2	*o*-Tolyl	Above 260	80	37.31	37.12
3	*p*-Tolyl	Dec. 165	83	37.31	37.09
4	*o*-Chlorophenyl	112	78	36.03	35.92
5	*m*-Chlorophenyl	235	70	36.03	35.90
6	*p*-Chlorophenyl	188	80	36.03	35.94
7	*o*-Carboxyphenyl	Above 260	72	39.68	39.15
8	*p*-Carboxyphenyl	Above 260	75	39.68	39.03
9	*m*-Nitrophenyl	178	72	35.39	35.32
10	*p*-Nitrophenyl	165	70	35.39	35.20
11	α-Naphthyl	154–156	72	35.09	34.92
12	β-Naphthyl	172	70	35.09	34.82

Acknowledgement. The authors are grateful to Dr. B. Padhi, Department of Botany, Ravenshaw College, for help in carrying out the fungicidal tests and to Board of Scientific & Industrial Research, Orissa, for a research grant.

References

1. A. R. Surrey, THIS JOURNAL, **71**, 3354 (1949).
2. H. D. Troutman and L. M. Long, *ibid.,* **70**, 3436 (1948).
3. A. R. Surrey and R. A. Cutler, *ibid..***76**, 578 (1954).
4. A. R. Surrey, *ibid.,* **69**, 2911 (1947).
5. R. D. Desai, F. G. Hunter and L. G. Koppar, *Rec. trav. chim.,* **54**, 118 (1935).
6. R. Andreasch, *Ber.*, **l2**,1385 (1879).
7. S. B. Dutt and D. P. Ahuja, *J. Indian Chcm.* Soc., **18**, 12(1951).
8. I. M. Kolthoff, THIS JOURNAL, **52**, 2222 (1930).
9. P. Ray and J. Gupta, *J. Indian Chcm. Soc.,* **l2**, 308 (1935).
10. G. Ettisch and J. Tamchyna, *Mikrochcm.,* **10**, 92 (1931).
11. Goldsworthy and Green, *Phytopath,* **29**, 700 (1939).
12. M. O. Farooq and R. F. Hunter, *J. Indian Chem.* Soc., **9**, 545 (1932)
13. Montgomery and Moore, *J. Pomol and Hovt. Sci*., **15**, 253 (1938)

J. Am. Chem. Soc. 1957, 79, 1763.

Communication to the Editor

THE STRUCTURE OF ASPIDOSPERMINE

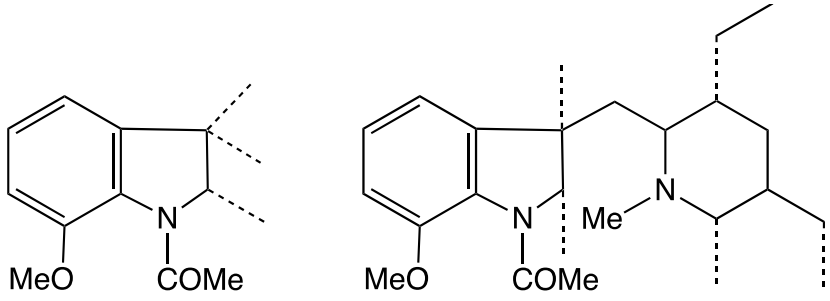
Harold Conroy, Peter R. Brook, Mahendra K. Rout, and Norman Silverman

Department of Chemistry, Brandeis University, Waltham 54, Massachusetts

Received February 5, 1957

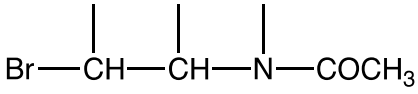
Sir:

Contrary to published reports, the alkaloid aspidospermine,[1] $C_{22}H_{30}O_2N_2$ contains an *N*-methyl grouping; this is shown by the presence of an intense singlet peak at 1164 cycles[2] in the nuclear magnetic resonance spectra of aspidospermine and of deacetylaspidospermine, and by a direct Herzig-Meyer determination upon aspidosine (calcd. for one N-methyl: 5.04; found: 4.72). Aspidospermine had been shown[1d] to contain the 7-methoxy-1-acetylindoline system (I), to give 3,5-diethylpyridine and, presumably, 3-ethylindole and/or skatole, upon zinc dust distillation[1c] and to contain one additional C-methyl grouping.[1b] The NMR spectra strongly suggest the presence of three aminomethine hydrogen atoms >CHN- and the absence of any methylene groups adjacent to nitrogen[3]; the latter conclusion is consistent with our failure to prepare any corresponding lactam in oxidation experiments. In consideration of the certain relationship to tryptamine we propose the part-structure (II) and from the evidence for the lack of additional unsaturation we note that the two C-C bonds are missing in II; one bond must join the alpha carbon of the piperidine ring to either the *alpha* or *beta* indolic positions.[4]

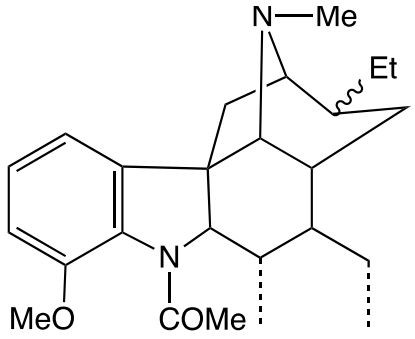


I II

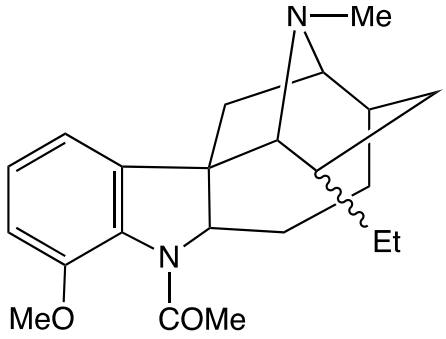
The von Braun degradation with aspidospermine leads to a bromocyanamide, m.p. 178° (calcd. for $C_{23}H_{30}O_2N_3Br$: C, 59.98; H, 6.57; N, 9.13; found: C, 59.35, 59.98; H, 6.67, 6.28; N, 8.55, 9.77) and not to loss of methyl bromide or to any other cyanamide; the bromocyanamide is converted to aspidospermine merely by reflux with hot aqueous ethanol or to deacetylaspidospermine by reflux with dilute acid. Clearly N_b is bonded to some center which can undergo displacement with extraordinary ease.[5] Zinc dust in methanolic ammonium chloride gave a cyanamide, m.p. 188° (calcd. for $C_{23}H_{31}O_2N_3$: N, 11.01, found: N, 11.27) in which hydrogen replaces bromine; there is no evidence of unsaturation and there is no NH band in the infrared spectrum of the debrominated substance. Structures where the corresponding bromocyanamide contains the grouping



should have allowed β-elimination rather than replacement at this stage; moreover, none of these provides a satisfactory explanation for the course of the von Braun reaction or its easy reversal; we conclude that the piperidine ring must be joined to the beta indolic position. The two possibilities are III and IV:

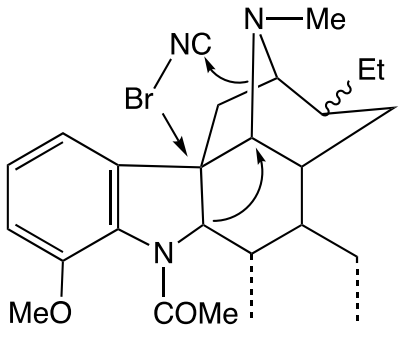


III

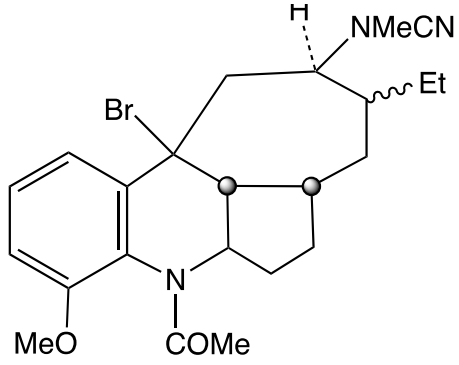


IV

Although we know of no experimental evidence as yet conclusively eliminating either of these, the structure III is preferred for biological reasons.[6] On the basis of III the abnormal von Braun degradation is interpreted in terms of a rearrangement transition state (V) meeting eminently well all stereoelectronic requirements. The bromocyanamide, then formulated as VI, in fact does not appear to contain the CHBr grouping, for no new peak is evident in the region *(ca.* 1090 cycles, as in isopropyl bromide) expected in its NMR spectrum.



V



VI

Acknowledgment. We wish to thank Dr. E. Schlittler for a generous gift of aspidospermine, Dr. Aksel Bothner-By for his assistance with the NMR spectrometer and Dr. S. M. Nagy for the analyses. The work is supported by grants from Research Corporation and from the National Institutes of Health.

(1) (a) A J. Ewins, *J . Chem. Soc.***105**, 06, 2738 (1914); (b) E. Schlittler and M. Rottenburg, *Heiv. Chim.* Acta, **31**, 446 (1948); (c) B. Witkop, THIS JOURNAL, **70**, 3712 (1948); (d) B. Witkop and J. B. Patrick, *ibid.*, **76**, 5603 (1954).

(2) At 40.01 mc./sec. on an arbitrary scale wherein the toluene aromatic proton resonance peak is assigned a value of 1000 cycles and the toluene methyl proton peak assigned 1197 cycles. The proton

resonance peak of water on this scale is at 1067 cycles. Spectra were examined in carbon tetrachloride or chloroform solution with an internal toluene reference capillary on a Varian Associates High Resolution Nuclear Magnetic Resonance Spectrometer with Superstabilizer.

(3) In our experience with NMR spectra of a number of compounds containing $-CH_2-N<$ groupings taken in chloroform or carbon tetrachloride solution resonance fell within the range 1115-1150 cycles, usually within the range 1120-1140 cycles. While the NMR curve for aspidospermine showed a weak, broad peak at 1127 cycles, its integrated intensity corresponded to no more than one proton, so that it cannot represent a methylene group. A peak at 1097 cycles corresponding to two protons in area is ascribed to two tertiary hydrogens adjacent to nitrogen and another peak at 1086 cycles is assigned to a single tertiary hydrogen next to the acetylated N_a. Other features were: aromatic protons, 980; metboxyl, 1100; acetyl C-methyl, 1168; ethyl C-methyl, 1227 and miscellaneous methylene and methine protons, 1127-1210 cycles.

(4) We reject an eserine-like structure: (i) because of the difficulty in rationalization of formation of 3,5-diethylpyridine (ref. 1c), (ii) because aspidospermine methiodide, m.p. 268-272° (calcd. for $C_{23}H_{33}N_2O_2I$: C, 55.63; H, 6.70; N, 5.64; found: C, 55.14; H, 6.84, N, 5.63) gives upon acid hydrolysis a deacetyl methiodide which shows no tendency to revert to the expected indolenine-tertiary amine with alkali and is stable to sodium borohydride, (iii) because although deacetylaspidospermine is slowly degraded by lithium aluminum hydride at higher temperatures the product still contains a tertiary N_b and (iv) the change in *pK* at N_b upon acetylation at N_a is negligible (ref. 1d).

(5) The methiodide, in contrast, gave upon Hofmann degradation merely a mixture of deacetylaspidospermine and its N_a-methyl derivative substantially identical to that produced in a lithium alumiuum hydride reduction of vallesine.

(6) The expression (III) is sufficiently similar in relevant detail to that proposed by Openshaw (*cf.* "Structural Relations of Natural Products," by R. Robinson, Oxford University Press, Oxford, 1955, p. 117) and by Witkop (ref. 1d) so that Openshaw's biogenesis could be adapted to fit. A simpler, and perhaps preferable, scheme pictures the biogenetic derivation of III with appropriate Mannich/aldol condensations of precursors formed from tryptophan and phenylalanine, where the phenylalanine suffers typical ring cleavage, but between its *ortho* and *meta* positions, to give a *butylidenesuccindialdehyde equivalent.* ■■■

J. Am. Chem. Soc. 1958, 80, 5172.

Aspidospermine. II. Nuclear Magnetic Resonance Spectra and Classical Degradations

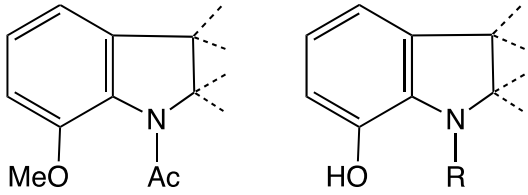
Harold Conroy, Peter R. Brook, Mahendra K. Rout, and Norman Silverman

Department of Chemistry, Brandeis University, Waltham 54, Massachusetts

Received March 8, 1958

Abstract. Nuclear magnetic resonance spectra of the alkaloid aspidospermine and a number of its degradation products are recorded and their structural implications discussed. The Hofmann, Emde and von Braun degradations have been carried out. An N-methyl group, thought previously to be present on the basis of n.m.r. spectra and direct Herzig-Meyer determinations, has been excluded by these classical methods and by the fact that inactive aspidospermine can be recovered by decomposition of its radioactive N-methyl-C-14 methiodide. Evidence obtained leads to the formulation of the environment a N_b.

Aspidospermine, $C_{22}H_{30}O_2N_2$, the alkaloids of *Aspidosperma quebracho blanco* and of *Vallesia glabra,* was first studied from a chemical viewpoint by Ewins[2]; he found it to contain a methoxylated aromatic ring, an acetamido grouping and a tertiary, basic nitrogen atom. Spectral comparisons of aspidospermine



I II

and derivatives with model substances allowed Openshaw,[3] Witkop[4] and their coworkers to conclude that a 7-methoxy-1-acetylindoline system (I) is present. Deacetylaspidospemine, obtained by acid hydrolysis of aspidospermine, or alternatively from the corresponding formamide (vallesine), contains one C-methyl grouping[5]; the isolation of propionic acid in the Kuhn-Roth determinatioin[3d,6] indicates that this is actually a C-ethyl grouping. The molecule apparently contains no additional centers of unsaturation, so its composition taken together with I implies a pentacyclic structure.

The proton magnetic resonance spectra of aspidospermine (curves A and B) show peaks at 980 c.p.s.[7] for the aromatic hydrogen atoms, at 1100 c.p.s. for the O-methyl, 1168 c.p.s. for the acetyl C-methyl and 1227 c.p.s. for the ethyl C-methyl; the multiplets near 1200 c.p.s. are due to the various C-methylenes. The spectrum (curve C) of N-acetylaspidosine (II, R = Ac) does not contain the O-methyl peak while the curve (D) for deacetylaspidospermine does not contain the intense 1168 c.p.s. maximum. The presence of the strong resonance at 1164 c.p.s., midway between the peaks due to the O-methyl and the C-methyl suggested the possibility of an N-methyl group; although Djerassi, *et al.,* have recently reported low N-methyl values for aspidospermine (calcd. for one N-methyl, 4.22; found,[9]1.83, 0.50), these could not be regarded as significant since Witkop[10] has shown that other materials, *e.g.,* yohimbol, which certainly do

not contain this grouping give similar low "blank" values in the Herzig-Meyer determination. Otherwise, it seemed possible that these results might be ascribed to incomplete removal of the O-methyl prior to the N-methyl[1] with the standard procedure. The presence of an N-methyl was hardly supported by the alkaloid's behavior in the von Braun degradation *(vide infra)*; we have therefore devised a more absolute method for detection of the controversial function.

Although Ewins[2] reported that aspidospermine does not react with methyl iodide except at higher temperatures to give what was described by him as a complex mixture, we experienced no difficulty in the preparation of aspidospermine N_b-methiodide[1] by the prolonged action of methyl iodide on the base in a sealed tube at 100°.[11] Since the pK_a (7.30)[4b] is not abnormal, this low reactivity does indicate an exceptional steric block at the tertiary nitrogen; still the quaternary salt can be obtained nearly quantitatively under the conditions used. The salt is smoothly converted back to the free tertiary base on pyrolysis[11] (dry distillation *in vacuo*). In the event that aspidospermine contains an N-methyl, it should have been possible to prepare a radioactive specimen by pyrolytic decomposition of the labeled salt formed by combination of the alkaloid with C-14 tagged methyl iodide.

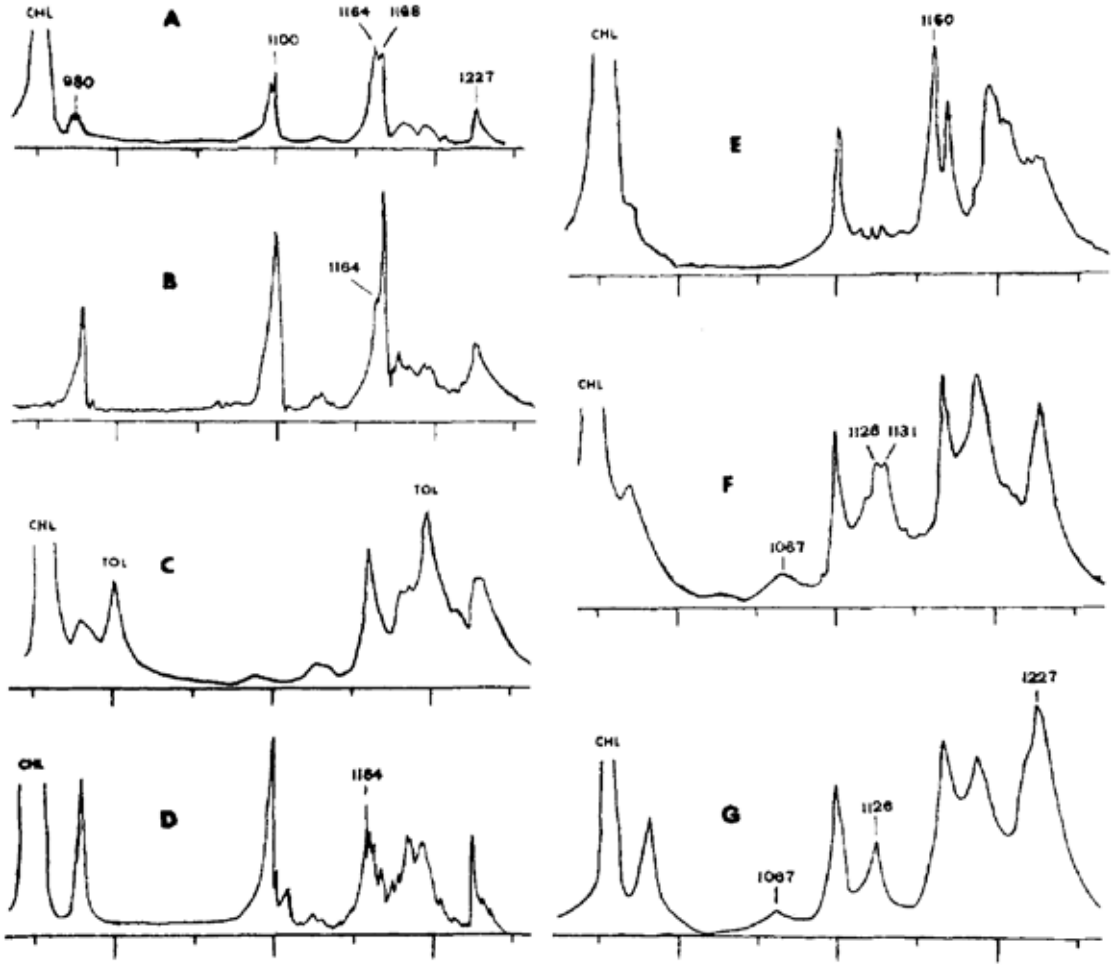
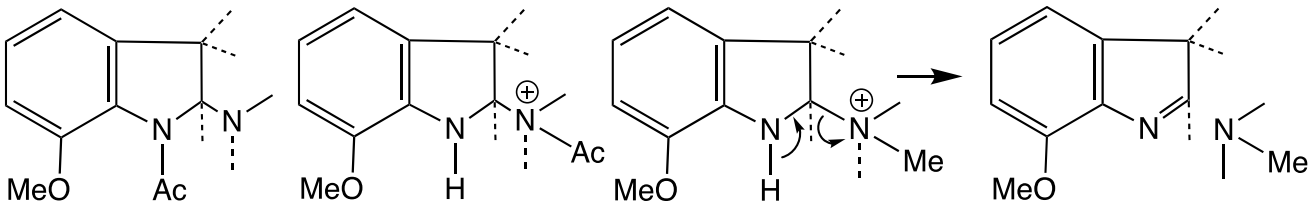


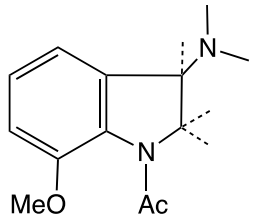
Fig. l. Nuclear magnetic resonance spectra: curve A, aspidospermine; curve B, aspidospermine in carbon tetrachloride; curve C, N-acetylaspidosine; curve D, deacetylaspidospermine; curve E, aspidospermine dihydromethine; curve F, aspidospermine bromocyanamide; curve G, aspidospermine cyanamide.

The aspidospermine preparation resulting from distillation of the labeled methiodide was carefully purified by chromatography to eliminate any trace of unchanged precursor and then recrystallized to a constant specific count rate of the barium carbonate resulting from its combustion. *The free base so obtained was nearly completely inactive*, with less than 3% of the C-14 originally incorporated having been recovered. While the two methyl groups in the supposed dimethylammonium cation need not be equivalent it is very difficult to believe that the ejection process could be so selective; indeed such stereoselectivity was sought for and found to be quite absent in a recent study of the formation and decomposition of C-14 labeled tropine methochloride.[12] The retention of a small trace of radioactivity could find explanation in the possibility of some O-methyl exchange at the high temperature of the decomposition. This result then undermines the earlier conclusion; other evidence obtained mill, in the sequel, fully retire the N-methyl hypothesis.

A positive result in the Herzig-Meyer N-methyl determination is virtually meaningless in this series, even when, as in the case mentioned, a full equivalent of volatile alkyl iodide is generated. But the n.m.r. data must be reckoned with. If the intense 1164 C.P.S. peak (curves A, B and D) is not associated with an N-methyl group then its position is still indicative of protons in proximity to nitrogen and its strength suggests at least two, or probably four, such species, as in $-CH_2N<$ or $-CH_2NCH_2-$. That the latter idea is actually correct was shown ultimately by chemical work; nevertheless the observed peak location is somewhat atypical, the N-methylene resonance exhibited by a number of model compounds falling within the range 1113-1150 c.p.s.[13]



Witkop[4b] rejected the possibility that aspidospermine contains an eserine-like unit (III) on grounds, (i) that the increase in basicity attending the conversion of aspidospermine (*pK'* 7.30) to deacetylaspidospermine (*pK'* 7.36) was too small for such close juxtaposition of nitrogens and (ii) because treatment of deacetylaspidospermine with acylating agents did not result in ring cleavage but merely in acylation at N_a. Ground (i) appears reasonable, but (ii) could perhaps be discounted. With sufficient steric hindrance at N_b the N_b acylammonium ion (IV) required for cleavage might form at a rate negligible in comparison to that of simple acylation at N_a. We have adduced some further evidence on the point. Acid hydrolysis of aspidospermine N_b-methiodide yields the deacetyl methiodide,[1,3d] which on the assumption of III would be V, and which must certainly be expected to cleave to VI as shown, at least reversibly, with alkali. But deacetylaspidospermine N_b-methiodide is stable to alkali, and to alkaline sodium borohydride solution, which should have removed any VI from equilibrium. Furthermore compounds containing the N-C-N linkage are ordinarily sensitive to lithium aluminum hydride reduction, but deacetylaspidospermine is stable to this reagent under the usual conditions and only very slowly at higher temperatures is degraded to a poorly characterized material which, as it was shown, still contains a tertiary N_b.



VII

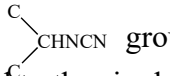
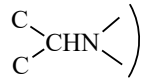
A similar objection applies to the part structure VII in which N_b is directly connected to the β-indolinic position. As a benzylamine type, VII would be expected to suffer cleavage of the C-N bond by catalytic hydrogenolysis; this reaction does not proceed. Especially with the modification of VII containing hydrogen at the α-indolinic carbon, Hofmann elimination of the N_b-methiodide would be expected to be facile and to result in an indole; again this is not observed (*vide infra*). Clearly N_b is not directly substituted on the (benzo)pyrroline nucleus.

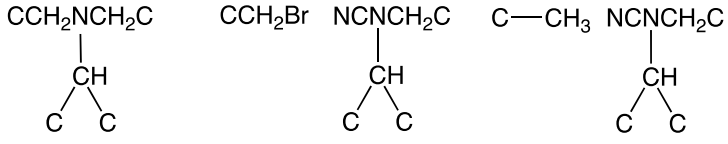
When aspidospermine N_b-methiodide was heated with potassium hydroxide in a sublimation apparatus in vacuo a colorless, viscous, oily base was obtained as distillate. Unfortunately this is no tetracyclic unsaturated amine formed in a normal Hofmann elimination but a mixture of deacetylaspidospermine with N_a-methyldeacetylaspidospermine.[4b] The composition of material produced in one experiment was such that the infrared spectrum was found to be superimposable in every detail with the spectrum of the total crude product of lithium aluminum hydride reduction of vallesine (formyldeacetylaspidosperniine).[1] [4] Aspidospermine methosulfate is formed when the alkaloid and excess methyl sulfate are kept together at room temperature for a week or more; both the methosulfate and the methiodide could be converted to the same (N_b) methoperchlorate. Hofmann degradation of the methosulfate failed similarly, although in one experiment the oily base obtained was shown to be the N_a-methyldeacetylaspidospermine in essentially pure condition. The situation finds a parallel in the degradation of gelsemine methiodide, where N_a-methylgelsemine is formed and elimination does not occur.[15] It is at odds with the statement of Openshaw, *et a1.*,[3d] that their preliminary observations indicate that aspidospermine methiodide is susceptible to Hofmann degradation. Acting on the chance that the discrepancy might have resulted from the presence of inorganic salts with our procedures, we adopted the method involving pyrolysis of the methohydroxide prepared from the methiodide with silver oxide, but this led again to deacetylaspidospermine as the only product identified. In the absence of the hoped for elimination reaction[16] we conclude only that the environment at N_b lacks any hydrogen atoms *trans*, *beta* and *accessible*.

Sodium-liquid ammonia reduction of aspidospermine for a short time (five minutes) gave largely unchanged material, but reaction for a longer time (twenty minutes) gave some deacetylaspidospermine by ammonolysis or reduction of the amide grouping. Deacetylaspidospermine was quite unchanged by excess sodium in liquid ammonia after 2.5 hours. In contrast to these results and to the results of Hofmann elimination attempts, sodiumliquid ammonia reduction (Emde degradation) of aspidospermine N_b-methiodide was successful and led smoothly to the desired base, aspidospermine dihydromethine. This was acccompanied by a small amount of demethylated material, i.e., aspidospermine. The dihydromethine was characterized by its perchlorate, its methiodide and its methoperchlorate; acid hydrolysis gave the deacetyl derivative characterized as the N_a-benzoyldeacetylaspidospermine dihydromethine. The ultraviolet spectrum of the Emde base is very similar to that of aspidospermine itself, while the infrared spectrum confirms survival of the acetyl group; as expected, the infrared and ultraviolet spectra of the deacetylated derivative are comparable to those of deacetylaspidospermine. The

n.m.r. spectrum (curve E) of aspidospermine dihydroinethine contains an "N-methyl" peak at 1160 c.p.s. of twice the intensity[17] of the neighboring acetyl C-methyl peak at 1167 c.p.s. and a somewhat stronger resonance near 1190 c.p.s. (methylene region); there is no increase in relative area in the C-methyl region (1225-1230 c.p.s.). That the number of C-methyl groups is no larger in the Emde base was confirmed by Kuhn-Roth determinations, so it is clear that the course of Emde reduction has not involved fission at any N-methylene group which might be present. Of the remaining possibilities, viz., separation of N_b from a tertiary or from a secondary position, we favor the latter somewhat on the basis of additional information contained in the n.m.r. curves.[18]

The von Braun cyanogen bromide degradation of aspidospermine was successful, although it took a course unexpected on the basis that the alkaloid contains an N-methyl group. In the case of simple trialkyl amines the smallest group, usually that most susceptible to bimolecular displacement, is lost as alkyl bromide[19]; tropane,[20] for example, is demethylated quantitatively (except for quarternary bromide). A crystalline bromocyanamide, $C_{23}H_{30}O_2N_3Br$, corresponding simply to the addition of cyanogen bromide, was obtained from aspidospermine. The substance is not a salt-like quaternary cyanoammonium bromide, since its solution in ethanol gives no immediate precipitate with silver nitrate; its infrared spectrum shows an intense sharp peak at 2198 cm^{-1} (4.55 μ), typical of the cyanamide grouping, and its ultraviolet spectrum is similar to that of aspidospermine. The n.m.r. spectrum (curve F) is particularly instructive. In addition to resonance at 1100 c.p.s. (methoxyl), 1167 (acetyl C-methyl), 1187 (various C-methylenes) and 1227 (ethyl C-methyl) the curve shows a new doublet (area ≅ 4 protons) at 1126 and 1131 c.p.s. and a new, weaker band (area ≅ 1 proton) near 1067 c.p.s. The peak at 1164 c.p.s. observed in previous spectra is absent.

The grouping >CH-Br might be expected to contribute a band near 1091 c.p.s. as it does in the case of isopropyl bromide; this resonance is not observed. We now propose that von Braun cleavage involves the change VIII → IX, and consider the following assignment: (i) The 1131 c.p.s. peak is due to the CCH_2Br grouping. A -CH_2Br resonance multiplet is observed near 1125 c.p.s. in the n.m.r. spectra of ethyl, *n*-propyl and *n*-butyl bromides. (ii) The 1126 c.p.s. peak is due to the CCH_2NCN grouping. If the two N-methylene functions of aspidospermine appear in the n.m.r. at 1164 c.p.s. then it is reasonable to suppose that the substitution of the electron-withdrawing cyano group upon N_b in IX will cause a shift (- 38 c.p.s.) of the remaining N-methylene resonance to a lower field (cf. the case of dimethylformamide (~ -25 c.p.s.).[8] (iii) The 1067 c.p.s. peak is due to the  grouping. The peak at 1097 c.p.s. in the spectrum of aspidospermine (curve A) is then assigned to the single proton  and in the cyanamide is shifted downscale by very nearly the same amount (~ -30 c.p.s.).



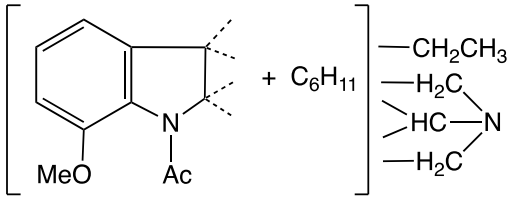
VIII IX X

These conclusions must be confirmed by the chemical evidence. The first-order solvolysis rate constant for this bromocyanamide (IX) was found to be $k_1 = 7.0 \times 10^{-6}$ $sec.^{-1}$ (80% aqueous ethanol at 58°) of the same order as observed with other primary alkyl bromides.[21] The product of this solvolysis is aspidospermine, not the ethyl ether which might have been expected. Similarly an attempt at mild acidic hydrolysis of the bromocyanamide yielded deacetylaspidospermine, and aspidospermine was formed even upon

attempted vacuum distillation of the bromocyanamide. So far as we are aware this is the first example of facile reclosure of a von Braun bromocyanamide under conditions mild enough to exclude hydrolysis of the cyanamido group *per se* as a separate mechanistic step; a normal cyanamide is quite unaffected by ethanol and ordinarily required drastic conditions for hydrolysis to the corresponding secondary amine.[22] The relative ease of ring closure here apparently reflects a lowered entropy requirement for cyclization, as has been observed often with complex, highly substituted molecular systems, and suggests that the bromine-bearing chain has few degrees of freedom in which it becomes removed in space from N_b.

With zinc dust in methanolic ammonium chloride solution the bromocyanamide was debrominated to a cyanamide, $C_{23}H_{31}O_2N_3$, whose infrared and ultraviolet spectra are consistent with the formulation X, wherein the only change is represented to have been simple replacement of bromine by hydrogen. The n.m.r. spectrum (curve G) of the debrominated cyanamide no longer exhibits the peak at 1131 c.p.s. assigned to the grouping CCH_2Br in IX, but retains the maxima at 1126 c.p.s. (area ≅ 2 protons) and at 1067 c.p.s. (area ≅ 1 proton) associated with the system $-CH_2N(CN)CH<$, as required. The area under the peak at 1227 c.p.s. is relatively much larger in curve G. This indication that an *additional C-methyl* has been generated in the zinc reduction was fully confirmed by Kuhn-Roth determinations upon the debrominated product (calcd. for two C-methyls, 7.89; calcd. for three C-methyls, 11.82; found, 10.35, 10.3).

In summary, we represent the structure of aspidospermine at this stage by the expression XI.



IX

Acknowledgment. This work was supported by research grant (RG-4852) from the National Institutes of Health and by a Frederick Gardner Cottrell grant from Research Corporation. We wish to thank Dr. E. Schlittler and Dr. B. Witkop for making available supplies of the alkaloid. It is a pleasure to acknowledge the kind assistance of Dr. A. A. Bothner-By in the use of the n.m.r. spectrometer and in connection with some of the measurements on model substances.

Experimental

All melting points are corrected. Analyses were carried out by Dr. S. M. Nagy and associates at M.I.T. and by W. Manser. E.T.H.. Zurich.

Aspidospermine. The sample had the m.p. 208-209°; infrared spectrum (chloroform): 2915s, 2780m, 1630s, 592m, 1486m, 1460s, 1385s, 1335m, 1319m, 1290m, 1269m, 171w, 1117w, 1103w, 1073w, 909w.

Deacetylaspidospermine. Samples had the m.p. 107-109°; infrared spectrum (chloroform): 3356w, 2907°; 2778m, 2717m, 2667w-sh, 2475w, 1621m, 1595m, 1488s, 462s, 1443m-sh, 1389m, 1376m, 1332m, 1325m, 1302m, 2825, 12635, 1175m, 1131m, 1112m, 10855, 1053m, 1033m, 016m, 965w, 931w, 901m, 867w.

Aspidosine. The sample had the m.p. 255.5-257.5° (evacuated tube); infrared spectrum (potassium bromide): 3436w, 3300w, 3049m, 2941s, 2786m, 2717m, 1626w, 1603m, 1504w, 1481s, 1447m, 1376s, 1333m, 1321m, 1304m, 1287m, 1271m, 1261m, 1241m, 1225w, 1199w, 1181s, 1142m, 1114m, 1053w,

1032w, 1013w, 1003m,1171w, 960w, 943w, 925m, 913m, 880m, 857w, 792m, 764s, 722w. Anal. Calcd. for $C_{19}H_{26}ON_2$:76.47: H. 8.78: N, 9.39; O-Me, 0.00; 1 N-Me; 5.04. Found: C, 76.251; H, 8.94; N, 9.20; O-Me, 0.00; N-Me, 4.72.

Aspidospermine N_b-Methiodide. Aspidospermine (895 mg.) was heated with 6 ml. of methyl iodide in a sealed glass tube at 100° for 34 hr. The crystalline precipitate of aspidospermine methiodide was removed by filtration, washed with benzene and dried *in vucuo*. The crude product (1.214 g.) had a m.p. of 268-272° (rapid heating). For analysis a sample was recrystallized from absolute ethanol as needles, m.p. 277-278° (rapid heating); ultraviolet spectrum (methanol): λ_{max} 255 mμ (10,600); 285 mμ (2960); infrared spectrum (potassium bromide): 2924m, 1647s, 1605m, 1595m,1486s, 1460, 1441m, 1433m, 1374s, 1355m, 1319m, 12951x1, 1271m, 1244m, 1204m, 1179rn, 1157w, 1133w, 1107m, 1070m, 1033w, 1013m, 984w, 971w, 951m, 925m, 895w, 877w, 850w, 831w, 808w, 791m, 776m, 744111, 724w, 698w, 678w. Anal. Calcd. for $C_{23}H_{33}O_2N_2I$: C, 55.65; H, 6.70; N, 5.65. Found: C, 55.14; H, 6.84; N, 5.63.

Aspidospermine N_b-Methoperchlorate. (A) From the Methiodide. Treatment of a strong aqueous solution of the methiodide with sodium perchlorate solution yielded the methoperchlorate, which crystallized from water in needles, m.p. 320-323°; infrared spectrum (potassium bromide): 2950m, 1650s, 1608w, 1597w, 1490m, 1462m, 1443m, 1377m, 1355m-sh, 1323m, 1299m, 1274m,1250m, 1208w, 1178w, 1134w, 1120m-sh, 1096s, 1067s-sh, 1033m, 1010m, 952w, 922w, 893w, 877w, 849w, 829w, 808w, 797w, 776m, 743m. Anal. Calcd. for $C_{23}H_{33}O_6N_2Cl$: C, 58.88; H, 7.09. Found: C, 58.35; H, 6.88.

(B) From the Methosulfate. Aspidospermine (300 mg.) was allowed to stand with dimethyl sulfate (3 ml.) in a stoppered flask. After seven days the solid material had dissolved completely. The excess methyl sulfate was removed under reduced pressure; the residue was taken up in excess of sodium carbonate solution and benzene. The benzene layer yielded some aspidospermine, identified by its infrared spectrum. The aqueous solution was evaporated to dryness and the organic material separated from the inorganic by extraction with methanol; evaporation gave the crude methosulfate still containing some inorganic material. A portion was treated with a concentrated aqueous solution of sodium perchlorate, when a gummy solid separated; this was recrystallized twice from water and twice from acetone. The methoperchlorate had the m.p. 265-270° (slow heating) or 320-323° (rapid heating). The infrared spectrum was identical with that of material prepared above with method A.

Aspidospermine N_b-^{14}C-Methiodide. In the preparation of the radioactive sample, aspidosperinine (700 mg.) was heated with methyl iodide (2 ml., 4.56 g,) containing 50 microcuries of ^{14}C; the product was worked up as given above. After recrystallization from absolute ethanol the yield was 782 mg., m.p. 277-278°.

Pyrolysis of Aspidospermine N_b-^{14}C-Methiodide. In a typical experiment, the methiodide (51 mg.) was heated at 280-290° for one hour at 0.01 mm. pressure in a vacuum sublimation apparatus. Aspidospermine (32 mg.) sublimed and was collected on the cold finger. The sample (not completely soluble in benzene) was chromatographed on a basic alumina column (8 x 120 mm.) to remove any contaminating methiodide. The chromatographed product had the m.p. 200°, raised to 207-208° after three recrystallizations. The infrared spectrum was identical with that of an authentic sample of aspidospermine.

Radiochemical Assay. The Van Slyke wet combustion[23] was carried out with approximately 3 mg. of material (methiodide or base); the barium carbonate disks were counted in a windowless flow counter. After correction for background and self absorption a typical sample of the methiodide was found to have an activity of 780 c.p.m./micromole. A similar determination upon the aspidospermine, m.p. 207-208°, above, gave 22 c.p.m./micromole; after one more recrystallization from methanol the

m.p. was unchanged and the corrected count was 21 c.p.m./micromole; still another recrystallization from methanol gave material with 25 c.p.m./micromole. The activity of the recovered aspidospermine, averaging 23 c.p.m./micromole, is therefore 2.9% of that of the precursor methiodide.

Deacetylation of Aspidospermine N_b-Methiodide. Aspidospermine methiodide (300 mg.) was heated at 80° with dilute hydriodic acid (1:l0) for 1.5 hr. The volatile material was removed under reduced pressure, the residue was dissolved in water, neutralized with sodium bicarbonate and extracted with chloroform (3 x 10 ml.). The extract gave a yellow gum upon removal of the solvent. The infrared spectrum in potassium bromide indicated approximately 50% hydrolysis of the acetyl so the gum was heated for an additional three hours at 80' with the same amount of hydriodic acid and the isolation procedure was repeated. The product showed no carbonyl in the infrared and hydrolysis was judged to be complete. The compound did not crystallize from ethanol, acetone or methyl ethyl ketone and was precipitated from these solvents by ether as a yellow gum which was dried *in vucuo*. The yield was 208 mg.; infrared spectrum (potassium bromide): 3270m, 2915111, 1618m, 1595m, 1488s, 1462s, 1395w, 1339w, 1309w, 1279m, 1250m, 1215w-sh, 12021x1, 1174w, 1153w, 1120w, 1093w, 1070m, 1026w, 1008m, 988w, 967w, 953w, 923w, 893w, 847w, 826w, 776m, 740s, 693m, 658m.

Attempted Sodium Borohydride Cleavage of Deacetylaspidospermine N_b-Methiodide. The gum (208 mg.) was dissolved in methanol (4 ml.) and sodium borohydride (53 mg.) was added. After ten minutes the mixture had the pH of 10; sodium hydroxide (2N, 3 ml.) was added and the mixture was allowed to stand for a further 3 hr. Extraction with chloroform yielded a gum whose infrared spectrum was identical with that of the starting material.

Lithium Aluminum Hydride Reduction of Deacetylaspidospermine. Deacetylaspidospermine (100 mg.) in tetrahydrofuran (3 ml.) was heated under reflux with lithium aluminum hydride (200 mg.) for two days. After decomposition of the salt by dropwise addition of water the mixture was extracted with ether; evaporation of the extracts gave material whose infrared spectrum showed that very little change had occurred. In another run, 100 mg. of deacetylaspidospermine in 4 ml. of xylene mixed with 3 ml. of tetrahydrofuran and 200 mg. of lithium aluminum hydride was heated at reflux for seven days, with a mercury sealed nitrogen atmosphere. The product was isolated in the same manner as given above, and the infrared spectrum of the gum so obtained indicated the absence of any unchanged deacetylaspidospermine as well as the absence of any aspidosine. The crude material was acetylated by overnight treatment with 1 ml. of pyridine and 0.5 ml. of acetic anhydride; the reagents were evaporated and the residue taken up in ether and 2*N* hydrochloric acid. Only a trace of non-basic material was obtained, but the aqueous acidic extract on basification with sodium carbonate yielded a gum whose spectrum contained a medium band at 1754 cm^{-1} ascribed to a phenolic acetate, and a strong band at 1641 cm^{-1} due to an N_a-acetyl group and no NH band. The spectrum indicated furthermore that aspidospermine was not a component of this material.

Hofmann Degradation with Aspidospermine Nb-Methohydroxide. The aspidospermine N_b-methiodide (154 mg.) was dissolved in methanol and shaken with an excess of freshly prepared silver oxide. The slurry was filtered and the precipitate washed with methanol. The filtrate yielded an oily residue after removal of methanol. This was heated in a vacuum sublimation apparatus; at 170-180° at *ca.* 0.01 mm. a colorless gum distilled and was collected on the cold finger. This was redistilled *in vacuo* to ensure complete removal of quaternary hydroxide. The yield was 84 mg. of material whose infrared spectrum was virtually superimposable with that of deacetylaspidospermine. The compound was heated with acetic anhydride for one hour at 80°, whence 67 mg. of aspidospermine, m.p. 206-208°, was obtained after recrystallization from aqueous acetone.

Hofmann Degradation with Aspidospermine N_b-Methiodide. The methiodide (50 mg.) was treated with five drops of a concentrated aqueous solution of potassium hydroxide. After removal of the water, the mixture was distilled at 290° in vacuo, otherwise as given above. The infrared spectrum of the distillate was superimposable with that of a mixture of deacetylaspidospermine and N_a-methyldeacetylaspidospermine as produced in the lithium aluminum hydride reduction of vallesine (*vide infra*).

Hofmann Degradation with Aspidospermine N_b-Methosulfate. The crude methosulfate (*vide supra*) equivalent to 70-80 mg. of aspidospermine was refluxed with excess potassium hydroxide in aqueous methanol for three hours. The solution was taken to dryness and the residue heated in the vacuum sublimation apparatus as given above. The infrared spectrum, containing an intense singlet peak at 1592 cm^{-1} and no NH band, was otherwise identical with that of an authentic sample of N_a-methyldeacetylaspidospermine.

Formyldeacetylaspidospermine(Vallesine). Deacetylaspidospermine (300 mg.) was allowed to stand with a mixture of formic acid (98%, 1 ml.) and acetic anhydride (0.5 ml.) overnight. The excess formic acid and acetic acid were removed and the product, obtained in good yield, was recrystallized from ethyl acetate, m.p. 152-154 Lithium Aluminum Hydride Reduction of Val1esine. Vallesine (200 mg.) in tetrahydrofuran (2 ml.) was treated with excess lithium aluminum hydride and the mixture was allowed to stand for 10 min.; water was added dropwise and the organic product was extracted with ether. The gum obtained on removal of the ether gave an infrared spectrum containing an NH band at 3344 cm^{-1} and otherwise very similar to that of deacetylaspidospermine but containing as well the peaks due to N_a-methyldeacetylaspidospermine.

Sodium-Liquid Ammonia (Emde) Reduction of Aspidospermine N_b-Methiodide. Preparation of Aspidospermine Dihydromethine. Aspidospermine methiodide (2.000 g.) was added to liquid ammonia (200 ml.); excess sodium was added, sufficient to maintain a blue color for seven minutes. After this time the sodium and sodamide were destroyed by addition of ammonium chloride and the ammonia was allowed to evaporate. The residue was dissolved in a mixture of water (10 ml.) and ether (150 ml.) and the ether layer was dried over sodium sulfate and evaporated. The residual pale brown gum was heated with acetic anhydride (4 ml.) for 1.5 hr. at 100°. The volatile matter was removed under reduced pressure and the residue was dissolved in benzene (100 ml.). This solution was washed twice with 10 ml. of 2 *N* sodium hydroxide and once with water. The benzene solution after drying and removal of solvent gave a colorless gum (1.235 g,). The crude Emde base so obtained contained a small amount of aspidospermine, which could be largely removed by dissolving the substance in a small amount of ether and allowing the solution to stand overnight, when the aspidospermine, m.p. 198°, crystallized out. The purification of other samples of the Emde base was carried out via the crystalline perchlorate, *vide infra*.

Aspidospermine Dihydromethine Perchlorate. The perchlorate was formed by treatment of the Emde base with perchloric acid in ethanol to pH 3. The solution was diluted with water and the ethanol evaporated in a stream of nitrogen, when the product perchlorate crystallized. For analysis this was recrystallized from water; prisms, m.p. 170-173° with sintering at 155°; infrared spectrum (potasium bromide): 3390w, 3096w, 2915m, 1639s, 1595w, 1484s, 1462s, 1383m, 1323m, 1304m, 1271m, 1105s, 1080s, 969w, 948w, 919w, 870w. Anal. Calcd. for $C_{23}H_{35}O_6N_2Cl$: C, 58.64; H, 7.49; OMe, 6.79; N-Me, 2.86.

The Emde base regenerated from its perchlorate was obtaminated as a colorless glass which still stubbornly resisted the attempts to induce crystallization. It was distilled for analysis at 105° (10^{-4} mm.); ultraviolet spectrum (ethanol 217 mμ (31,900); 257 mμ (11,100); $\lambda_{infl.}$ 285 mμ (3200); infrared spectrum (chloroform): 3378w, 2899m, 2762w, 1631s, 1592w, 1486m-sh, 1462s, 1381s, under reflux for 21 hours.

The chloroform and excess of 1355w, 1323m, 1309w-sh, 1271m, 1149w, 1124w, 1111w, 1037m, 990w, 975w, 942w, 871w. *Anal*. Calcd. for $C_{23}H_{34}O_2N_2$: C, 74.53; H, 9.25; two C-Me, 8.12. Found: C, 73.99; H, 9.53; C-Me, 6.70.

Aspidospermine Dihydromethine Methiodide. The crude was recrystallized from chloroform-ethyl acetate to give dihydromethine base above (1.235 8.) was allowed to stand overnight at room temperature with a mixture of methyl Anal. Calcd. for Cz2HsoO2hTz~HBr:C, 60.67; H, 7.18. iodide (4 ml.) and benzene (12 ml.), when pale yellow crystals together with some yellow, gummy material separated. This was removed and recrystallized from methyl ethyl ketone as colorless microcrystalline needles, m.p. 280°, with evolution of gas at 214°. The yield was 1.063 g. (first crop) 178.5°. Some additional material was obtained as a second plus 71 mg. (second crop). The benzene-methyl iodide solution, upon being taken to dryness, gave a gum which was chromatographed to give pale yellow needles (110 mg.) of impure aspidospermine. For analysis the methiodide was recrystallized from methyl ethyl ketone; another sample from isopropyl alcohol; infrared spectrum (potassium bromide): 2941m, 1656s, 1616w-sh, 1493s, 1468s, 1389s, 1325w, 1309w, 1276m, 1235w, 1215w, 1182w, 1053m, 1038w, 1013w, 966w, 939w, 912w, 889w, 784w, 761w, 741w. *Anal*. Calcd. for $C_{24}H_{35}O_2N_2I$: C, 54.77, 54.83; H, 7.32, 7.34; N, 5.36. Calcd. for $C_{24}H_{35}O_2N_2I.H_2O$: C, 54.44; H, 7.24; N, 5.29.

Aspidospemne Dihydromethine Methoperchlorate. The above methiodide, when dissolved in water and treated with a concentrated solution of sodium perchlorate a precipitate of the methoperchlorate. This was washed twice with a very small amount of water and then crystallized from absolute ethanol as clusters of prismatic needles, m.p. 264° with sintering above 150°. *Anal.* Calcd. for $C_{23}H_{37}O_6N_2Cl$: C, 59.44; H, 7.69. Found: C, 59.18; H, 7.85.

Deacetylaspidospermine Dihydromethine. Aspidospermine N_b-methiodide (795 mg.) was reduced with sodium and liquid ammonia as given above; purification of the reduction product was accomplished by filtration through alumina with benzene as eluent. This product was heated with 10 ml. of *N* hydrochloric acid at 100° for 3 hr. The hydrochloric acid was removed under reduced pressure, leaving a pink gum, which was dissolved in water, basified with 2*N* sodium hydroxide and extracted with ether (3 x 15 ml.). The extracts yielded 254 mg. of deacetylated Emde base, characterized as N_a-benzoyldeacetylaspidospermine, prepared with benzoyl chloride-pyridine at room temperature overnight. The N_a-benzoyl derivative purified by chromatography on alumina with ether as eluent was crystallized from aqueous acetone as needles, m.p. 163-164°. *Anal.* Calcd. for $C_{28}H_{36}O_2N_2$: C, 77.74; H, 8.39; N, 6.48; 1 C-Me, 3.47; 2 C-Me, 6.95. Found: C, 77.85; H, 8.36; N, 6.55; C-Me, 4.30. A sample of benzoic acid, submitted for C-methyl determination under the same conditions "C-Me," 2.28. Subtraction of the indicated blank value (0.64) gives a corrected C-methyl. Infrared spectrum (chloroform): 2915s, 2849w-sh, 2793m, 1961w, 1905w, 1818w, 1721w, 1634s, 1595w, 1582m, 1490s, 1462s, 1389s, 1357w-sh, 1330m, 1276m, 1190w, 1147w, 1124w, 1105w, 1091w, 1078w, 1040w, 993w, 946w, 908w.

Treatment of Aspidospermine with Sodium-Liquid Ammonia. Aspidospermine (100 mg.), tetrahydrofuran (10 ml.), ammonia (20 ml.) and sufficient sodium to give a permanent blue color were allowed to stand for 20 minutes. Ammonium chloride was added, the ammonia allowed to and the tetrahydrofuran was removed in a stream of nitrogen. The residue was extracted with benzene (10 ml.) and the extract gave upon evaporation a brown gum (84.5 mg.) (theory, for loss of acetyl, 88 mg.). The infrared spectrum showed no carbonyl and was very similar to that of deacetylaspidospermine. The compound was acetylated with acetic anhydride (0.5 ml.) for two hours at 100°; the acetic anhydride was removed by evaporation and the product kept over sodium hydroxide *in vacuo* for 12 hours. Chromatography on basic alumina with chloroform as eluent gave as the main fraction, aspidospermine

(60.1 mg.) contaminated with material giving rise to weak absorption in carbonyl region at 1761 (phenolic acetate) and 1712 $cm.^{-1}$.

Braun Degradation with Aspidospermine. Bromocyanoaspidospermine. Aspidospermine (350 mg.) in chloroform (5 ml.) with 450 mg. of cyanogen bromide was heated under reflux for 21 hours. The chloroform and excess of cyanogen bromide were removed under reduced pressure at 100° and the residual yellow gum was triturated with ethylacetate; a pale yellow crystalline material did not dissolve (aspidospermine hydrobromide, m.p. 269.5°, 46.7 mg.) and was recrystallized from chloroform-ethyl acetate to give material with m.p. 269-271°. *Anal.* Calcd. for $C_{28}H_{30}O_2N_2 \cdot HBr$: C, 60.67; H, 7.18. Found: C, 60.33; H, 7.11.

The ethyl acetate extract, upon removal of the solvent, gave a residue (414 mg.) which was recrystallized from 95% with ethanol and gave 162 mg. of bromocyanamide, m.p. 177.5-178.5°. Some additional material was obtained as a second crop, m.p. 162-165°. For analysis a sample was recrystallized from ethanol and had the m.p. 177.5-178.5°; ultra violet spectrum (ethanol): λ_{max} 220 mμ (31,000), λ_{max} 255 mμ (12,400), plateau 286 mμ (4000); infrared spectrum (chloroform): 2924m, 2198s, 1653s, 1605m, 1592m, 1486s, 1458s. 1381s. 1355m. 1348m, 1337m-sh, 1318m, 1285m, 1272m, 1143w, l062m; 1021w, 95lw, 899w. *Anal*. Calcd: for $C_{23}H_{30}O_2N_2Br$: C, 59.98; H, 6.58; N, 9.13. Found: C, 59.35, 59.98; H,6.67,6.28; N, 8.55, 9.77.

In a subsequent preparation the aspidospermine bromide was removed by filtration through a short alumina column with chloroform as solvent and the bromocyanamide was crystallized from chloroform-ether; it had the m.p. 187-189°.

Ethanolysis of Bromocyanoaspidospermine. The bromo cyanoaspidospermine (22.5 mg.) in 3 ml. of ethanol containtwice with a very small amount of water was refluxed for two hours. The solution was evaporated to dryness under nitrogen. The residue was made basic with 2*N* sodium hydroxide, extracted with benzene and the benzene solution was extracted with aqueous acid. When the acidic solution was basified with 2*N* sodium hydroxide crystallization occurred; 6.1 mg. (35%) of aspidospermine, m.p. 208°, was obtained.

Ethanolysis of Bromocyanoaspidospermine. Kinetic Run. Bromocyanoaspidospermine was dissolved in 80% aqueous ethanol in a sealed tube at a concentration of 0.0234 g./ml.; this was placed in refluxing acetone (58°). At the end of reaction time, the tube was cooled in ice to quench the reaction. The contents were diluted to 4 ml. with 80% aqueous ethanol. Dextrin (*ca.* 15 mg.) was added together with a few drops of tetrabromofluorescein indicator and the mixture titrated against 0.0106 N silver nitrate solution. Two values of the first-order rate constant were determined viz., $k_1 = 6.7 \times 10^{-6}$ and $k_1 = 7.2 \times 10^{-6}$ $sec.^{-1}$ after reaction times of 21 and 26 hours, respectively.

N_a-Benzoyldeacetylbromocyanoaspidospermine. N_a-Benzoyldeacetylaspidospermine, m.p. 185-187' (189.3 mg.), was refluxed in chloroform (5 ml.) with 266 mg. of cyanogen bromide. After 26 hr. the solvent was removed and the yellow residue was chromatographed on acidic alumina with benzene as eluent. The main fraction amounted to 209 mg. from which by crystallization from ethyl acetate 136.4 mg. of material with the m.p. 155-160° was obtained. For analysis this was recrystallized from ethyl acetate when it had the m.p. 166.5-168°; infrared spectrum (chloroform): 2907s, 2208s, 1953w, 1905w, 1812w, 1658m-sh, 1639vs, 1629vs, 1613m-sh, 1590m, 1580m, 1488s, 1458s, 1441m-sh, 1381s, 1362m-sh, 1333m, 1277m, 1143s, 1109m, 1093m, 1064s, 1047m-sh, 1019m, 1002w-sh, 982w, 952w, 913w, 895m, STOW, 859w, 844w. Anal. Calcd. for $C_{28}H_{32}O_2N_3Br$: C, 64.36; H, 6.18; N, 8.04. Found: C, 64.49; H, 6.25; N, 7.89.

Aspidospermine Cyanamide: Zinc Dust Debromination of the Bromocyanamide. Bromocyanoaspidaspermine (135 mg in methanol (8 ml.) was heated under reflux with zinc dust (1 g) and ammonium chloride (10 mg.) for 10 hours. The zinc was separated and washed with methanol and the combined filtrate evaporated. The residue was treated with water and then extracted with chloroform. The chloroform extract was washed, dried, and evaporated to give 129 mg. of crude product. Chromatography on acidic alumina with chloroform as eluent gave a main fraction yielding crystals of m.p. 174° (187-188 ° after drying) from ethanol. Recrystallization from benzene-ether gave product with m.p. 176°, but two more recrystallizations from ethanol raised this to 188°; ultraviolet spectrum (methanol): λ_{max} 217 mμ (34,800), 257 mμ (12,400), plateau 282 mμ (4000); infrared spectrum (chloroform): 2907s, 2198s, 1656s, 1605m, 1590m,1484s, 1456s, 1379s, 1350m, 1316m, 1269s, 1143w, 1117w, 1087w, 1066m, 1047m, 967w, 945w, 897w, 860w. Anal. Calcd. for $C_{23}H_{31}O_2N_3$: C, 72.40; H, 8.19; N, 11.01; 2 C-Me, 7.89; 3 C-Me, 11.82. Found: C, 71.82; H, 8.41; N, 11.27; C-Me, 10.35, 10.3 (distilled sample).

References

1. Part I of this series appears as a preliminary Communication, H. Conroy, P. R. Brook, M. K. Rout and N. Silverman, This Journal, **79**, 1763 (1957).

2. A. J. Ewins, *J. Chem. Soc.,* **105**, 2738 (1914).

3. (a) H. T. Openshaw, G. F. Smith and J. R. Chalmers, XIIIth International Congress of Pure and Applied Chemistry, Stockholm and Uppsala, 1953, Abstracts p. 223; (b) H. T. Openshaw and G. F. Smith, *Erpevienfia,*4, 428 (1948); (c) J. R. Chalmers, H. T. Openshaw and *G.* F. Smith, *J.Chem. Soc.,* 1115 (1957); (d) A. J. Everett, H. T. Openshaw and G. F. Smith, *ibid.,* 1120 (1957).

4. (a) B. Witkop, This Journal, **70**, 3712 (1948); (h) B. Witkop and J. B. Patrick, *ibid..* 76, 5603 (1954).

5. E. Schlittler and 31. Rottenberg, *Hela. Chim.* Acta, **31**, 446 (1948).

6. W. I. Taylor, This Journal, **79**, 3298 (1957); M. F. Bartlett, D. F. Dickel and W. I. Toylor, *ibid.,* **80**, 126 (1958).

7. At 40.01 mc./sec. on an arbitrary scale wherein the toluene aromatic resonance peak is assigned a value of 1000 C.P.S.and the toluene methyl proton peak assigned 1197 c.p.s. Spectra, except for curve B, were examined in chloroform solution with a toluene capillary for external reference on a Varian Associates high resolution nuclear magnetic resonance spectrometer with superstabilizer.

8. N-Methyl resonance would be expected to occur in this vicinity on the basis that chemical shifts are dependent upon the electronegativity of adjacent atoms. Empirical observations with compounds known to contain that system, with the exception of cases wherein the nitrogen is conjugated with electron-withdrawing groups as in amides, have generally supported the plausibility of the assignment. In carbon tetrachloride or chloroform solution these N-methyl peaks were observed: 8-dimethylaminoethyl alcohol, 1169, and dimethyl- aniline, 1139 (A. A. Bothner-By, private communication); dimethyl formamide, 1141, 1148; dimethylformamide neat, 1155, 1162; and dimethylcyanamide neat, 1153 (B. Bonne, M. A. Thesis, Brandeis University, 1957); thebaine, 1160; gelsemine, 1164 c.p.s.

9. O. O. Orazi. R. A. Corral, J. *S.* E. Holker and *C.* Djerassi, *J. Org. Chem.,* **21**, 979 (1956).

10. B. Witkop, This Journal, **71**, 2559 (1949).

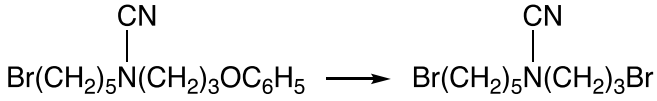
11. The English group (ref. 3d) recently and independently found similar conditions for the preparation of aspidospermine N_b-methiodide and as well for its pyrolytic decomposition.

12. K. Schmid, W. von Philipsborn, H. Schmid and P. Karrer, *Helv. Chim. Acta*, **39**, 394 (1956).

13. In carbon tetrachloride or chloroform solution, not including derivatives wherein the nitrogen is conjugated with an electron-withdrawing group, where a somewhat lower range would apply. The following compounds containing the group -CH_2N showed strong maxima as given: ibogamine, 1125. 11x4; thebaine, 111.5; dihydroquinone, 1145; ethylamine, 1150 (quartet center); piperidine, 1147 (B. Bonne, M. A. Thesis, Brandeis University, 1957). These other compounds examined neat or in t-butylamine showed maxima 15-20 c.p.s. higher because of the solvent bulk susceptibility difference: ethylamine, 1165 (quartet center) ; *n*-butylamine, 1156; di-*n*-propylamine, 1158; triethylamine, 1163; tri-*n*-propylamine, 1167 (A. A. Bother-By, private communication).

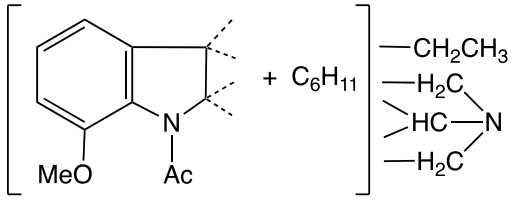
14. The lithium aluminum hydride reduction of vallesine to the oily N_a-methyldeacetylaspidospermine, characterized by a crystalline hydrochloride, is reported by Witkop (ref, 4b): although he did not mention the presence of deacetylaspidospermine in the crude reduction product, the spectra of our samples leave little doubt of the concomitant formation of that substance. Similarly, reduction of aspidospermine itself leads to a mixture of N,-ethyldeacetylaspidospermine with some deacetyl compound as first pointed out by Prof. Carl Djerassi (private communication).

15. R. Goutarel, M. -M. Janot, V. Prelog and R. P. A. Sneeden, *Helv. Chim. Acta*, **34**, 1962 (1951); T.



Habgood, L. Marion and H. Schwarz, *ibid.*, **36**, 638 (1952); V. Prelog. J. B. Patrick and B. Witkop, *ibid.*, **36**, 640 (1952).

16. In a letter dated May 15, 1957, Dr. G. F. Smith very kindly mentioned that while no *des*-base had been isolated as yet, the reason for believing that some degradation had occurred was that the derived base gave a poor yield of aspidospermine even after acetylation. At least that result is accounted for by the presence of the N_a-methylated derivative; we concede that our observations do not exclude the possibility that a small trace of *des*-base might have formed.



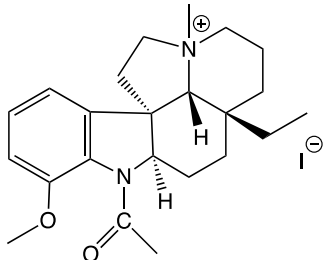
IX

17. The high intensity of the 1160 c.p.s. peak is believed due to the fact that it is composed of lines associated with one N-methyl and two N-methylene functions which, most remarkably, appear at very nearly the same chemical shift in this example.
18. Proton resonance in the system >CH-N< is expected close to 1100 c.p.s., assigned in curve A to the separate maximum at 1097 c.p.s. In curves B and D it is not resolved from the 1100 c.p.s. peak but is apparent as a slight broadening at the left base and in the increase in relative area at 1100 c.p.s. beyond that expected for the three protons of the O-methyl group. In curve C (N-acetylaspidosine-, no methoxyl) the >CH-N< resonance stands alone as a small maximum *ca.* 1090 c.p.s. Both this set of assignments and the preferred formulation of the Emde reduction are supported by the fact that in curve E (aspidospermine dihydromethine) the C-methylene region has increased in area at the expense of the 1100 c.p.s. peak, the latter being sharp and of normal size for an O-methyl.
19. Cf. H. A. Hageman in "Organic Reactions," Vol. VII. John Wiley and Sons, Inc. New York, N. Y.,1953, pp. 1988.
20. J. von Braun, *Ber.*, **44**, 1252 (1911).
21. Thus ethyl bromide in 80% aqueous ethanol at 55O gave a first-order rate constant of 1.39 X 10-8 sec-1 [L. C. Bateman, K. A. Cooper, E. D. Hughes and C.K. Ingold, *J. Chem. Soc.*, 925 (1940)].
22. As an illustration of the difficulty with which cyanamides are hydrolyzed, consider the reaction carried out by von Braun [*Ber.* **42**, 2035 (1909)] in a sealed tube with a fivefold excess of fuming hydrobromic acid for 10 hr. at 105-107°.
23. (23) "Isotopic Carbon" by M. Calvin, C. Heidelberger, J. C. Reid, B. M. Tolbert and P. F. Yankwich, John Wiley and Sons, Inc., New York, N.Y., 1940, P 93.

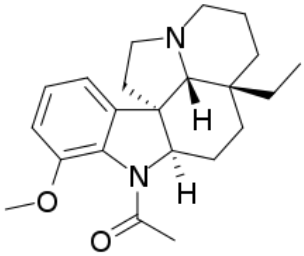
EDITORIAL NOTE:

Aspidospermine, first studied in 1914 by Ewins (*J. Chem. Soc.* **1914**, 2738), was the subject of study for structure determination and biogenesis since 1947 by groups of Witkop (*J. Am. Chem. Soc.* **1948**, *70*, 1948, 3712; *J. Am. Chem. Soc.* **1954**, *76*, 3603), Conroy (*J. Am. Chem. Soc.* **1957**, *79*, 1763; *J. Am. Chem. Soc.* **1958**, *80*, 5178), and Robinson (*Tetrahedron Lett.* **1959**, *18*, 14). The work done by the Conroy group (where Prof. Rout worked on the subject) arrived at the structure of aspidospermine as IX (*J. Am. Chem. Soc.* **1958**, *80*, 5172):

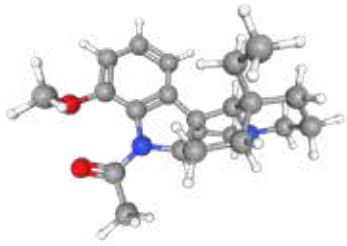
The structure of the alkaloid eluded unambiguous determination by degradation methods. The molecular structure was unequivocally established by X-ray analysis of crystals of (-)-aspidospermine-N_b-methiiodide (A). Thus the structure of aspidospermine is determined as B (C representing the 3D model structure).



A



B



C

Total syntheses of aspidospermidine, *N*-methylaspidospermidine, *N*-acetylaspidospermidine, and aspidospermine *via* a tandem cyclization of tryptamine-ynamide is recently reported by Yang *et al.* (*Org. Lett.* **2021**, *23*, 6471). ■■■

A TRIBUTE TO PROF. MAHENDRA KUMAR ROUT'S RESEARCH CONTRIBUTIONS

Dr. Subhrakant Jena

Prof. Himansu S. Biswal

Deciphering the Absorption Features of Cyanine Dyes Using Free Electron Molecular Orbital Model: A Tribute to Prof. M. K. Rout's Contribution

by **Subhrakant Jena** and **Himansu S. Biswal**
School of Chemical Sciences,
National Institute of Science Education and Research (NISER)

Prof. Bijay K Mishra

The Routvian Research in Chemistry: A Need for Chemical Education

by **Prof. Bijay K Mishra**
Ex-UGC BSR Faculty Fellow and UGC Emeritus Fellow,
School of Chemistry, Sambalpur University, Jyoti Vihar,
Burla, Sambalpur 768 019

Deciphering the Absorption Features of Cyanine Dyes Using Free Electron Molecular Orbital Model: A Tribute to Prof. M. K. Rout's Contribution

Subhrakant Jena[1,2*] and **Himansu S. Biswal**[1,2*]

Professor Mahendra Kumar Rout is a person of high caliber who has undoubtedly justified his role as a researcher, educational administrator, teacher, and mentor by driving changes and inspiring many others for nearly a century. His multidisciplinary expertise includes several fields of research like organic synthesis, reaction mechanisms, studies on oils, polymer chemistry, environmental chemistry, cyanine dyes, and quantum chemistry. On his birth centenary, we want to dedicate this concise note by specifically highlighting his contribution towards understanding the spectroscopic features of various synthesized cyanine dyes from a quantum chemistry point of view.

Polymethines or cyanines are an important class of organic dyes exhibiting a wide range of applications in light-emitting devices,[1] organic solar cell,[2,3] photosensitizers and plasmonics,[4,5] fluorescent chemosensors,[6] so forth.[7] These interesting properties are related to the cyanine electronic structure arising from a symmetric, positively charged, amino-terminated, odd-numbered polymethine chain as shown in **Figure 1**. In the past century, several approaches have been adopted to understand the electronic transitions in cyanine derivatives. In 1926, for the very first time, Prof. Konig proposed a theory based on an alternation of the charge density along the chain to explain the absorption properties of dyes.[8] In 1949, Prof. Kuhn published one article on the use of the free electron model to understand and explain the absorption spectra of organic dyes.[9] Later, the first and simplest Huckel molecular orbital method and the Kuhn free-electron model were further modified to explain the deep color of cyanine dyes. In 1966, Prof. Dahne proposed the existence of three ideal states, i.e., the aromatic, the polyene, and the polymethine state of unsaturated organic compounds, by unifying all existing approaches into a

theoretical concept called the triad principle.[10] According to the triad theory, there are two distinguishing properties of cyanine dyes:

(i) The equalization in the single and double bond lengths.

(ii) The appreciable alternation of the positive and negative charges at the carbon atoms.

The electronic excitation substantially changes the atomic charges, while the CC bond lengths remain practically unchanged. Due to these structural features, the cyanine dyes possess a strong S_0-S_1 transition accompanied by a change in the (electron density on the carbon atoms from odd positions to one in the even position. The absorption profile of cyanine dyes can be shifted from UV to visible to near IR region and thus useful in several applications.

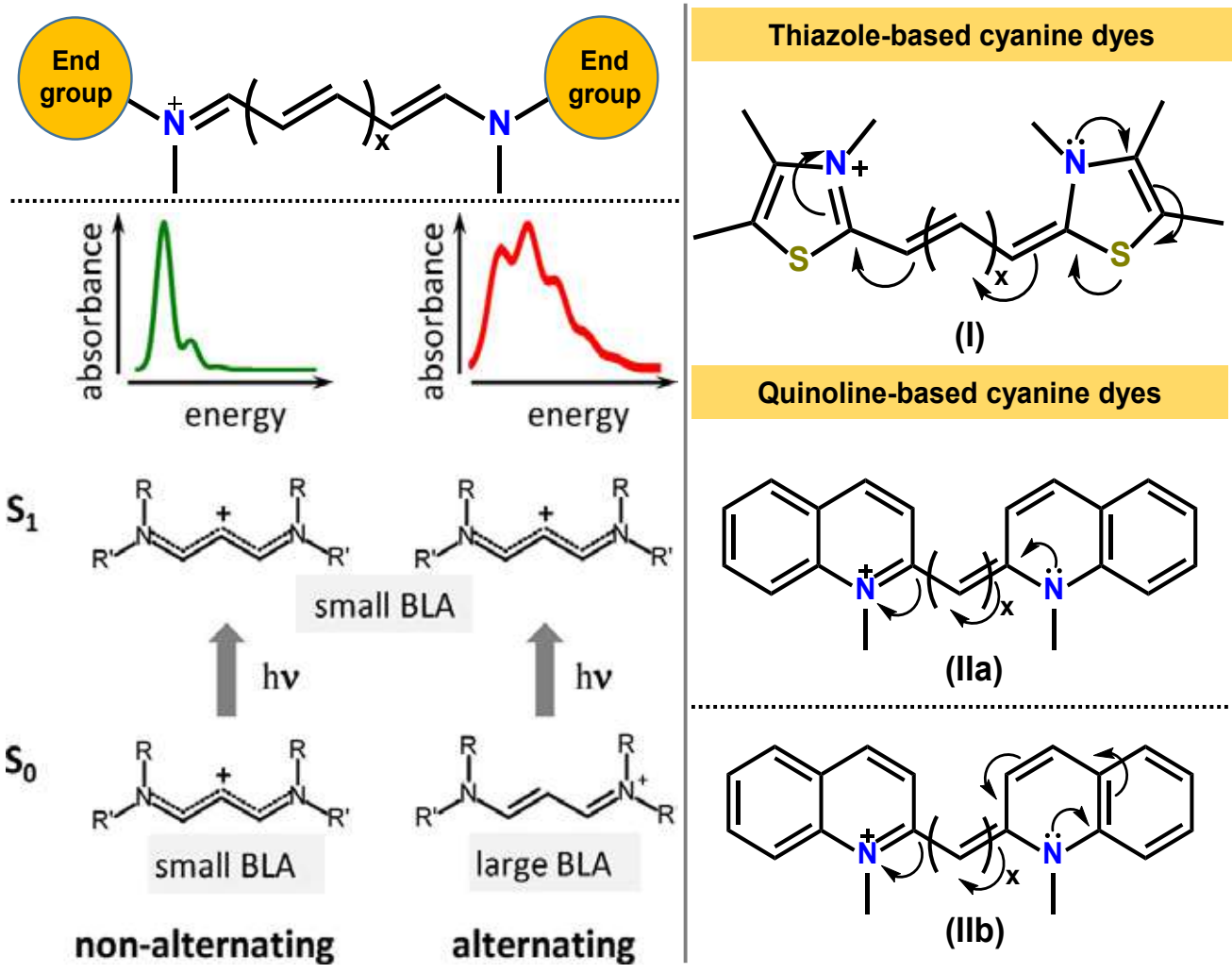


Figure 1. Left panel: *Structural representation of cyanine dye and ground- and excited-state geometries of non/alternating cyanines and the impact on the absorption spectrum. Reproduced with permission from ref[11] Copyright (2021) American Chemical Society.* ***Right panel:*** *Molecular structures of Thiazole and Quinoline chromophore-based cyanine dyes displaying the possible conjugation pathways.*

Quantum mechanics is very useful for interpreting such spectroscopic transitions. The red most peak wavelength of the absorption spectrum is used to determine the energy difference between the ground and excited states. Each dye contains two cyanine chromophoric moieties connected through a conjugated carbon chain and gives visible absorption due to electronic excitation between the ground (HOMO) and the first excited state (LUMO). This can be possible by the following approaches: (i) The particle in a one-dimensional (1-D) box or the free electron model; (ii) The Hückel Molecular Orbital Theory; (iii) Modified semiempirical methods based on Hartree-Fock and Neglect of Diatomic Differential Overlap models. However, most of the works proposed by Prof. M.K. Rout used a free electron molecular orbital (FEMO) model to explain the absorption properties. The basic idea of this note is to provide how this energy gap depends on the length of the cyanine moiety and the type of chromophoric units with the predictions of the free electron model mentioned above. For a 1-D box, the energy levels of an electron can be expressed using the following equation:

Where *h* is Planck's constant, *n* is the principle quantum number, *m* is the mass of the electron, and *L* is the length of the box, which can be determined from a sum of all bond lengths in the box. For such dyes, box size is the distance between nitrogen atoms plus one bond length beyond each nitrogen, as proposed by Kuhn. The energy difference between the ground and excited state can be determined by Eq 2. The wavelength of the maximum absorption (λ_{max}) for a system containing *M* number of π-electrons, the first transition due to the excitation of an electron from (M/2) to $(M/2+1)^{th}$ quantum state and is given by Eq 3.

Cyanine dyes served as a model system for developing new theoretical concepts and effective quantum-chemical methods. Since then, the scientific community around the globe has refined the concept and applied it to understand the absorption properties of various cyanine derivatives and developed new quantum chemical methods. Among them, the contribution of Prof. Rout is noticeable.

Work on thiazole and quinoline chromophore-based cyanine dyes: Date back to 1975, Prof. M.K. Rout and his coworkers synthesized thiazole and quinoline-based cyanine dyes by varying the chain length and purifying them using analytical techniques.[12] Further, the wavelength of maximum absorption (λ_{max}) was determined using the MEMO model. In the first class, sulfur-containing thiazole-based cyanine dyes were considered because of the ability of sulfur to utilize its d-orbital by participating in the conjugation and can be used as a resonance transmitter and vinyl group analog. The second class of cyanine dye was derived from quinoline-2 chromophore, in which the π-electron delocalization can be depicted in two ways. The λ_{max} was further calculated using the well-known Eq 3. The length of the box is equal to (a+2)l, where a is the number of bonds and l is the average CC bond length. The calculated λ_{max} is summarised in **Table 1**. The theoretically calculated λ_{max} values match quite well with experimentally obtained values. However, the relatively higher discrepancies in the case of sulfur-containing dyes from the experimental observation were attributed to the incorporation of sulfur-induced asymmetry in the geometry of the polymethine chain for which the used equation could not be strictly followed.

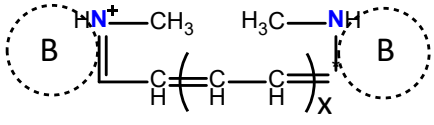


Table 1. Absorption maximum for symmetrical cyanines.

Nature of B	x	L (Å)	M	λ_{max} (nm)	
				Calc.	Obs.
4-Phenyl thiazole	0	(7+2) × 1.39 = 12.51	10	468.2	460
	1	(9+2) × 1.39 = 15.29	12	593.5	560
	2	(11+2) × 1.39 = 18.09	14	718.7	660
Benzothiazole	0	(7+2) × 1.39 = 12.51	10	468.2	460
	1	(9+2) × 1.39 = 15.29	12	593.5	560
	2	(11+2) × 1.39 = 18.09	14	718.7	660
Benzoxazole	1	(6+2) × 1.39 = 11.12	8	453	480
	2	(8+2) × 1.39 = 13.9	10	578	580
	3	(I0+2) × 1.39 = 16.68	12	705	680
Quinoline-2	1		10	579	610
	2		12	704	710
Quinoline-4	1	(10+2) × 1.39 = 16.68	12	705	710
	2	(I2+2) × 1.39 = 19.46	14	831	820

Finally, through this study, they demonstrated that the appropriate selection of not only chain length (box length L, the adjustable parameter) but also the type of chromophoric group. The chromophoric group plays an important role in accurately predicting λ_{max}. Furthermore, in 1977, Prof. M.K. Rout and his coworkers investigated a series of thiazole and quinoline-based symmetrical cyanine dyes.[13] Kuhn proposed that the simple 1-D box model for a symmetrical polymethine chain of cyanine dye suffers a disturbance with the introduction of a nitrogen atom in place of a central CH group. The potential energy in the region of the newly added nitrogen atom is less than in the rest of the chain. In the frame of Kronig and Penney's model, a narrow and deep potential drop at the position of the nitrogen atom for odd and even numbers of double bonds can be expressed using Eq 4 and the wavelength by Eq 5.

The L, a, and V_1 are adjustable parameters in Eq 4, and 2n is the number of π-electrons in Eq 5. In previous studies, the parameter V_1a seems to have been reported to be entirely arbitrary and can be of any value to best fit with the experimental λ_{max}. After a series of investigations, they observed that whatever may be the nature and magnitude of V_1a, the change in frequency due to N replacement of central CH is nearly similar to and proportional to L. They again concluded two important points: (i) the parameter V_1a is not independent of the chain length as envisaged implicitly in Kuhn's theory, and (ii) the magnitude of perturbation by N replacement of central CH, depends to a fair degree on the nature of the end chromophoric groups. This is in line with their previous investigation.

Work on phosphocyanine-based dyes: In addition to the above-discussed dyes, Prof. M.K. Rout and his coworkers further explored to understand the absorption properties of phosphocyanine-based dyes.[14] Again, they used the FEMO model using Morse's procedure to explain the experimentally observed

absorption properties. They studied merophosphocyanine and unsym-phosphocyanines derived from cyclopentadienylene-triphenyl-phosphoranes, as shown in **Figure 2**. In the FEMO model, the ground and excited state geometries were assumed to be the same, and the Franck-Condon transition was taken care of. In addition, the alternation of single and double bonds has been neglected, and electronic interaction and spin splitting were not considered while calculating the absorption maximum.

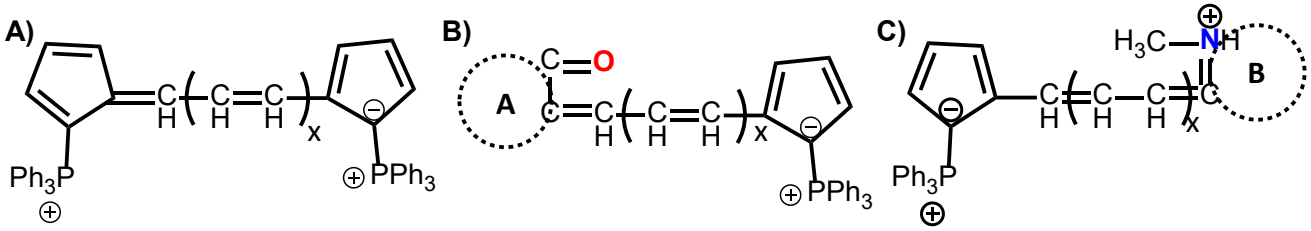


Figure 2. *Structures of investigated phosphocyanines: A) symmetrical phosphocyanine; B) merophosphinines; C) unsymmetrical phosphocyanines. A and B within the circles denote different types of chromophores.*

For the investigated phosphocyanines, an excellent correlation was observed between experimentally observed and theoretically calculated λ_{max}. This suggests a similar canonical polyene-type structure for the chromophoric chain. The presence of phosphorous was observed to have very little effect on the absorption spectra of the derived chromophores. Interestingly, the results were found to be very close analog to the localized canonical atomic orbital (LCAO) model.

Implementation and future perspectives: The research works performed by Prof. Rout to understand the absorption properties of a wide range of cyanine dyes is significant. The respective studies provide fundamental insights into how to use the FEMO model to explain the electronic transition in organic chromophores. The FEMO model is suitable to benchmark the absorption properties with minimal discrepancies. They also served as a basis to extend the FEMO to Huckel molecular orbital and modified semiempirical method-based computational strategies and development. Nowadays, FEMO is used to demonstrate physical chemistry laboratory experiments by considering cyanine dyes as model chromophores. This implies the practical use of such investigations in state-of-the-art experiments and incorporating the obtained knowledge in textbooks.

Apart from basic understanding, the outcomes of these studies have been extended to practical applications.

- They have been used in dye laser applications. Cyanine dyes are highly fluorescent. Hence, they are used as laser dyes in the solution phase due to their broad and tunable absorption profile.[15,16]
- Due to their excellent singlet oxygen generation ability, cyanine-based dyes are also promising in phototherapy, such as photodynamic therapy and photothermal therapy to treat cancer cells.[5,17]

- Recently, the synthetic tenability of cyanine dyes has led to Stokes shifts. This photophysical property has been used in biological cell imaging applications.[18,19]

- The FEOM concept has been extended to semiempirical models, Hartree-Fock and density functional theory to determine the HOMO-LUMO gap. Here at the National Institute of Science Education and Research (NISER), Bhubaneswar, we regularly use such concepts to computationally predict the absorption properties and singlet-triplet energy gaps of thionated photosensitizers.[20] These photosensitizers are useful in daylight photodynamic therapy.

- Such concepts are also useful in determining the orbital energy gap between fluorophores and quenchers to determine photoinduced electron transfer (PET) efficacy. We could succeed in predicting PET between a wide range of fluorophores and thio/seleno amide-based quenchers to study protein conformational changes and dynamics.

The absorption and emission properties of cyanine dyes are affected by the polymethine bridge length, and it delivers additional scope in designing new dyes. As perceived and proved by Prof. Rout, these chromophoric groups are vital for laser dyes and biomedical applications, providing a new avenue for advanced applications.

References

1. Pertegás, A.; Tordera, D.; Serrano-Pérez, J. J.; Ortí, E.; Bolink, H. J. Light-Emitting Electrochemical Cells Using Cyanine Dyes as the Active Components. *J. Am. Chem. Soc.* **2013**, *135*, 18008-18011.

2. Devižis, A.; De Jonghe-Risse, J.; Hany, R.; Nüesch, F.; Jenatsch, S.; Gulbinas, V.; Moser, J.-E. Dissociation of Charge Transfer States and Carrier Separation in Bilayer Organic Solar Cells: A Time-Resolved Electroabsorption Spectroscopy Study. *J. Am. Chem. Soc.* **2015**, *137*, 8192-8198.

3. Richards, B. S.; Hudry, D.; Busko, D.; Turshatov, A.; Howard, I. A. Photon Upconversion for Photovoltaics and Photocatalysis: A Critical Review. *Chem. Rev.* **2021**, *121*, 9165-9195.

4. Changhong, S.; Jason, B. W.; Dongfeng, P. Review on near-infrared heptamethine cyanine dyes as theranostic agents for tumor imaging, targeting, and photodynamic therapy. *J. Biomed. Opt.* **2016**, *21*, 050901.

5. Bilici, K.; Cetin, S.; Celikbas, E.; Yagci Acar, H.; Kolemen, S. Recent Advances in Cyanine-Based Phototherapy Agents. *Front. Chem.* **2021**, *9*.

6. Sun, W.; Guo, S.; Hu, C.; Fan, J.; Peng, X. Recent Development of Chemosensors Based on Cyanine Platforms. *Chem. Rev.* **2016**, *116*, 7768-7817.

7. Gopika, G. S.; Prasad, P. M. H.; Lekshmi, A. G.; Lekshmypriya, S.; Sreesaila, S.; Arunima, C.; Kumar, M. S.; Anil, A.; Sreekumar, A.; Pillai, Z. S. Chemistry of cyanine dyes-A review. *Mater. Today: Proc.* **2021**, *46*, 3102-3108.

8. W. Konig, J. P. About the concept of "polymethine dyes" and a general dye formula that can be derived from it as the basis of a new system of color chemistry. *J. Prakt. Chem.* **1926**, *112*, 1-36.

9. Kuhn, H. A Quantum Mechanical Theory of Light Absorption of Organic Dyes and Similar Compounds. *J. Chem. Phys.* **1949**, *17*, 1198-1212.

10. Dähne, S.; Leupold, D. Coupling principles of organic dyes. *Angew. Chem.* **1966**, *78*, 1029-1039.

11. Eskandari, M.; Roldao, J. C.; Cerezo, J.; Milián-Medina, B.; Gierschner, J. Counterion-Mediated Crossing of the Cyanine Limit in Crystals and Fluid Solution: Bond Length Alternation and Spectral Broadening Unveiled by Quantum Chemistry. *J. Am. Chem. Soc.* **2020**, *142*, 2835-2843.

12. ROUT., L. N. P. P. K. M. M. K. Application of Free Electron Molecular Orbital Model : Absorption Spectra of Cyanine Dyes. *J. Indian Chem. Soc.* **1976**, *53*, 391–392.

13. Rout, M.; Patnaik, L.; Bhuyan, B. Application of Free Electron Molecular Orbital Model, Part II: Absorption Spectra of Azacyanines. *Z. phys. Chemie, Leipzig* **1977**, *258*, 601-604.

14. Rout, M.; Patnaik, L. Application of Free Electron Molecular Orbital Model: Absorption Frequencies of Unsymmetrical Phosphocyanines Derived from Cyclopentadienylenetriphenylphosphorane. *Z. phys. Chemie, Leipzig* **1975**, *256*, 785-791.

15. Melentiev, P.; Kalmykov, A.; Gritchenko, A.; Afanasiev, A.; Balykin, V.; Baburin, A. S.; Ryzhova, E.; Filippov, I.; Rodionov, I. A.; Nechepurenko, I. A.; Dorofeenko, A. V.; Ryzhikov, I.; Vinogradov, A. P.; Zyablovsky, A. A.; Andrianov, E. S.; Lisyansky, A. A. Plasmonic nanolaser for intracavity spectroscopy and sensorics. *Appl. Phys. Lett.* **2017**, *111*.

16. Czerney, P.; Graneß, G.; Birckner, E.; Vollmer, F.; Rettig, W. Molecular engineering of cyanine-type fluorescent and laser dyes. *J. Photochem. Photobiol., A: Chemistry* **1995**, *89*, 31-36.

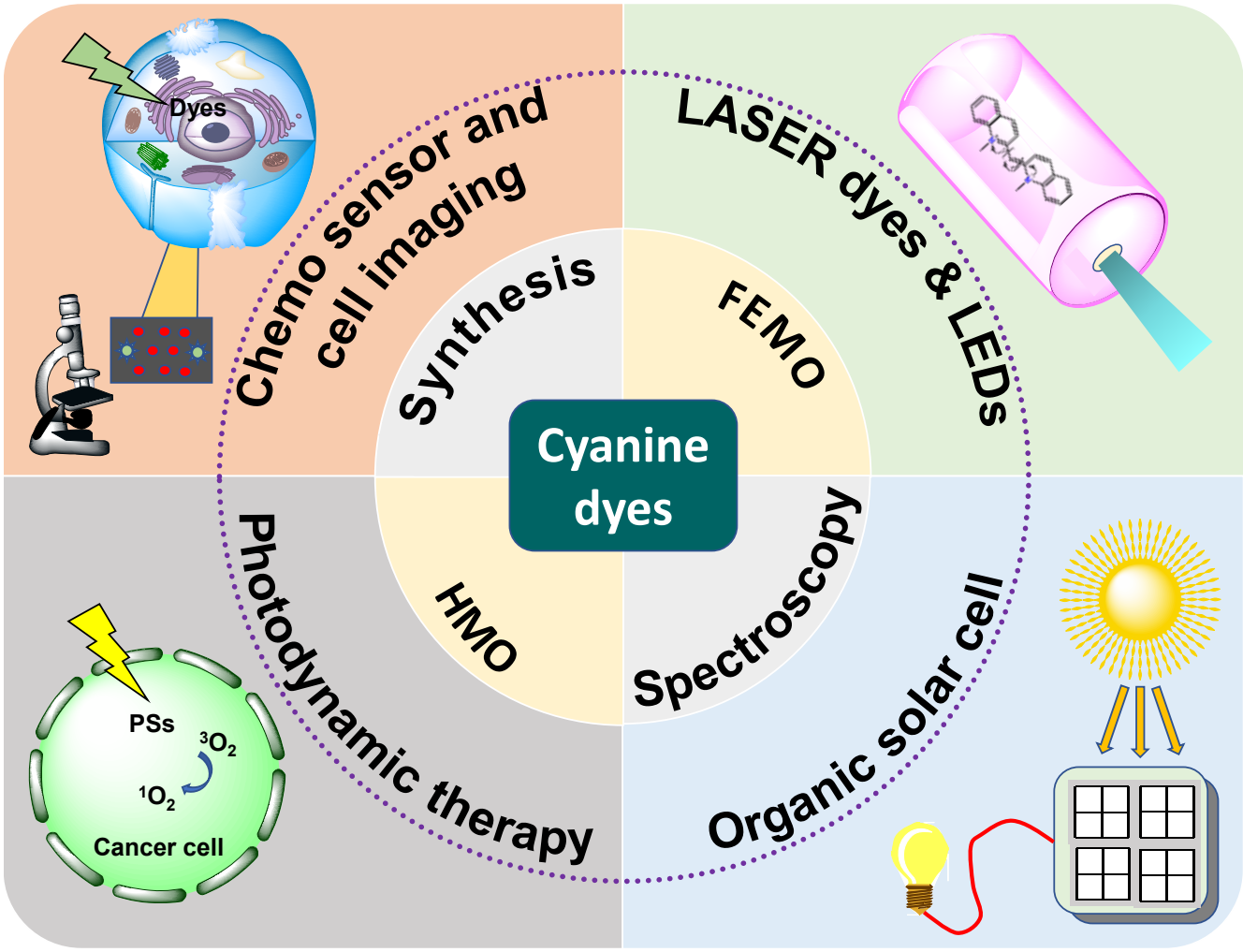
17. Zhao, X.; Zhao, H.; Wang, S.; Fan, Z.; Ma, Y.; Yin, Y.; Wang, W.; Xi, R.; Meng, M. A Tumor-Targeting Near-Infrared Heptamethine Cyanine Photosensitizer with Twisted Molecular Structure for Enhanced Imaging-Guided Cancer Phototherapy. *J. Am. Chem. Soc.* **2021**, *143*, 20828-20836.

18. Abeywickrama, C. S. Large Stokes shift benzothiazolium cyanine dyes with improved intramolecular charge transfer (ICT) for cell imaging applications. *Chem. Commun.* **2022**, *58*, 9855-9869.

19. Zhang, Y.; Yang, C.; Peng, S.; Ling, J.; Chen, P.; Ma, Y.; Wang, W.; Chen, Z.; Chen, C. General Strategy To Improve the Photon Budget of Thiol-Conjugated Cyanine Dyes. *J. Am. Chem. Soc.* **2023**, *145*, 4187-4198.

20. Jena, S.; Tulsiyan, K. D.; Kumari, A.; Das, R.; Biswal, H. S. Thiolumazines as Heavy-Atom-Free Photosensitizers for Applications in Daylight Photodynamic Therapy: Insights from Ultrafast Excited-State Dynamics. *J. Phys. Chem. B* **2022**, *126*, 6083-6094.

Table of Contents Graphic:



Brief Bio-Sketch of Authors

Dr. Subhrakant Jena
[2]Homi Bhabha National Institute, Training School Complex, Anushakti Nagar, Mumbai 400094, India
Corresponding Author's E-mail: subhrakant.jena@niser.ac.in, himansu@niser.ac.in and
Phone No: - +91-674-2494 185/

Presently-
Post Doctoral Fellow
School of Chemical Sciences, National Institute of Science Education and Research (NISER),
PO- Bhimpur-Padanpur, Via-Jatni, District- Khurda, PIN - 752050, Bhubaneswar, India

Subhrakant Jena completed Ph.D. in the School of Chemical Sciences, National Institute of Science Education and Research (NISER), Bhubaneswar under the guidance of Prof. Himansu Sekhar bIswal. The thesis title is "Ground and Excited-state Dynamics of Sulfur and Selenium Containing Molecules of Biological Significance". His research aims at exploring and understanding the role of unusual noncovalent interactions in photochemistry and photophysics of heavy-atom free model biomolecules and their possible implications for photodynamic therapy application and for monitoring protein structure and dynamics.

Prof. Himansu S. Biswal
Professor Of Chemistry
School of Chemical Sciences, National Institute of Science Education and Research (NISER),
PO- Bhimpur-Padanpur, Via-Jatni, District- Khurda, PIN - 752050, Bhubaneswar, India
Ph.No.-9178311188

Himansu Sekhar Biswal: Himansu Biswal is presently a Professor in the School of Chemical Sciences, NISER, Bhubaneswar. After completing his doctoral research (2003–2009) from Tata Institute of Fundamental Research (TIFR) India with Prof. Sanjay Wategaonkar, Prof. Biswal carried out his postdoctoral research (2009–2011) with Prof. Michel Mons at CEA, Saclay, France, and then moved to Prof. Jennifer P. Ogilvie's research group at University of Michigan, USA, to work on 2D-electronic spectroscopy. His research efforts focus on understanding the noncovalent interaction (NCI) in biomolecules. Prof. Biswal's research group combines both spectroscopy, including supersonic jet spectroscopy and theoretical chemistry, to investigate the NCIs at the molecular level. The basic knowledge gained from molecular spectroscopy on different types of NCIs is extended to explore alternative green solvents for the long-term storage of DNA and RNA.

In his recognition of his academic career and research, he has received many awards, which include the Best Student Award (Utkal University, 2002), Best Thesis Award (TAA-Zita Lobo Memorial Award (Honorable Mention), TIFR, 2010), Young Researcher Award (IRAMIS, SPAM, Commissariat à l'Énergie Atomique, Saclay, France. December 2010), Young Scientist Award (Dr. P. K. Bhattacharya Memorial Award, Indian Society for Radiation and Photochemical Sciences, BARC, 2011), and DST-INSPIRE Faculty Fellowship (DST, Govt. of India, 2012), and Fellow of the Royal Society of Chemistry (FRSC), UK. Prof. Biswal was also featured in "Young Physical Chemists" across the world, spanning Theory, Experiments and Spectroscopy. 82 scientists have been featured on this special Cover Image of The Journal of Physical Chemistry C, published by the American Chemical Society. He has also been featured in "Early-Career & Emerging Researchers in Physical Chemistry Volume 2" for the second time. ■■■

The Routvian Research in Chemistry : A Need for Chemical Education

Prof. Bijay K Mishra

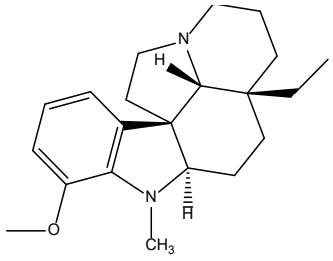
Prologue

Teaching and research in contemporary science is at a crossroad. During my career as an educator (1987-2019) in chemistry, I have seen how well-trained persons from advanced research centers show their disappointment in continuing research in their desired field. A person, handling sophisticated equipment like 400 MHz NMR, SEM, and TEM, when lands in an institute/college with no research facilities, even a colorimeter, becomes depressed and sits with tight hands cursing himself with a far sight of dark future. The brain drains from India to abroad has least seen a reversal flow almost till date. However, recently, there has been a declining trend of brain drain due to the establishment of many IITs, IISERs, NISERs, and other competitive private institutes. Without much financial attraction, there is an overflow of alluring opportunities for research in India, due to the availability of good equipment and laboratories. There is a proliferation of new scientific disciplines in various fields of chemistry, e.g. medicinal chemistry, organic nanomaterials, organic, polymers, phytochemistry, heterocyclic chemistry, and organic reaction mechanisms in organic chemistry in different institutes. Further, due to the liberalization ofthe orthodox discipline barrier, there is an increase in collaboration among the researchers leading to multi-, inter-, and trans-disciplinary research and thereby increasing the possibility of cross-fertilizing minds with a scope of generation of newer sub-disciplines.

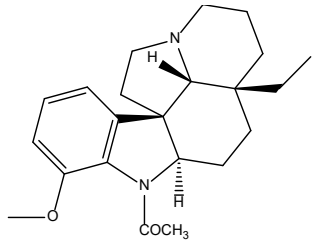
When Prof. Mahendra Kumar Rout stepped into the teaching profession in the 1950s, it was the time of the first five-year plan, in the draft of which, there was a dedicated chapter on Industrial and Scientific Research, so that all the scientific minds were oriented in that direction. During that time the five pioneer IITs were instituted, mostly for technical teaching and research, and the fundamental research for creating good teachers in universities and colleges was completely masked. The major share of funds for research was diverted to applied or technical research and almost there was meager provision for fundamental research.

In the journey of the research career of Prof. Rout, most of his research works were of a fundamental type and were engendered from his teaching process.With available facilities in the college laboratories, and without any external finance, he used to frame his research plan with the main objective of using it in the teaching program. Thus, with the trend in change in course structure, he was pursuing research for its utilization in teaching chemistry in his institution. His legacy of pursuing research with available facilities in his own institute is being followed by many of his students.

During his visit to Conroy Research School in Brandeis University, USA, Prof. Rout used NMR for the first time to elucidate the structure of an indole alkaloid aspidospermine (I), which was first isolated in 1878 from the bark of *Aspidosperma quebracho*. Witkop and Patrick in 1954 proposed the presence of an N-CH_3 group in the molecular structure (*J. Am. Chem. Soc.* 1954, *76*, 5603). Prof. Rout studied the elucidation of structure again in 1957and initially from chemical analysis found the group to be N-$COCH_3$, which he further confirmed from its NMR spectra.



Witkop's structure



I

When he came back to Ravenshaw College, he taught the structure elucidation of natural products by consulting the research reports of Woodward and the use of NMR in structure elucidation. He did some work on natural products - isolation and their derivatization.

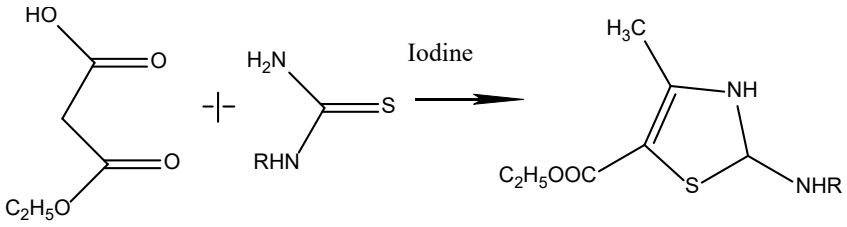
With the changing time and consequent changes in course structure, his journey in research covered various fields like the synthesis of heterocyclic compounds and their metallic derivatives, polymers - reaction kinetics of oxidation and polymerization, theoretical studies on frontier molecular orbital, correlation analysis, and environmental chemistry. Some glimpses of his research contributions are given below.

Synthesis of heterocyclic compounds

Due to the less energetic characteristics of C-N and C-S bonds compared to C-C and C-O, it is easy to play with heterocyclic systems containing N and S. Prof. Rout, with his research group synthesized a library of five-membered heterocyclic compounds containing N and S, and their derivatives from simple starting materials.

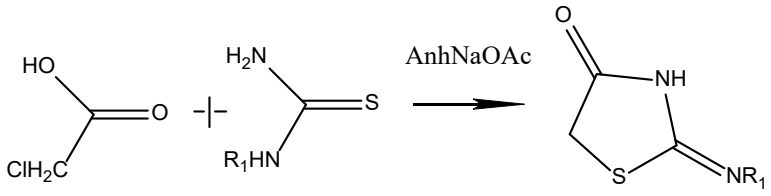
Thiazole has a five-memberedheterocyclic skeleton which is present in millions of organic moieties having biological and industrial activities. It is a core scaffold of many natural (vitamin B1-thiamine) and synthetic medicinally important compounds. It is present in antibiotic (penicillin), antimicrobial (sulfazole), antiretroviral (ritonavir), antifungal (abafungin), antihistaminic, antithyroid (thiamazole), schistosomicide (niridazole), anticancer (tiazofurin), anthelmintic, vulcanizing accelerators, (mercaptobenzothiazole) and photographic sensitizers (cyanine dyes), corrosion inhibitor etc.The simplest and most widely used method for the synthesis of thiazoles is the cyclization of the CH_2CO group with N-C-S group, mostly derived from thiourea. Thiourea has reactive functional groups like NH_2 and C=S and thus can lead to manycompounds with the other reactive species like the active ketomethylene group. Specific reagents can mask the side/undesired products and it has always been the search of interest. Prof. Rout with his research associates refluxed ethyl acetoacetate with substituted

thioureas in the presence of iodine toget substituted aminothiazole (Scheme 1). In the nonavailability of analytical equipment, they experimentally determined sulphur by gravimetric method for the prime compounds and their picrate derivatives. We followed the same procedure during the 1980s in our research in synthetic chemistry and obtained the results with a maximum deviation of 3%. With his research associates, he also prepared themercurated derivatives of thiazoles and estimated the mercury for establishing the molecular structure of the product. They published the paper in the Journal of American Chemical Society for its novel synthetic method to get pure compounds with good yield. Prof. Rout and his coworkers studied the fungicidal activities of the mercury derivatives and published the results in Nature.



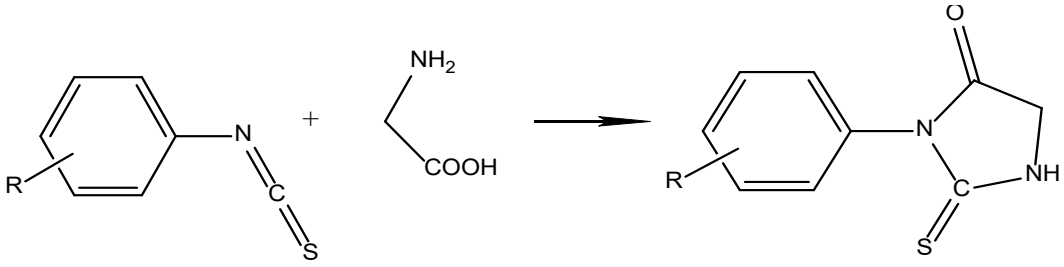
Scheme 1. Synthesis of substituted thiazoles

He, with his coworkers, prepared some more substituted thiazoles and benzothiazoles by a similar method and reported the fungicidal and bactericidal activities of these compounds and their azo, bromo, and mercurial derivatives.He used alpha-beta unsaturated ketone, a simple and easily synthesized group to prepare thiazoles. For example, he synthesized 4-styryl 2-phenylamino thiazole by cyclizing benzylidene acetone with phenyl thiourea in the presence of iodine.The substitution of ketomethylene compound by halocarbonyl compounds in Scheme 1led to the formation of thiazolidone. Rout and coworkers found that *N*-substituted thiourea reacts with chloroacetic acid by boiling in alcohol for 2 hours in the presence of anhydrous sodium acetate to afford 2-substituted imino-4-thiazolidone and its derivatives (Scheme 2).

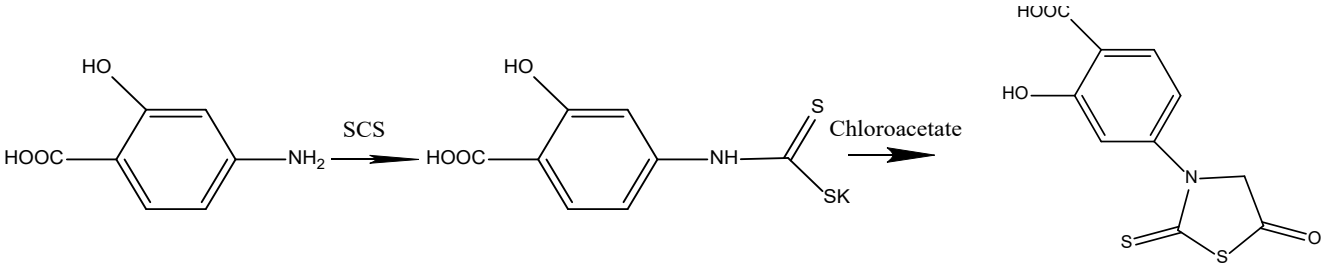


Scheme 2. Synthesis of thiazolidinone

They prepared several substituted thiazolidinones by adding bromo, and arylidene groups at the 5-position of thiazolidinonesand mercury at nitrogen to study the fungicidal and bactericidal activities. By the reaction of arylisothiocyanate and amino acids (glycine), Rout *et al.* synthesized some substituted thiohydantoin (Scheme 3). They extended the synthesis to their arylidene derivatives and corresponding mercurial derivatives. These compounds exhibited fungicidal and bactericidal activities. Due to the high affinity of mercury and silver towards the thiohydantoins, these compounds were used successfully for analytical estimation of mercury and silver.They have extended the synthesis by linking isatin to thiohydantoin.



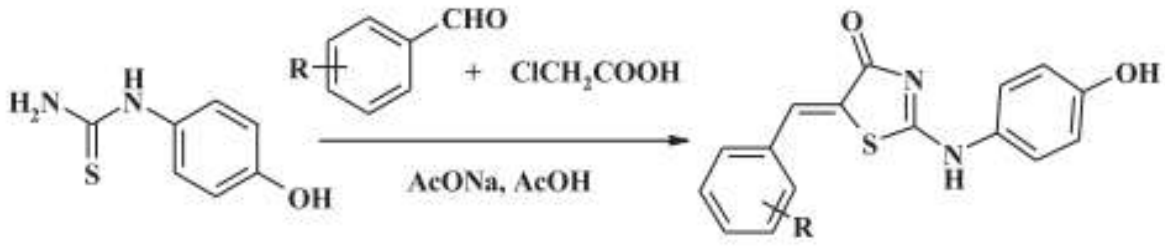
Scheme 3



Scheme 4

Rhodanines are thioxothiazoles and are mostly prepared from chloroacetic acid and ammonium thiocyanate andby the action of ethyl chloroacetate upon ammonium dithiocarbamate in the presence of alcohol and hydrogen chloride. For the preparation of salicylic rhodanine, he initially prepared dithiocarbamate of *p*-aminosalicylic acid by treating *p*-aminosalicylic acid with CS_2 in alkaline conditionsbelow room temperature. Then he treated it with potassium chloroacetate to get the corresponding rhodanine(Scheme 4). He used this compound for the estimation of thorium quantitatively. With his teaching assignment, he was, sometimes, pursuing research alone, and this publication was due to his solo work. With his research associates, he synthesized some more rhodanines and studied the biological as well as analytical activities of the compounds.

Prof. Rout, with his research associates, prepared many derivatives of these compounds with simple chemical reactions. For example, he reduced nitro thiazolidinones to the corresponding amino group by simple laboratory technique using iron fillings in acetic acid medium. However, the results implied the stability of the base heterocyclic unit to these reagents. All the synthesized compounds were studied for different biological activities in his laboratory. His work has been followed recently for the synthesis of 5-arylidene-2- (4-hydroxyphenyl) aminothiazol-4(5*H*)-ones (Scheme 5) for the use in selective inhibitory activity against some leukemia cell lines.(Arch Pharm. 2020;e2000342. https://doi.org/10.1002/ardp.202000342).



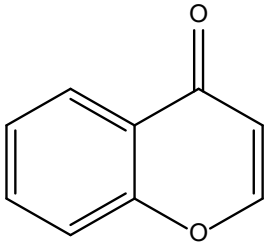
Scheme 5

Condensation of benzaldehyde with active methylene groups of the synthesized compounds to yield the corresponding benzylidene is a common derivatization in Prof.Rout's research school. In a similar attempt in his laboratory benzaldehyde reacted with 3-methyl-1-phenyl-5-pyrazolone in acetic acid solution to afford two products, red crystals of conventional 4-benzylidene-3-methyl-1-phenyl-5-pyrazolone, (m.p. 107°) and nonconventional pale-yellow crystals of benzylidene-4,4'-bis-(3-methyl-1-phenyl-5-pyrazolone, (m.p. 161-163°). He analyzed the nonconventional product and found it to be a species, which can be tautomerised in acetic acid to corresponding keto-enol form.

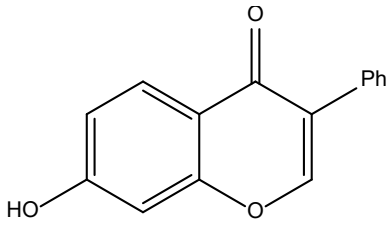
Synthesis of carbocyclic and aromatic compounds

Cromones (II) are oxygen heterocycles and can be prepared by the ring closure of 1-phenoxy propionic acids in the presence of polyphosphoric acid. Prof. Rout with his coworkers linked arsonophenyl- and sulphonamidophenyl groups to an active methylene group, which is in α-position to an activating carbonyl group. They studied the antiamoebic activity in vitro against a virulent strain of *Entamoeba kistolytica* (Strain S T A). The compounds overall showed very little activity. However, the 3-sulphonamido derivatives were active at 10 µg/ml. against the bacteria *S. aureus*.

Chalcone is formed by the condensation of benzaldehyde with acetophenone and thus it contains an *α,β*-unsaturated ketone ($C_6H_5C(O)CH=CHC_6H_5$). It is used for further generating cyclic compounds by treating them with suitable synthon components. Prof. Rout and coworkers synthesized some hydroxyl flavones from chalcones by refluxing them with amyl alcohol and an equal amount of selenium dioxide. These compounds were further derivatized by using different reagents to yield corresponding hydroxyl flavones (III), These compoundsshowed various pharmaceutical activities.



II



III

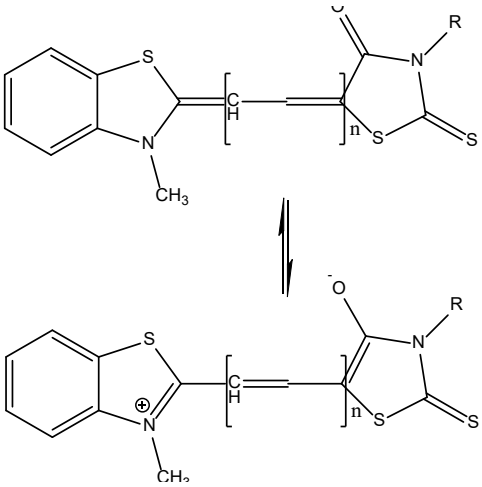
Synthesis of cyanine dyes

The cyanine dyes consist of two nitrogen centers, one of which is positively charged and is linked by a conjugated chain of an odd number of carbon atoms to the other nitrogen. With structural differences, these dyes are again classified as hemicyanine, cyanine, and merocyanine with a variety of colors. These dyes are sensitive to light and acids, and are not good dye stuff, but are good sensitizers, In Odisha; Prof. Rout was the pioneer in pursuing research in this area with a vision of encompassing photography in chemistry course curriculum. To initiate the study, he synthesized a large number ofcyanines and studied their spectral characteristics. His first work was on the synthesis of some polymethine dyes with two heterocyclic units in both termini. These were prepared by (i) reaction of two proportions of methyl quaternary saltof thiazole with one proportion of ethyl orthoformate, and (ii) reaction of a molecule of the quaternary salt with an intermediate of the dianilide type and subsequent condensation

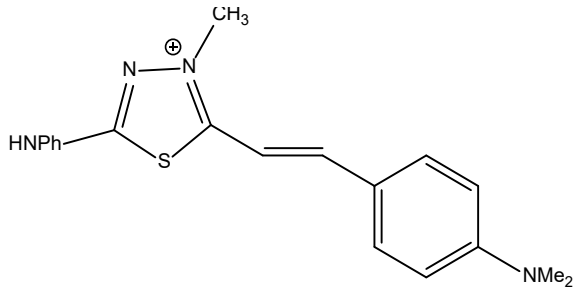
of the resulting product with another molecule of the quaternary salt. The yields were not very good in both conditions, and the products decreased more during purification. During that time, it was not easy to quarternized heterocyclic bases with methyl iodide in normal conditions. During his research work abroad, his supervisor asked him to retreat from the quaternization work to avoid wastage of time and money. Returning to India, Prof. Rout prepared the quaternized compounds in a sealed tube with high yield in his laboratory.

The merocyanines, are as significant as cyanines and are so called since a part of the molecule resembles cyanines. The second half of the molecule is derived from an acidic rather than a basic nucleus. These dyes are unionized or zwitterionized. Prof. Rout *et al.* dealt with the thiazolyl type of heterocyclic units and synthesized many merocyanines as example IV.

In his laboratory 2-*p*-dimethylaminostytyl-5-phenylamino 1:3:4-thiadiazole (V) was prepared by the condensation of 5-phenylamino-2-methyl-1:3:4-thiadiazole with dimethylaminobenzldehyde. It gave rise to two mono-methiodides, one a red compound and the other, almost colorless (separated by fractional crystallization). The red compound was identical to the product formed by condensation of 5-phenylamino-2:3-dimethyl-1:3:4-thiadiazolium iodide with p-dimethylaminobenzaldehyde, and the colorless compound was similar to that obtained by condensing the methiodide of p-dimethylaminobenzaldehyde with 5-phenylamino-2-methyl-1:3:4-thiadiazole. They assigned the deep colour in the red compound to the existence of resonance in the molecule.



(IV)



(V)

For his contribution to the field of dyestuff, he was invited, along with the Nobel Laureates L. S. Pauling, R. Robinson, and A. S. Gyorgyi, to contribute an article in the issue of the Journal of Indian Chemical Society commemorating the birth centenary of Prof. P. C. Ray, the legendary chemist of India. In that article, he illustrated the evaluation of relative acidities and basicities of a series of heterocyclicnuclei with the help of absorption maxima data. He considered the following groups of compounds; (i) dimethine merocyanines (ii) *p*-dialkylaminobenzylidene derivatives of ketomethylene compounds, (iii) *p*-dialkylaminostyryl dyes, and (iv) unsymmetrical cyanines and aza analogues of all the above class of

compounds. They used the Brookers methodbased on “deviation” in the spectra of the compound from a reference one following the Foster’s rule for the estimation of relative basicity and acidity of various heterocyclic nuclei. The method was based on absorption shift for replacement of =CH-by=N- in the chromophoric chain linking the heterocyclic nuclei concerned. Forster rule states that the absorption maximum of a dye will increase with the decreasing tendency of the chain of atoms (chromophores) to take up the characteristic charge. The chromophoric atoms carry charges only in the excited state and the nature of the charge and their relative contributions largely depend on their energies. Using this method Prof. Rout studied the spectra-structure relationships, basicity, and acidity of many compounds by synthesizing them in his laboratory.

Use of the Free Electron Molecular Orbital method for spectral characteristics

Molecular spectral characteristics can be studied experimentally as well as theoretically through molecular orbital calculations. The free electron molecular orbital (FEMO) method is the simplestand relatively old quantum mechanical method for the approximate calculation of molecular orbitals, their energies, and transition probabilities of pi-electron systems in conjugated hydrocarbons. Some general characteristics of FEMO are :(i) it is applied for pi-electronsonly (ii) within a certain domain the potential energy of the electrons is constant and infinite outside and hence electron-electron interaction is considered only within the domain, and (iii) electron spin is taken into account only through Pauli Exclusion Principle. Thus, though crude, this model has some satisfactory contribution to explain the absorption spectra of the dyes, and the calculation can be made with pencil and paper. Prof. Rout used the Kuhn model (Equation 1) for FEMO calculation to get the wavelength values of some dyes prepared in his laboratory.

$$\lambda = \frac{8mL^2c}{(2n+1)} \qquad \ldots(1)$$

where λ is the wavelength, L is the length of the conjugated system, which is the bond length of a double bond plus one single bond and n is the number of pi electrons. The synthesized dyes derived from benzothiazole, 4-phenyl thiazole, and quinoline were used to establish the use of the FEMO model for calculating the spectral data. The calculated data were found to be in good agreement with the experimental values (with 2-5% deviation).

They further applied this model to many synthesized dyesderived from cyclopentadienylenetriphenyl-phosphorane, merophosphinines, unsymmetrical phosphocyanines,merocyanines,and substituted poly-methine. They compared the FEMO model with the HMO (Hückel molecular orbital) model and valence bond model for some of their dyestuffs.

Studies on correlation chemistry

Any activity, (physical, chemical, or biological) of a molecule depends on its chemical structure, which is defined by the arrangement of atoms in the molecule. A quantitative relationship of the activities with the structure needs enumeration of both; for the activity - it may be the thermodynamic properties, rate of reactions spectral parameter, etc., and for the structure – it may be mass, density, or any topological parameter of the molecule. For diversified molecular systems, the study of the correlation of structure

and activity is highly intricate, but for any class of compounds, it is simple. In 1935 for the first time, Hammett used thermodynamic property as a structural parameter and used it for correlating the chemical reactivity of a series of benzoic acid derivatives (*Chem. Rev.* 1935, 125).

From the dissociation constant values of para-substituted benzoic acids Hammett derived a substituent parameter, σ, from Equation 2.

$$\log (K_X / K_H) = \rho\sigma \qquad \ldots(2)$$

where Kx is the dissociation (equilibrium) constant of X-substituted benzoic acid, K_H is that of unsubstituted one; ρ is a constant for a particular process (dissociation/reaction). Considering the dissociation of benzoic acid as the reference, and hence ρ = 1, the σ will be pK_X-pK_H and is considered as a parameter for the substituent. For a series of *para* and *meta* substituted benzoic acids the σ for *para* and *meta* substitutions have been evaluated and used as a substituent parameter to explain various types of activities of mostly aromatic compounds by using Equation 3. From the ρ value and the statistical parameters of the correlation equation of reactivity (k_x) withσ, a revelationof the reaction site, types of transition state can be obtained.

$$\log k_X = \log k_0 + \rho\sigma \qquad \ldots(3)$$

As the σ value is a contribution of the total electronic effect of the substituent through bonds, subsequently Taft (*J. Am. Chem. Soc.* 1953, *75*, 4321)separated the σ value into its resonance (σ_R) and inductive part (σ_I) and extended the Hammett equation to Equation 4.

$$\log k_X = \log k_0 + \rho_I\sigma_I + \rho_R\sigma_R \qquad \ldots(4)$$

Using this dual-parameter equation one can find out the resonance and inductive contribution of the substituent to the reaction. The analysis of the results has a lot of applications and solved many intricate organic reaction mechanisms. However, in 1968, Swain and Lupton (*J. Am. Chem. Soc.* 1968, *90*, 4328) derived two similar parameters F (field) and R (resonance) by using Equation 5.

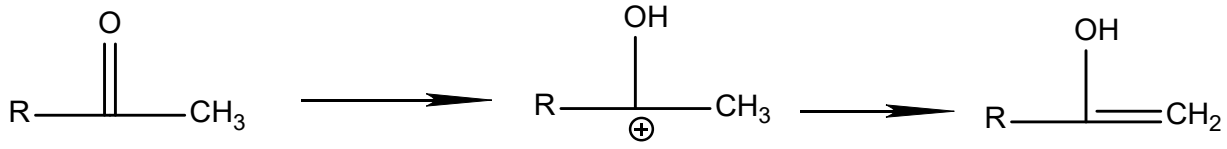
$$\rho\sigma_p = fF + rR \qquad \ldots(5)$$

The difference betweenfield and inductive effect lies in the consideration of the influence of the substituent at the reaction site through space inthe former and through bond in the latter. Their works were criticized by Taft groups, working all over the world and the criticisms were sent to the Journal of Organic Chemistry in 1984. The Editor of the journal, Prof. F. D. Greene of MIT, USA, sent the articles to Swain and Lupton for their response and published all five articles including the response of Swain and Lupton in a single issue.(*J. Org. Chem.*1984, *49*, 1989-2010). This gesture of the Editor and the authors to the scientific communication is highly praiseworthy. As the F and R parameters are derived from σ_pWilliams and Norrington (*J. Am. Chem. Soc.* 1976, *98*, 508) derived positional weightage factors for the substituents at different positions of a benzene nucleus and extended the equation further (Equation 6) to find out the electronic (F and R) effect of each substituent at different positions away from the reaction sites.

$$\log Pi = \alpha_i f_j F_k + \beta_i r_j R_k + \log P_0 \qquad \ldots(6)$$

where f_j and r_j are the weightage factor of field and resonance for the position j (*ortho*, *meta*, and *para* in benzene nucleus) and F_k and R_k are the constant for field and resonance of the substituent k, α and β are the respective sensitive parameters for the substituent constant towards the reactivity similar toρ of Hammett equation.

Prof. Rout initiated the studies on correlation chemistry by using the rate data of bromination of acetophenones. The bimolecular rate constant (*k*) and activation energy (*E*) for bromination of twenty-four mono and disubstituted acetophenones in 87% acetic acidwere determined and subjected to correlation analysis.The changes in activation energy due to the effects of substituents were found to be additive. Linear plots were obtained by plotting log k against the pK of different acetophenones, and by plotting the activation energies of different acetophenones against the corresponding dipole moments. When plotted against Hammett substituentconstants the value of ρ is found to be equal to -0.714, which is indicative of a cationic transition state. This implies the electron-withdrawingsubstituent retards the rate of reaction. Considering the results, they proposed the formation of bromoacetophenone through the formation of ahydroxy styrene intermediate (Scheme 6).



Scheme 6

Prof. Rout with his research associates pursued some extensive work to establish this equation in various reactions like the formation of chalcones, bromination and iodination of acetophenone, reaction of aniline with phenacyl bromide, bromination of chalcones, reaction of benzaldehyde with acetophenones, methoxy mercuration of chalcones and cinnamic acids, hydrolysis of cinnamic esters, cerium oxidation of benzyl phenyl glycolic acids etc. In each case, they obtained a very good correlation with the substituent parameters and reactivity. In some reactions, when *ortho* substituents were included in the data set, they observed an erratic structure-activity relationship and assigned this behavior to the *ortho*effect.

Following their work, we used Swain-Lupton parameters with Williams-Norrington weightage factors in many of our experimental results and proposed many regression models to explain and predict the reactivities. We derived an *ipso* substituent constant to explain the C^{13} NMR of benzenoid systems and weightage factors for substituents in heterocyclic systems like pyridines, furans, and thiophenes. To explain the deviation of predicted values from the experimental data for the substituent at the *ortho* position, we have extended the dual parametric equation of Swain and Lupton to a multiparametric equation by adding a self-devised steric parameter (SD Steric density) and improved the predictability of the regression models.

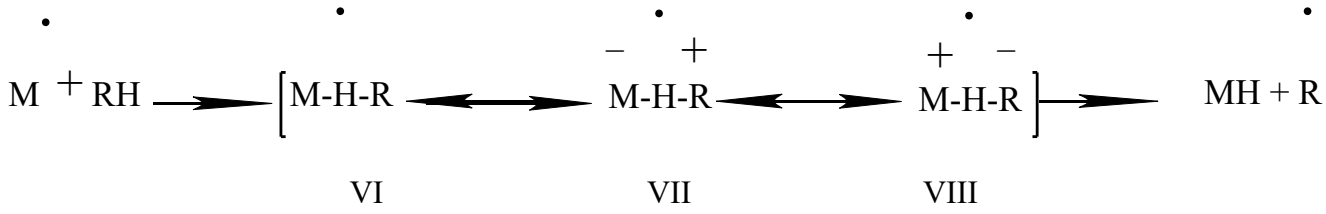
Oxidation kinetics using Ce, V, and Tl

Rout *et al.* studied the oxidation kinetics of thiohydantoin and rhodanine in an acidic medium and proposed a free radical mechanism for the reaction. They used acetic acid as the solvent and observed

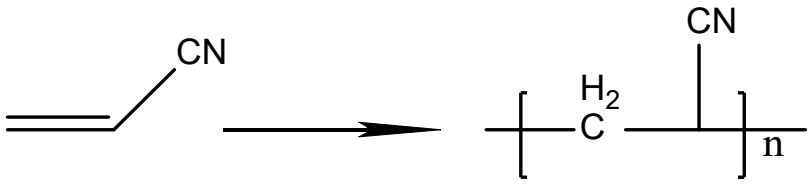
that the solvent did not influence the reaction kinetics. The reaction was like that of reactions in an aqueous medium as observed on other substrates. The structural difference in both the substrates (-NH-CS-NH-, –S-CS-NH-) is responsible for a change in reactivity. Thiohydantoin has a favourable proton abstracting group thanrhodanine. Some more oxidation reactions by using Ce were reported from his laboratory.Prof. Rout also studied the oxidation kinetics of some organic substrates using vanadium and thallium as the oxidants.

Dynamics of Polymerization

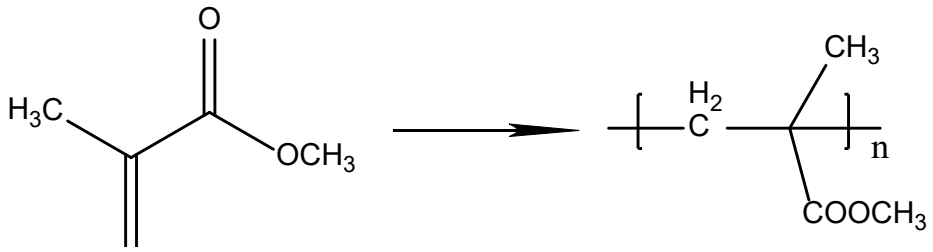
In continuation to his studies on correlation chemistry, Prof. Rout and coworkers have studied the effect of substituents on the role of phenols in the polymerization process. Generally, phenols are highly radical sensitive, and the presence of any substituent has a perceptible change in the reactivity. They proposed a hydrogen abstraction from the hydrogen donor inhibitor (RH) by the monomeric radical (M·) through some dipolar intermediates (VII and VIII) and established their proposition from the statistical analysis of the substituent effect.



Rate parameters of the reaction of phenols, deuterated phenols, and nitrobenzenes with poly(vinyl acetate) radicals and of aromatic thiols with polymethylmethacrylate radicals were correlated with Swain and Lupton's substituent constants (F_k and R_k) and Williams and Norrington's unique positional weighting factors (f_j and r_j) by using Equation 6 by his research school. The correlations were found to be quite satisfactory. The sign and magnitude, and the ratio of the reaction-dependent parameters α_i and β_i revealed the nature of the transition state and the relative contributions of the mesomeric and inductive effects. They observed that the same sign of the regression parameters α and β indicates the contribution of polar structures to the transition state, a negative sign for both α and β indicates the contribution of structures of type II and a positive sign indicates that structures of type Ill are important in the transition state. When α and β have opposite signs, there is weak contribution of polar structures to the transition state. The *ortho* effect and the additivity of substituent parameters in the reaction between phenols and poly (vinyl acetate) radicals were investigated by using Equation 6. They also used Charton's theory for ortho-substituents for ortho-substituted compounds.



Scheme 7



Scheme 8

Subsequently, Prof. Rout derived his data from polymerization reactions to investigate the reaction mechanism. The dynamics of polymerization of acrylic acid derivatives were extensively studied by his research group. Generally,the polymerization of acrylonitrile undergoes different mechanisms *i.e.* free radical, ionic, and gamma radiation mechanisms. In each case, the polymerization occurs through initiation, polymerization, and termination process. The termination reaction is the least ventured area of research. His group studied the polymerization kinetics of acrylic acid (Scheme 7) and methyl methacrylate (Scheme 8) in the presence of different initiators, solvents,and reaction conditions. For the radical formation, various initiators were used to control the reaction, and to understand the mechanism different moderators/inhibitors were used.

In their studies some initiators were *α,α›*–azobisisobutyronitrile (AIBN), manganese (III), cerium (IV), and vanadium (V). AIBN undergoes homolytic cleavage in organic solvents to engender its radical, which initiates the polymerization reaction, while the inorganic initiators generateradicals through single electron transfer. The research field was almost half a century oldthen, but his research school studied the reaction kinetics in the light of quantitative structure reactivity relationship. They used substituted chalcones, acetophenones, phenols, and cinnamic acids as the inhibitors of polymerization Equation 6 in their analysis. They could satisfactorily establish the role of weightage factors in explaining the substituent effect.

Epilogue

The journey of Professor Mahendra Kumar Rout in the path of academics is like the flow of the Ganges, which starts from the Himalayas carrying the life (water) of all living beings and disseminates it to whomsoever comes in contact and finely merges in the ocean. The knowledge Prof. Rout gained and disseminated through teaching, research training, and even in lecturing other than classrooms is everlasting in the group of academia. He has always encouraged pursuing research - even inodd circumstances, without any external support- by the teachers for their overall growth in academics. His work culture in research will inspire the young generation of teachers, who are joining different undergraduate colleges and even secondary schools, to think about pursuing research. For the understanding of common people, only a glimpseof his workhas been reported and details of his work can be obtained from the original research papers as listed in the list of publications of Prof. Rout in this Souvenir at different places. He has also contributed some seminal papers on environmentalstudies which are being followed as benchmarks in the governance of pollution control. He has enjoyed research as a solo worker, as well as a team leader, and his legacy is being maintained by many of his students.

Brief Bio-Sketch of Author

Prof. (Dr.) Bijay Kumar Mishra (1954) completed his M.Sc. (1975), Ph. D.(1981) and D. Sc.(2003) from Sambalpur University. Professional career: Research Fellow (1976), Research Assistant (1979),Lecturer (1987), Reader (1996), Professor (2004), UGC-BSR Faculty Fellow (2014), UGC Emeritus Fellow (2017), Superannuation(2019). Taught Biochemistry, Physical Organic Chemistry, Surface Chemistry and Industrial Chemistry. Research interests: Physical Organic Chemistry, Organic Synthesis and Surface Chemistry. Guided 25 PhD, 02 D.Sc candidates and 02 foreign students (Chile and Indonesia) for their Ph D internship program. Completed eight major research projects funded by DST, UGC, KVIC (Mumbai); BRNS, DAE, and CSIR, Govt of India. Published 170 research papers with a total citation of 7743 (two papers more than 1000) and h-index 32. He has been awarded INSA Visiting Scientist, IISc, Bangalore, 1991; Young Scientist Lecture in OCS, 1994; UGC Research Award IX Plan 1999; Samanta Chandrasekhar Award 2006; UGC-BSR Faculty Fellow 2014. UGC Emeritus Fellow 2017, ACS Membership Award for three years from 2015-2018 and Prof BN Ghosh Memorial Award (ISSST) 2019. He was President of Orissa Chemical Society in 2015. ■■■

Ex-UGC BSR Faculty Fellow and
UGC Emeritus Fellow,
School of Chemistry,
Sambalpur University,
Jyoti Vihar, Burla,
Sambalpur-768 019
Ph. No.- 9861046813
Email: bijaym@hotmail.com

Research Associates of Prof. Mahendra Kumar Rout

RESEARCH ASSOCIATES OF PROF. M. K. ROUT

Sl. No.	Name	Year	Title of the Thesis
1.	Prof. H. K. Pujari (Deceased)	1956	Preparation and useful applications of some thiazolidone derivatives.
2.	Prof. G. N. Mahapatra (Deceased)	1958	Chemical and biological investigations of some thiazole derivatives.
3.	Dr. B. K. Patnaik (USA)	1960	Studies on heterocyclic sulphur compounds.
4.	Prof. Bhaskar Das (Deceased)	1961	Thiazole derivatives
5.	Prof. B. K. Sabata	1963	Studies on natural products and photographic sensitisers.
6.	Dr. P. B. Tripathy	1965	Spasmolytics and photographic sensitisers derived from thiazoles and related compounds.
7.	Prof. A. S. Mittra (Deceased)	1965	Studies on pyrazolone compounds
8.	Prof. K. K. Patnaik (Deceased)	1966	Studies on some plant Products (fixed oil.)
9.	Dr. P. C. Rath	1966	Influence of structural changes on absorption, sensitisation and pharmacological activities.
10.	Prof. P. L. Nayak (Deceased)	1968	Studies on àcetophenones and some of their derivatives-Kinetic, spectral end pharmacological studies.
11.	Prof. P. K. Jesthi (Deceased)	1968	Studies on heterocyclic compounds.
12.	Prof. G. B. Behera	1969	Studies on acetophenones, deoxybenzoins, and some of their derivatives - Kinetic & Spectral studies.
13	Dr. D. C. Pati (Deceased)	1969	Influence of structural changes on absorption, sensitization and rearrangement.
14.	Prof. P. K. Misra	1970	Heterocyclic compounds for structure-Spectra Correlation.
15.	Prof. A. Nayak	1971	Structure-Spectra and Structure-Pharmacological Activity correlation.
16.	Dr. P. K. Mahapatra (Deceased)	1972	Influence of structural changes on reaction rate, absorption and chromatographic behaviour.
17.	Dr. N. Mohanty (Deceased)	1972	Structure-Spectra and structure-Pharmacological activity relationship
18.	Dr. J. N. Kar	1973	Influence of structural changes on rate and absorption.
19.	Dr. A. K. Panigrahi	1973	Studies on some Natural products (oils) and Pharmacologically active compounds.
20.	Dr. B. C. Mohanta (Deceased)	1973	Studies on structure spectra correlation and Natural products.
21.	Dr. L. N. Patnaik (Deceased)	1973	Studies on reaction Kinetics and quantum mechanical calculations relating to absorption frequencies, oscillator strengths etc.

22.	Dr. K. K. Mukherjee (USA)	1973	Structure-spectra and structure-reactivity correlation.
23.	Prof. R. C. Acharya (Deceased)	1974	Structure-reactivity correlation
24.	Dr. S. B. Mohanty	1974	Kinetics of Oxidation of organic compounds using Thallium (III), peroxydisulphate etc.
25.	Dr. D. Rout (Deceased)	1976	Studies on some pharmacologically, active compounds including antispasmodics, antihistaminics, filaricides and amoebicides.
26	Dr. B. Tulsi Das	1976	Studies on (i) Heterocyclic compounds and some of their useful properties (ii) some oils.
27.	Prof. B. C. Singh	1977	Studies on polymerization and oxidation reactions initiated by Ce(IV) and V(V) ions.
28.	Dr. Pravati Mishra	1977	Influence of structural changes on reaction rate.
29.	Prof. C. N. Nanda (Deceased)	1978	Studies on Kinetics of some reactions involving oxidation and substitution.
30.	Dr. Nivedita Mishra	1978	Effect of structural and environmental changes on absorption spectra.
31.	Dr. N. Mallick (Deceased)	1978	Studies on vinyl polymerization (addition) and oxidation reactions.
32.	Dr. B. V. Alka (Deceased)	1980	Studies on the synthesis of some useful organic substances and their characterization.
33.	Dr. R. K. Satpathy	1981	Kinetics of Polymerization Reactions and structure-reactivity correlations based on different models.
34.	Dr. S. N. Patnaik	1981	Studies on some polymerization reactions involving free radicals.
35.	Prof. B. K. Mishra	1981	Studies on some retarded polymerization and copolymerization systems.
36.	Dr. Narayan Chandra Samal (Deceased)	1984	Studies on Retarded Polymerization with Special Reference to Substituent Effect – Reactivity Correlation
37.	Dr. Manjusree Senapati	1984	Studies on Polymerising Systems
38.	Dr. Ranu Misra (Deceased)*		
39.	Dr. Satya Ranjan Mishra	1988	Retardation or Acceleration in Polymerisation and Development of Radical Substituent Constant
40.	Dr. Sanatan Sahu*		
41.	Dr. Alaka Patnaik	1991	Evaluation of Substituent Effects in Polymerisation and Binary Copolymerisation Reactions
42.	Bibekananda Tripathy*		
43.	Nrusingha Chandra Naik*		
44.	Brahmananda Bhuyan (deceased)*		

* No information

TEXT OF THE FAREWELL SPEECH TO THE STUDENTS AND COLLEAGUES

BY

Dr. Mahendra Kumar Rout,
D. Sc., Ph. D., F.N.I.
PRINCIPAL, RAVENSHAW COLLEGE

AT THE ANNUAL FUNCTION OF THE COLLEGE UNION
HELD ON 26TH. APRIL, 1980 AT 6-30 P.M.

TEXT OF THE FAREWELL SPEECH TO THE STUDENTS AND COLLEAGUES

Sri Justice HARIHAR MOHAPATRA, inaugurated the function

and

SRI RANJIT MOHANTY, Chairman,

Bar Council of India was the Guest of Honour.

When SRI M.N. SENAPATI requested Dr. ROUT to deliver his speech, there was thunderous applause from nearly three to four thousand students who were present.

President, College Union; Sri Justice Harihar Mohapatra; Sri Ranjit Mohanty, eminent advocate, distinguished ladies and gentlemen and my dear beloved students.

This is the last occasion, I am going to address you as the Principal of the College. I feel sorry, I feel sad. I had the chance to be the D.P.I. in November 1976 but that was different. I was combining both the posts. But when I stand before you today, within three days more, that is April 30, 1980 afternoon, I shall be leaving this College for ever as the Principal of the College. I feel sorry because my teaching career, my career as a teacher, ends today. In fact, it has already ended. I am not taking any more classes for the last ten or fifteen days. I feel very sad. I am essentially a teacher and also a research worker. By accident I have become an administrator, educational administrator. You might feel that I am happy. But it is not possible for you to fathom, clearly understand what I feel inside. My appointment for the post D.P.I. was of little or no concern to me. The Secretary, Education Department happened to be a student of mine during the I.Sc. and B.Sc. stages. I never rang him up just to know what was happening. Sri S. M. Pattanayak, Chief Secretary of the State, is a childhood friend of mine. We were together. We are known to each other as friends, since we were only four to five years old. The College Union had invited him to be the Guest of Honour because of his elevation to the post of Chief Secretary. When I rang him up, he said, "I am so busy that I cannot go", and he uttered one sentence and said, "you will not stay long in that College". But I did not like to elaborate on the point. I was silent. Another friend of mine, very well placed, wanted to speak to Mr. Raghupati, Adviser, just to know what was happening. I said, "Please don't interfere. It is of no concern to me. I have faith in God. *I don't know, which post is better whether, the post of Principal of Ravenshaw College or D.P.I. ship.* Let God's wish be fulfilled." I am known to the Governor. Governor sent me a commendation because of the successful function on the Commemoration Day. The Secretary to the Governor is very well known to me but during the last one month, I did not care to learn from them what was happening. That is because of two things I want to tell my students.

One is : this job of D.P.I., as I said in the Anniversary of the New P. G. Hostel.

The Principal, Ravenshaw College is a coordinate but the D.P.I. is a sub-ordinate. I will have to compromise my conscience on a number of occasions (*Clapping*).

Secondly, I am a teacher. I am a research worker. I love my students. *I will miss young minds. This is what I want to impress on you.*

I was in M.P.C. College, Baripada, inspecting the College when I was the D.P.I. in 1977. At about 6. P.M., I got a phone call that I had to come and hand over the charge by 10.30 A, M. There I had dinner. There was a tea party. I left the tea party and came away and reached Cuttack at 1 A.M. in the night and handed over the charge next day at 10.30 A.M. That did not concern me, because I wanted to come back to my College, my dear students. *I am recording my speech in the tape-recorder, since this is my last speech to the students.*

In 1977 on 29th June at about 12 noon, I got a phone call from Mr. Nair, Secretary to the Governor. He told me "Dr. Rout, you have been appointed the Vice-Chancellor of the 'Utkal University'. I said "What ! Utkal University. I am not prepared for it. He said "The appointment has been made and you have to join on 1st of July." On 30th June, I was sitting in my office preparing to hand over charge. At about 1.30 P.M. I got a phone call from the Secretary, Education Sri Gain Chand that there was some difficulty. I took it easily. I say this because I want to tell you that the job of a teacher is much better. I am speaking from my own experiences which can be verified. When I was in the United States in 1977 April-June, one of the persons who was associated with the panel for the selection of the Vice-Chancellor, rang up Prof. M. M. Nanda, who was acting as the Principal; for my biodata. Prof. Nanda could not give it. He told my wife. My wife said, "He may not be interested and we are not going to give the biodata." I returned on the 14th of June 1977 from the States. On 16th June evening, I was sitting in my office room in my residence. I got a phone call from Sri Gatikrishna Mishra, ex-Chief Justice. He wanted my biodata. I said, "Sir, kindly excuse me" but he insisted. I gave the biodata. On the 8th of July after the appointment of Vice-Chancellor was cancelled, I had gone to Delhi for attending a meeting and while I was at Bhubaneswar aerodrome, I got a phone call from Mr. Nair that I was wanted by the Governor. "Please come and meet the Governor, the Chief Minister and the Education Minister are waiting. I said, "I am tired. I cannot go just now. I will go in the afternoon". When I went, Governor Brar felt very sorry, almost apologised. In the words of Justice Harihar Mohapatra who told me many months later, that. he almost shed tears for the cancellation of my appointment. Justice Mohapatra told me this, I told Governor Brar "Sir, I can still stay as Principal with my students for 4 to 5 years. I am not that interested. My name has figured in the list. That is enough." But he was sorry. *I say this because these jobs are of little or no concern to me. God's desire will be fulfilled. I do not know whether I will be better off as the D.P.I.*, I do not know I can do something as the D.P.I., or if some chance comes as the Vice-Chancellor. But I will always like to come back to my research laboratory. My research students know how sad, I feel these days. Yet then, *I hope to come to the College most evenings to do my research work, (Clapping), I must continue my research activity.*

About the students I have got one guiding principle. Whenever a student commits mistakes, I think, if my own children would have committed the mistakes, would I have excused him? If I have got hundred per cent of love and affections for my own children, should I not show a little of that, ten per cent, twenty per cent of that, for the students who have erred, who have made mistakes and it has so happened that they got themselves all right, rectified.

I say this, there had been many difficult occasions, I would say that *I have such great faith in God and such great faith in the fact that my students love me because I have love for them.* Once in G. M. College, there was a strike and a students' procession had been lathi charged and many students had been injured. They were in the Police Hajat. I had gone there and the Additional S.P. Mr. Chatterjee was there and we were discussing how they could be released. They wanted a bond, a personal bond from me. While this was happening, the G. M. College students took as hostage one ASI from a passing taxi near the College gate. Altaf Babu was there, Dr. Gangadhar Sahu was there and many teachers of this College were there and then the Additional S.P. said "nothing doing. We are now going to march into your campus and I have got orders from the I.G. that he must be released within half an hour, otherwise we are going with a force". The force was ready on that occasion, the D.P.I. was also there. I told the D.P.l., "Don't go to the Syndicate meeting in your car. You take my car", and then I got down. I addressed the students, I had negotiations with them and then I told them, "Look, before the police enters the campus, I leave your College for ever. I will come back within half an hour and if you agree to release the ASI of Police, well and good, otherwise I will also leave the College. To tell you honestly, many teachers are here, who were with me there at that time. I came and my students said "Sir, all right, you take him back and he was released".

At Khallikote College, some of my present teacher colleagues were there. Mr. G.S.P. Misra is here. One party won and the party which was defeated came with rods and went inside the campus. They were only fifty to sixty of them and about one thousand students ran helter and skelter. Then they wanted to go upstairs to the College Office where I had kept hidden the newly elected President of the College Union. I do not know what would have happened on that day. There were many teachers. While the infuriated students were coming, I stood there with both of my hands stretched. Mr. G. S. P. Misra also told me, "Sir, you can alone save the situation and nobody else". There were about one hundred teachers with me My hands were stretched and discussion was going on and after five minutes, I looked at one of the students, Bhagirathi Misra. "Bhagirathi, your father was a teacher. I am a teacher, you can trample over me but I will not allow you to enter the College Office and beat my President, College Union". He said, "All right, we will not do so, with respect to you". But two days later, Santosh Mohapatra, Basanta Panda, Bhagirathi Misra, now well known advocates, told me, "You have done a good job for us. When we burnt the church (they had burnt a church, eight to ten years back), if one of our teachers or the Principal or any other senior teacher would have told us, 'please do not do it,' perhaps wo would not have done that." I say this because the Principal or the teachers must have such image. Under different situations, police will not be adequate for the purpose, not the least. It is the image of the teachers, the image of the Principal which alone will count.

In 1978 University strike, I felt sorry. I spent three months in agony because some people told higher ups that I was instigating the strike. I felt indeed very sorry. Any way the agitation was called off, but I wrote to the Government, "You have your intelligence reports, please establish if I have inspired the strike. I am prepared to resign my job." Till now I have not received a single reply from the Government whether they will have any enquiry or not (*Clapping*).

I felt sorry when somebody said that I plundered money from Khallikote College and that I have plundered money from this College. I feel very

sorry. Justice Mohapatra knows, two days later, on the 28th April we will be meeting. *Through God's grace, an amount of Rs. 6.6 lakhs has been put in fixed deposit for Ravenshaw College and* Rs 1.1 lakh for the Evening College. The interest proceeds will come to about sixty thousand for Ravenshaw College and they will be spent for the purpose of encouraging students, giving them research scholarships and giving many types of scholarships.

Now addressing my colleagues, I might have hurt your feelings often; but I am interested in two or three things. I am interested in the Departmental Progress Register because why should not a teacher write down what lecture he has taken on a particular day? If the University teachers do not agree to do it, it is not good. If I become the Vice-Chancellor at any time, I shall insist on it or else, I will get out of the job because I will enjoy a pension. Similarly I am very particular that with regard to post-graduate seminars; somebody should be accountable for the books of the post-graduate seminar. And one must ensure that books are available to the students on all days of the year as far as possible. If this is not done, I am prepared to abolish, the post-graduate seminars and keep them at a place where books are available to all the students throughout the year. If there is a clash with anybody, I am prepared to get out of the job but I will not yield on this point.

I had many difficulties about the Open Air Theatre, about the Text Book Section, about every thing, all good things. But my dear students, after all whenever one wants to do a good thing, he is criticised. So do not bother about this.

My dear colleagues, do not expect too much from me as the D. P. I. of the State. My feelings are known, my mind on a large number of matters is known and I am for the three-tier system. There is no doubt about it. I am absolutely for the three-tier system. I shall be a small person in the Government machinery. As the Principal of Ravenshaw College, I have much more say than the D.P.I. Anyway I will give my own views. I am sorry for the adhoc lecturers who have spent six years. I don't want them to be discharged or retrenched, But I want them to get some employment, somewhere because they have already spent the best period of their career. I am in favour of more quarters. More quarters should be built for them. These are policy matters. But I can only assure them that they can write to me straight by name, any representation, any difficulty, by name. I will certainly reply to them. They need not have to go to the D.P.I. Office. About the Class Ill staff, I might have been harsh to them but I have one faith. There is not a single Class III staff who can say that I have done injustice to him. *I have faith in God and whatever I have done, I have done it with faith in God. I know, when I will leave the College, there will be tears in the eyes of my Office Staff, peons.*

I feel sorry for the Class IV staff. I could not do much for them. Quarters shluld be built for them, but I am not sure how far I can succeed. My request to you, all of you, my dear students, you will always live in my heart.

I love students I used to love taking a First Year Science Class, I used to love them (*Clapping*). In spite of all my activities, I used to take one class every day and my classes came to a large number, about 110 to 120 classes in the course of eight months.

My dear colleagues, I was a lecturer. I became a Reader, then a Professor and today I am going to become the D.P.I. But what is there? *Teaching is much better than these jobs. I will work on the files. Shall I see the smiling face of a student? Can I get an opportunity to correct an erring student and erring lecturer? (Continual Clapping).*

My son is also a teacher. I have love for him. Please

be sure, you can write straight to me, you can go straight to me. I will attend to your difficulties (*Continual Clapping*).

Sri Justice Mahapatra, I am fortunate that Justice Mahapatra is here today to inaugurate the function. He has love and sympathy for me. He is a man of grace; man of charm. His son-in-law, Justice R. N. Misra, who, I hope, will become the Chief Justice of Orissa within three to four months, was addressing the boarders of the New Pest-Graduate Hostel and you might have heard how he spoke. What an ennobling speech !

Mr. Mohanty has been elected as the Chairman of the Bar Council. A great honour for a student of the College. I am very glad that he has kindly come over here. However I wish Dr. Sachi Routray would have been here. I am sorry how he has not come. He is also the President of the Orissa Sahitya Akademi. He also won the Sahitya Akademi Prize.

And before I end, I want to speak on another matter. The Presidents of College Union and some of the students were very critical of me. But I have got great regard for them. Sri Chitta Behera, Krushna Bal, Bijoy Routray were very critical of me. But I have affection for them and perhaps they have now regard and affection for me. *Nobody is an enemy to me.*

Hussain Rabi Gandhi was the President of the Sambalpur College Union. He distributed pamphlets when the Silver Jubilee was being celebrated. When I was coming away from the College on the 4th July, 1970, he was addressing the meeting. He said, "I have insulted this Principal more than any other Principal, But the Principal is a magnanimous man. But I cannot say anything further because I feel suffocated."

I have loved you, my dear students. You have given me abundant love in return. I shall remember you my dear colleagues. I might have been harsh to you but I have not given any adverse C.C.R. without informing you. Out of the four thousand C.C.R's, I might have written during the last ten to twelve years, I might have given adverse entries in five or six cases and be sure, you will be always in my mind. About Class Ill and Class IV employees, I will try to help you as far as possible.

With this, my dear students,
I take leave of you. ■■■

LETTER OF VICE-CHANCELLOR

DR. M.K. ROUT

TO

ALL MEMBERS OF THE SENATE

On the eve of laying down as Vice-Chancellor

ON 13TH SEPTEMBER, 1983

D. O. No. VC...../83 September, 13, 1983

FROM :

Dr. M. K. Rout, D.Sc.

Vice-Chancellor, Utkal University.

To

ALL MEMBERS OF THE SENATE

DEAR FRIEND,

(1) I am handing over charge of Vice-Chancellorship this afternoon on full completion of my term.

(2) When I joined as Vice-Chancellor on 14th September, 1980 exactly three years back, I invited suggestions from each of you for the improvement of the University in different spheres. There were a few responses.

(3) I feel I am under obligation to furnish an account of activities during the last three years. I acknowledge and accept accountability to the Senate and the Syndicate.

(4) In light of the suggestions received from you, and my own convictions, I decided to set my goal on the following two main objectives :

(*a*) to put the financial position of the University on a sound footing.

(*b*) to see that (i) the results of Annual Intermediate and Degree examinations are published in the first week of June and July respectively to enable I. Sc. and Honours students to secure seats in All India Institutions on competitive basis and (*ii*) to ensure cleanliness in the examinations.

(5) The results in 1981 and 1982 were published according to schedule and perhaps one or two months earlier than in the previous years on an over-all scale.

(6) Publication of Annual Intermediate and Degree exadination results in 1983 was a tremendous task.

(*i*) The Ex-Controller of Examinations left in February, 1983 and the new Controller after he joined was keen to take leave on health grounds.

(ii) The Deputy Controller took leave due to sudden illness in April and could not return. The new Controller of Examinations joined in the late part of June

(iii) The Assistant Controller was on the verge of retirement.

(iv) To add to these troubles, it was an imperative necessity to publish the results of P. G. Examinations in 37 subjects before 30th June to enable the successful candidates to compete for the post of adhoc lecturers.

(v) The employees were on strike from 10th may to 6th June. As the class IV employees and even the Daily Wagers were on cease work, on some occasions, I had to assist in carrying bundles of answer-scripts for the purpose of sorting out the six lakhs of answer-scripts of the Intermediate examination.

(vi) Most of the experienced Assistants had been transferred from the examination sections after reporting of cases of tampering, by the Vice-Chancellor in a certain situation.

(7) I was entitled to 3 months earned leave and complete rest with effect from June 14. I did not avail of it and allowed the leave to lapse to *see a little smile and gratitude on the faces of the students* whose results could be published in time.

(8) To impart some sanctity to examinations, the examinations in twelve colleges were cancelled in 1983. I had to face angry students and my family had to face considerable harassment but I accepted them as official hazards.

(9) I had waited for the new Controller of Examinations and the Deputy Controller of Examinations to join. They are now in position. The Assistant Controller will join as soon as the relative seniority of two persons is determied by the new Vice-Chancellor.

The P. G. Examination Unit has now been expanded from one section to three sections to ensure quicker publication of P. G., M.Phil and Ph.D. examination results etc. 23 new Junior Assistants have also joined I am sure the Examination Sections will now work smoothly, effectively and efficiently.

(10) I worked with a mission. I have worked for 12 to 14 hours on all days during the last three years. I have taken casual leave for only 2 days and I have remained absent from headquarters on duty leave for not more than 12 days during the last three years. The annual correspondence increased from nearly five hundred to more than thirteen thousand i. e. nearly 25 times at the Vice--Chancellor's level. I used to check the daily memos every day about street lights, hostels, open air theatre, electric consumption etc.

(11) On 17th January, 1983 I had issued a statement to the Press praying for instituting a Commission or Committee of Enquiry and I had declared my intention to offer myself for dismissal, if the findings of the Commission tended to the conclusion that there has been deterioration in the University during my tenure. The Commission was not appointed. I understand that my name found a place in the panel suggested by the Committee presided over by an Ex-Governor and Ex-Chief Justice of the High Court, a reputed Ex-Vice-Chancellor (U.G.C. representative) and the State Government representative, manifestly in consideration of my performance during the last three years. If this information is correct, my actions may stand morally vindicated and that perhaps encouraged me to work till the last hour of my term.

(12) Admiration or denigration has the same impact on my mind. I derive joy and pleasure from the inner satisfaction of having discharged my responsibilities and fulfilled my commitments and obligations.

(13) The information given in the "Note on the Affairs of the University during 1980-1983" may help you in assessing the situation in the correct perspective in an unbiased manner.

(14) I pray to God to give me strength and imagination to play my role effectively in the exciting field of control of environmental pollution with rich potential for challenging scientific activity.

With regards.,

Yours Sincerely,

A NOTE ON THE AFFAIRS OF THE UTKAL UNIVERSITY DURING 1980 SEPTEMBER—1983 SEPTEMBER

(Dated the 1st September, 1983)

I. FINANCE :

(1) Clearance of Outstanding Dues :

The staggering figure of Rs. 155 lakhs (P.W.D. 80 lakhs, Housing Board 43 lakhs, Library 7 lakhs, Printer's Bill and remuneration to examiners etc. nearly Rs. 25 lakhs) has been reduced to Rs. 23 lakhs (Rs. 19 lakhs to be paid to Housing Board in instalments partially from the University's own funds and the balance from the Development Grants provided by the State Government) and Rs. 4 lakhs received from the Harijan Welfare Department for extension to Women's Hostel and still to be utilised.

(2) Fixed Deposit :

In addition to Rs.3 lakhs put in fixed deposit in 1975, Rs. 40 lakhs (forty lakhs) have been put in fixed deposit during 1980-83. With interest, the fixed deposit has come to nearly Rs. 48 lakhs.

Another at least Rs. 20 lakhs will be put in fixed deposit when the Government reimburses the University's claim of Rs. 25 lakhs, which is the loss sustained by the University on account of exemption of examination fees, tuition fees etc. granted by the Government to students affected by flood, cyclone etc.

It is hoped that the annual interest proceeds will be spent as follows :

Quarters	...	3 lakhs
Hostel	...	3 lakhs
Books	...	1 lakh

(3) Measures taken to effect economy and financial discipline and to augment income.

(*i*) Fixation of metres in all 300 old quarters and 150 new quarters as a result of which the amount collected from occupants of quarters for electric charges has increased three times. The Vice-Chancellor has also been paying for electric charges for the first time.

(*ii*) Medical advance has been limited to Rs.200/- in an instalment. This was done to check abuse. The expenditure has been considerably reduced.

(*iii*) Medical reimbursement limited to Rs.500/- per year to check abuse. The expenditure has been considerably reduced.

(*iv*) Reduction of expenditure on vehicles.

For private purpose, Rs. 1.25 p. is charged per kilo metre. *This also applies to the Vice-Chancellor*. The expenditure has been considerably reduced.

(*v*) Monitoring of bills for water charges, phone charges and purchase of paper etc. This has resulted in considerable economy.

(*vi*) Increase of Annual Block Grant from Rs.60 to Rs. 100 lakhs through effective presentation of facts.

(*vii*) Charging Rs.50/- per candidate on opening of a new Centre.

(*viii*) By exerting pressure on Electricity Board, the occupants of quarters were charged at domestic rate (32 paise per unit) instead of at General Rate (75 paise per unit) resulting in a saving of nearly Rs 5 lakhs per year.

The University still loses Rs. 6 lakhs per year as the Hostels are to pay electric charges at General rate (75 paise per unit) because of imposition of electricity duty at 45%.

(*ix*) Increase of fees for Mark Sheet, Provisional Certificate and Migration Certificate.

(*x*) By keeping 55 posts of L. D. Assistants vacant for the last three years.

II. EXAMINATION

(4) *Publication of Intermeaiate ana Degree Examination results at least a month earlier than that publishea in previous years.*

The tables given below will bring out into sharp focus the improvement in this area.

There was employees' strike from May 10 to June 6 *i.e.* over a period of 26 days.

The I. Sc. results involving 7,500 students were published on 8th June in spite of the employees' cease-work agitation.

Dates of Publication of Annual Intermediate and Degree Examination results by different Universities.

	Utkal University	Sambalpur University	Berhampur University
I. Sc,	7,500 students published on 8th June	2,600 students published on 20th June.	1,700 students published on 21st June.
I. Com.	4,500 students published on 17th June.	1,800 students published on 1st July.	1,200 students published on 28th June.
I. A. (Regular) & I.A. (Private)	27.500 students (Regular) and 12,000 students (Private) published on 21st June and 27th June respectively	7,000 students published on 10th July.	4,444 students published on 16th July.
Degree (Hons. and Pass)	9.000 students (Hons.) and 13,000 students (pass) published on 10th and 18th July respectively.	3,000 students published on 10th August.	3,000 students published on 10th August,

(5) Steps taken to check manipulation and tampering of marks.

Following a direction from the Chancellor, one case of manipulation was detected. *The Vice-Chancellor then ordered scrutiny* by a Committee of senior teachers of all tabulation registers of Degree Examination involving 22,000 candidates and of Intermediate Examination involving 44,000 cases. Eleven cases of manipulation were detected and were *reported in a particular situation by the Vice-Chancellor to the Hon'ble Chancellor for enquiry by State Vigilance Department.*

One Grade-I Assistant and three Teacher-tabulators have been put under suspension and are being criminally prosecuted. Atleast 10 examiners are going to be debarred from examinership for life.

For these actions, the Vice-Chancellor has had to face a systematic campaign of blackmail and character assassination in the Press perhaps engineered by those involved in manipulation and tampering of marks, Senior teachers and officials were also involved.

(6) *Cancellation of Examinations in 12 College centres including three Colleges of Cuttack and Bhubaneswar in Intermediate Examination and one College in Cuttack in Hons. Paper V in Degree Examinations.*

Never in the history of the University, 12 College centres including three Colleges of Cuttack and Bhubaneswar had been cancelled. The Vice-Chancellor had to face the wrath and fury of the students.

III. TEACHING AND RESEARCH :

(7) *Teaching and Research Activities of teachers of P. G. Departments.*

The teachers are required to submit in a prescribed proforma an annual statement indicating the total number of (i) theory classes taken, (ii) practical or tutorial classes taken, (iii) seminars attended, (iv) research papers or books published and (v) any distinction achieved. These annual statements are sent to the Chancellor. This has induced an atmosphere of seriousness in teaching in P. G. Departments.

(8) Monitoring of teaching work in Affiliated Colleges.

The affiliated colleges numbering (163) are required to submit an annual statement in the following proforma :

Class	Subject	Total number of theory classes, tutorial classes and practical classes taken during the year. (to be given separately.)	Section wise/ Group wise.

Thirty thousand rupees (Rs. 30,000/-) have been provided in the budget for financial assistance to colleges for holding seminars and workshops.

IV. ADMINISTRATIVE DISCIPLINE

(9) *Steps taken to enforce Administrative Discipline.*

After the withdrawal of the Employees' cease-work agitation in the three Universities, it has been possible to enforce greater discipline. Each of the Section Officers send daily comments about the work of each person working under them to the Vice-Chancellor. The Vice-Chancellor takes appropriate action against delinquent employees.

V. STUDENT DISCIPLINE

(10) Student Discipline—After the students' Strike in 1981, when the boarders were asked to vacate the hostels within 12 hours and a number of police cases have been started, there seems to prevail greater discipline.

The Visiting Committee of the U. G. C. was highly impressed by the behaviour of the students and the peace, quite and good academic atmosphere in the Campus.

VI. BUILDINGS

[(i) Completed, (ii) In Progress (iii) Construction about to start.]

1)	Sump	Rs. 7 lakhs	Complete
2)	Open Air Theatre at Vani Vihar and also Samiana, Carpet at University's own funds.	Rs. 1.8 lakhs	Complete
3)	Open Air Theatre at M. S. Law College--University's own funds.	Rs. 0.8 lakhs	Complete
4)	High School Building—University's own funds.	Rs. 1.5 lakhs	Complete
5)	Extension to Women's Hostel No. II—Ground floor complete 1st floor in progress— with State Bank loan of Rs. 4 lakhs at 4% interest.	Rs. 2.3 lakhs Rs. 2 lakhs to be spent	Hostel occupied
6)	Water, electricity connection in Press Building, 150 new quarters—University's own funds.	Rs. 5 lakhs	Complete
7)	LL. M. Building—U. G. C. assisted.		Completed and occupied.
8)	Geology Building—U. G. C. assisted.		Being completed and just occupied.

9)	22 numbers of Teaching Staff quarters—U. G. C. assisted.		Completed and occupied during the last two months.
10)	126 numbers of non-teaching Staff quarters.		Completed and occupied during the last six months.
11)	Cycle Shed	Rs. 0.75 lakhs	In Progress
12)	University Law College	Rs. 5 lakhs	Rs. 1.5 lakhs deposited with theBRIT ender invited.
13)	Extension to Women's Hostel No. I—U.G.C. assisted.	Rs. 3.75 lakhs and State Govt. snare Rs. 1.25 lakhs.	Tender invited Rs. 2 lakhs deposited with P.W D.
14)	Extension to 3 Boy's Hostels—U.G.C. assisted.	Rs. 7.5 lakhs + Rs. 7.5 lakhs State Govt. share.	Tender invited Rs. 3 lakhs also deposited in anticipation of receipt of funds from U.G C. and State Government.
15)	A 2nd wing Extension to Womens' Hostel No. 1 Rs. 4 lakhs sanctioned by the Harijan Welfare Department.	Rs. 4 laks	Work to start soon
16)	Further Extension to High School—	Rs. 2·2 lakhs	Estimate approved
17)	Miscellaneous— Road Repair work—Tar-felting etc.	Rs. 6 lakhs	Some already taken up.
18)	Lecture Theatre for Botany Department.	Rs. 1 lakh	Incomplete Building to be completed.
19)	Animal house for Zoology Department.	Rs. 1 lakh	- Do--

VII. Funds sanctioned by the U.G.C. on the recommendations of the U. G. C. Committee which visited the University during November 8—November 12, 1982.

a) Teaching Posts sanctioned :

7 Professors
12 Readers
12 Lecturers
| appointments to be made shortly

b) Opening of Master of Library Science — Rs. 2.05 Lakhs

c) Equipments including Electron Microscope— Rs. 30.00 Lakhs

d) Extension to Science Bulding — Rs. 6.00 Lakhs

e) Extension to Faculty Club, Guest House — Rs. 2.50 Lakhs

f) Purchase of X-Ray and E. C. G. for Hospital — Rs. 1.50 Lakhs

g) Improvement of Library facilities — Rs. 2.00 Lakhs

VIII. OPENING OF NEW SUBJECTS :

a) M.A. Education—Arrangements completed—Applications will be invited from students very soon.

b) Post B.Sc. Diploma Course in Computer Science—Posts of Readers and Lecturers already advertised. Classes may start next month.

c) Master in Library Science—The U.G.C has sanctioned funds. Admission can be made within two or three months.

d) M.A. in Correspondence Course in Political Science and Oriya—To be started from this session.

e) M.B.A.—In view of the progress made in securing clearance, as mentioned in my note to the Syndicate, the State Govt. should permit the University to start the course in anticipation U.G.C. clearance.

f) B. Lib, Science—Started in 1981.

g) M. Phil.—Started in a number of subjects.

IX. BENEFITS TO TEACHERS & EMPLOYEES :

a) Sabbatical leave—Introduced. Four Professors have already availed of this during the last three years.

b) Surrender Leave—It was withdrawn in early 1980 but restored in 1981 May. The Govt. have recently decided that this would be met from University's own funds.

c) Leave encashment—It was withdrawn in early 1980 but restored in 1981 May.

d) Gratuity—10 months' salary paid to employees who had retired many years back for the first time since the inception of the University.

Gratuity for 6½ months' more salary also released recently.

e) C.P.F.—Continues at 10%.

f) L.T.C —Introduced of course in a restricted form; Rs.25,000/- set apart for 1983-84.

g) Quarters—Construction of 150 (one hundred and fifty) quarters completed anp alloted for occupation.

h) Housing building advance and Scooter Advance etc. being given on a very liberal scale.

i) Merit Promotion to teachers—The scheme is likely to be cleared by the State Govt. before the end of September as per assurance given by the appropriate authorities.

j) Payment of Pension to the University Employees by the Government is now under the active consideration of a top-level committee.

———

MSRC. U. U. Press—6-9-83—750

Prof. M. K. ROUT

SIXTIETH BIRTHDAY CELEBRATION

SOUVENIR

17th February, 1984
RAVENSHAW COLLEGE, CUTTACK

ADVISORY COMMITTEE

Patron—Prof. B. Prasad

Members

Prof. S. Pani
Prof. A. S. Mittra
Prof. G. N. Mahapatra
Prof. R. C. Tripathy
Prof. G. C. Mohanty
Dr. B. K. Patnaik
Dr. D. Mangaraj
Dr. H. P. Misra
Prof. P. K. Jena
Prof. M. S. Quanungo
Prof. P. K. Das
Prof. S. K. Talpatra
Prof. R. C. Mehrotra
Prof. (Mrs.) A. Chatterjee
Prof. R. N. Chakravarti
Prof. R. D. Tiwari
Prof. G. B. Singh
Prof. P. K. Pati
Prof. M. Santappa
Prof. S. Sastri
Prof J. Shankar
Prof. J. N. Chatterjee
Prof. D. Nasipuri
Prof. K. D. Banerjee
Prof. S. Aditya

President—Prof. K. K. Patnaik

Vice Presidents—

Prof. H. K. Pujari
Prof. B. Nayak
Prof. D. V. Raman Rao
Dr. J. D. Panda
Prof. R. K. Nanda
Prof. P. S. R. Murty
Prof. C. N. Nanda

Secretary—Prof. G. B. Behera

Treasurer—Dr. B. K. Sinha

Members in different committees

Prof. B. Sahu
Dr. P. K. Misra
Dr. P. L. Nayak
Dr. B. K. Mahapatra
Dr. R. K. Satpathy
Dr. L. N. Patnaik
Dr N. Mohanty
Dr. (Mrs.) P. Mohanty
Dr. K. C. Satpathy
Dr. C. S. Panda
Dr. D. C. Pati
Dr. S. C. Basa
Dr. A. K. Panigrahi
Dr. G. Sahu
Dr. P. C. Roy
Dr. A. C. Dash
Dr. B. C. Singh
Dr. B. K. Patnaik
Dr. B. K. Das
Dr U. C. Misra
Dr. P. K. Mahapatra
Prof. P. B. Das
Prof. R. C. Das
Dr. R. C. Acharya
Dr. B. K. Sabat
Dr. B. Dash
Dr. S. N. Mohapatra
Dr. K. C. Dash
Dr. D. P. Das
Dr. A. K. Tripathy
Dr. P. P. Mahapatra
Dr. H. Patnaik
Sri S. K. Prasad
Dr. D. Rout
Sri P. Mahapatra
Sri B. L. Das
Sri G. N. Mahapatra
Dr. S. C. Pati
Mr. C. N. Patra
Dr. P. Patra
Dr. C. R. Das
Dr. J. N. Kar

Dr. A. Nayak

Preface

During last August the former students, colleagues and research associates of Professor Mahendra Kumar Rout resolved to celebrate the sixtieth birthday of their mentor for which several committees were formed. At their request, the Council of Indian Chemical Society accepted the proposal to dedicate the December '84 issue of the journal of the society to Prof. Rout on this occasion. We are grateful to the society for this gesture.

We are happy to present this souvenir as a token of our gratitude to Professor Rout for his manifold qualities.

On behalf of our friends and colleagues we wish Professor Rout long years of further activity in the cause of Science, Education and Society.

ORGNAISING COMMITTEE

PROF. MAHENDRA KUMAR ROUT

Dr. B. N. PANDE
Governor, Orissa

RAJ BHAVAN
BHUBANESWAR

The 11th February, '84

I am glad that a Souvenir is being brought out on the occasion of the celebration of the Sixtieth Birthday of Prof. M.K. Rout, former Vice-Chancellor of the Utkal University.

Prof. Rout is an eminent educationist and academician. He is very popular among the student community. I wish him many returns of the day in the service of the State.

Sd/-B. N. Pande
Governor, Orissa

Prof. N. R. Dhar, D. Sc., F.N.A.
Director, Sheila Dhar Institute of Soil Science
University of Allahabad
2-D, Bell Road
Allahabad, (India)

Dt.13-1-1984

I convey to Professor M. K. Rout my heartiest blessings and good wishes and kindest greetings on his sixtieth birthday.

Professor Rout alongwith late Professor P. K. Parija have rendered great service to the progress of Science in Orissa.

Professor Rout is deeply interested in the welfare of the students in Chemical Science and is always watching their progress.

I have lived with Professor Rout in his house at Cuttack and he was highly devoted to me and looked after me very well.

I wish him many more years of life in the service of Science and Technology in Orissa.

I wish him success and progress for many more years.

N. R. DHAR

Dr. Harekrushna Mahtab

Nivas
Bhubaneswar 751002

Dt. 13-1-1984

I am glad to know that the Souvenir Committee of Prof. M. K. Rout is going to bring out a Souvenir on the occasion of his 60th birthday ceremony. Nodoubt Dr. Rout has proved himself an able administrator and an educationalist. On this occasion I pray to God for a long active life of Dr. Rout and wish the Souvenir all success.

H. K. MAHTAB

Dr. B. Prasad, D.Sc., F.N.A.
Retired Prof. of Chemistry, Ravenshaw College
Vice-Chancellor of Patna and Allahabad Universities.

Dr. Bawa Kartar Singh began research work in Chemistry Department of the Ravenshaw College when research was not a common thing in a college. I succeeded him. I organised research and persuaded the Patna University to create Ph. D. degree. After sometime Dr. Mahendra Kumar Rout became Professor of Chemistry. He devoted more time to research than myself. He used to work till about 10 P. M. in the laboratory. A large number of students took Ph. D. degree under his guidance. His devotion to research was real. Subsequently he became Principal of the Ravenshaw College. As principal also he carried on his research with vigour. Then he shifted to administration as D. P. I. and Vice Chancellor of the Utkal University. Now he is chairman of the State prevention and control of pollution Board, Orissa.

I am sure he will make his mark there.

On his 60th year I wish him greater success in life.

Dr. B. PRASAD

Dr. M. Santappa
Ph D. (Lond.), Ph.D. (Manch.)
F.N.A., F.A.Sc., F.R.I.C.,
Vice-Chancellor
University of Madras

University Buildings
Chepauk, Madras 600005

12th January, 1984

I am indeed very happy to note that Prof. M. K. Rout has completed 60 years and that the Prof M. K. Rout Sixtieth Birthday Celebration Committee is bringing out a souvenir to mark the occasion.

On this occasion, we may recall the many services rendered by Prof. Rout for cause of education. He is an exemplary teacher and a great research scientist. His contributions to the chosen field are outstanding. Generations of students will remember with affection and gratitude for the teaching and training imparted by him.

It is my privilege to send my hearty felicitations to Prof. Rout and best wishes to celebrations committee for all success in its endeavours.

M. SANTAPPA

Dr. Sadasiv Misra, M.A., Ph.D. (London)
Ex-Vice-Chancellor
Utkal University

Professor Para
Cuttack 753003

Jan. 16, 1984

I am glad to learn that Professor M. K. Rout's sixtieth birthday is being celebrated in last week of January. Apart from being a successful educational administrator, he made substantial contribution in the field of chemisty. He has guided a very large number of scholars in their doctoral thesis. All this has been a remarkable achievement. continues to be energetic and enthusiastic in research and will make many more able contributions.

S. MISHRA

Prof. R. C. Mehrotra, D.Sc., F.N.A.
Ex-Vice-Chancellor
Delhi University and
Emeritus Professor of Chemistry
Rajsthan University

There are a few persons, who have the unique talent both for administration and research and Dr. Rout happens to be one of them. He is admired by his students for his outstanding teaching ability. He has worked in diverse areas of research-drugs, dyes, quantum mechanical interpretation of absorption spectra, physical organic chemistry and polymers. Recently after joining as the Chairman of Orissa State Pollution Control Board, he is rapidly developing expertise on industrial pollution and establishing himself as an environmental Scientist. His note to successors when he relinquished the office of the Principal, Ravenshaw College and also as D. P. I. will testify to his contribution at a glance to the offices he held with great distinction. His printed note to the members of the senate on the 13th September, 83 when he relinquished the office of the Vice Chancellor will find a significant place in the history of Utkal University when it will be written in future. He is remembered by students, teachers and employees with deep love, respect and gratitude.

R. C. MEHEROTRA

Dr. M. N. Das
Vice-Chancellor
Utkal University

Vani Vihar
Bhubaneswar 751004

January 13, 1984

For years I have admired Professor M. K. Rout as an ideal teacher, an ideal guide, an efficient administrator and as an eminent scientist. By his contributions to the science of Chemistry through numerous researches and substantial results, he has honoured the scientists of Orissa and has established a place of prestige in respect of his discipline in the wider scientific map of India. He has been a source of inspiration to many others who regard devotion to learning a duty of life.

Through a difficult time he worked as the Pilot of Utkal University and shouldered the responsibilities to the best of his ability. As his successor in office, I have started realising how difficult it is to be a Vice-Chancellor in any University. That Professor Rout faced these difficulties with courage and confidence and overcame many problems will remain like a lesson to me and to others who will occupy this position,

We pray for a long and glorious life for Professor Rout and we hope that every month of his life will be a time of dedication to the cause of science and progress of the State.
Praying got many many more birth days, I remain.

M. N. DAS

Prof. R. D. Tiwari
Retired Head Chemistry Department
Allahabad University

36, Mumfordganj
Allahabad 211002
India

January 16, 1984

Ravenshaw College Cuttack has been an important centre of chemical studies and research and the credit for its development goes to Professor M. K. Rout who has spent important and useful years of his active life in this institution in various capacities both teaching and administrative. Professor Rout has been a reputed teacher and his research contributions in the field of organic chemistry particularly synthetic dyes are too well known. In fact he has established a flourishing school of synthetic organic chemistry and his students are occupying important places not only in Orissa and Bihar, but all over India. I am confident that even after his retirement from teaching post and the administrative assignment as Vice Chancellor whenever it comes, he would continue his interest in teaching and research in chemistry to benefit the coming younger generations.

I wish many happy returns of the day to Professor Rout and pray God to grant him vigour and energy to continue his interest to chemistry, a cause which he has served through out in life and which has always been so dear to him.

With best wishes to you and for a successful celebration in which unfortunately I would not be able to participate.

R. D. TIWARI

Prof. S. PANI, Ph.D.(London)
Retired Professor of Chemistry
Sambalpur University
Burla 768019

I am extremely happy to know that the sixtieth birth day of Prof. Mahendra Kumar Rout is being celebrated by his students and admirers. Prof. Rout and myself worked together at Ravenshaw College for more than a decade. His dynamic leadership has secured a place for the College in the scientific map of the world.

As a good friend, as an excellent teacher and a researcher, as an excellent educational administrator, and above all as a good man he has earned respect from his colleagues and friends. Prof. Rout is God fearing and a positive personality.

I pray God to continue bestowing His blessings on him so that he can serve the humanity in his new assignment with the same understanding and humane qualities.

S. PANI

Prof. J. N. Chatterjea, D. Sc., F. N. A.
Department of Chemistry
Patna University
Patna 800005

I am extremely pleased to hear that the 60th birth anniversary of Professor M. K. Rout is being celebrated in a befitting manner. I knew Mahendra since his M. Sc. days at Patna but his seniority in the class by one year kept him at a distance. Turning the pages of the Journals since the late forties, it was apparent to all readers that a new star was on the horizon in Orissa, for Dr. Rout, right after his Ph. D. degree, hurled his legion to the research table from which a steady stream of papers emerged to illumne the pages of scientific communications. At this distance of time it will be difficult to appreciate the full significance of his contributions, for the conditions and environments of the period is well-known to everybody. Reviewing his work is like rotating a Kaleidoscope containing as bright pebbles some different facets of organic chemistry. Dr Rout regretted many times having had his higher education at Patna any other place, Calcutta for example, could have groomed him better for higher research. His lasting contributions in cyanine dyes area however had their origin at his Alma Mater.

Dr. Rout is a lovable friend and an ideal colleague. I wish he will continue to vitalise the growth of Science in Orissa and serve as an enduring inspiration to the young generation.

J. N. CHATTERJEA

Prof. B. D. Tilak
Chief Coordinator
Centre for Application of Science and
Technology for Rural Development (Castford)

January 21, 1984

"Prof. Rout has made outstanding contributions to teaching and research in organic chemistry. I offer him my heartiest felicitations on the occasion of his Sixtieth Birthday Celebrations and wish him a long, healthy and fruitful life."

Dr. TILAK

Prof. P. Anantakrishna Nadar
Prof. and Head, Chemistry Department
Anna University, Madras 600 025

February 4, 1984

I had the privilege of introducing Prof. M. K. Rout at the National Seminar on "Assessment and management of Pollution" at the School of Environmental Science, New Delhi. Prof. Rout gave the Theme talk on 'Status of Alkali Industries'. All those who listened to him admired not only the way of presentation but also the insightful approach and expertise which he has developed only during the last four months, not only on pollution control measures but also on the relative merits of the manufacturing processes and demercurisation methods.

Recently attended an International Symposium on Correlation Analysis. Though Prof. Rout did not attend the symposium, his works were referred to several times by the participants during the symposium.

I met him for the first time at Anamalai in 1964 and his lecture at the symposium gave me sufficient insight into the work; I carried out almost in allied field subsequently. I take this opportunity of expressing my deep gratitude to him. In fact I have been an ardent silent admirer of him, though, I met only yesterday after twenty years.

P. ANANTAKRISHNA NADAR

REMINISCENCES

Reminiscences

Dr. D. C. Misra, M. A., Ph. D. (Harvard)
Ex-Vice Chancellor
Sambalpur University

In the year 1938 I joined the first year class of Ravenshaw College. Dr. Mahendra Kumar Rout also joined in the same class that year. This was how we became classmates and the association ripened with friendship over the last forty six years. Dr. Rout was in science class and I was in Arts; he was in the West Hostel and I was in the East. But Ravenshaw College had not yet grown to its present massive proportions. Humanities and Science had yet to be two separate cultures and East and West had not yet developed their splendid isolation. We met very often in English and Oriya classes, college corridors and hostel rooms.

I joined the Patna College for my B. A. Therefore, Dr. Rout and myself could not meet very often until he joined Patna College in July 1942. The cultures then prevailing in Patna College and Science College could be compared to ancient Athens and Sparta. While we were enjoying a life of unfettered liberty in Patna College our friends in science College were groaning under the authoritarian discipline of a scientific type. But the long hours of work is the laboratory was perhaps helpful to Dr. Rout to develop an unusual capacity for long and sustained work which scientific research demands. This also partly explains his brilliant career as a research scientist later on.

Dr. Rout took his M. Sc. degree in Chemistry in 1944, the same year I got my M A. in Economics. That year was also a land mark in the history of higher education n Orissa. Three new colleges were started at Balasore, Puri and Sambalpur. There was a sudden demand for lecturers in various subjects, but supply was extremely short. That was how we were lucky to escape unemployment and Dr. Rout found for himself an employment as lecturer in Chemistry even before his results were out. I joined as a lecturer in Economics in Government College, Sambalpur and came back to Ravenshaw only in 1946. I was off again to U. S. A. in 1947 and returned to my post in the later part of 1950. From that

time till 1971, I was in Ravenshaw College. During this period our association become very close and intimate. We worked together on various assignments. This was also Dr. Rout's finest hours. His research input increased in geometric progression. He carved for himself a secure position among the eminent scientists of the country. The number of his research students steadily increased and he was able to create a suitable environment for scientific research in the college. But what amazed me most was his capacity for performing a variety of tasks at the same time. He had to spend long hours in the laboratory either doing or guiding research, but still then, he had time for his friends, time for keep track of men and affairs, time for solving student and staff problems, for advising his colleagues and for attending to college functions. But the most interesting creation of his, was the Chemistry Department tea club. I had the good fortune of attending this tea club many a times, where tea and friendship were mixed in equal proportions. Another interesting trait of his character is his great capacity for writing letters. I wonder how he got the time for it. It did not matter, whether he was Principal, D. P. I. or Vice-Chancellor, his pen would never remain idle. He would fire one letter after another, often several at a time to authorities concerned bringing to their notice not only the problem but also solutions to them. No wonder that on whichever thing he lay his hand, whether research, teaching, administration or public affairs, he would not rest contented till he had brought it to a fruitful conclusion.

I am very happy that on the completion of his sixtieth birthday, his former students, admirers, friends and colleagues are assembling to wish him a happy, long prosperous and productive life. I join with them in wishing him a long happy and fruitful life. ■■■

Reminiscences

Dr. P. K. Pati
Vice-Chancellor
Sambalpur University
Jyoti Vihar.

I am an intimate friend of Dr Mahendra Kumar Rout. Our friendship has been almost lifelong , i.e., from 1938 till today. He is one of the few persons with whom my friendship has never been affected by any kind of misunderstanding. Indeed our friendship in the current course of years has become more intense.

It is for this reason that I am not very keen on writing about him. People may think that whatever I say about him is tinged with the weaknesses of a friend. While making the remarks that I follow I am conscious of this and, therefore, what I am writing is an indication of my sincere opinion about him.

Dr. Rout was a very good student but he was not extraordinarily brilliant. However, after he became a Lecturer in Chemistry, he strove very hard and whatever he has achieved has been the product of not only his inherent qualities but also his dedicated work.

The Department of Chemistry in Ravenshaw College was one of the few Departments which initiated a research tradition in addition to excellence in teaching I do not know what research was being done before Dr. Balabhadra Prasad became the Head of the Department. I think Dr. Prasad was the pioneer in this field. Dr. Rout imbibed this tradition from Dr. Prasad and Dr. Guha Sarkar. Like them, he spent hours and hours in the Chemistry Department. He has gone on scaling one peak after another and has added many feathers to his cap. From Ph.D. he moved on to D.Sc., the number of his research papers is legion, and he has acquired a number of other honours. What is more, like Dr. Prasad he has become an inspiring force, a radiating centre for research in the State and he has acceded in producing a devoted band of research workers and successful teachers.

I would like to let out a cat out of the bag. When the post of Professor of Chemistry fell vacant in Utkal University, I advised Dr. Rout to go in for that. I wanted him to be devoted with singleness of purpose to research and teaching. Dr. Rout, like most of us, succumbed to the temptation of accepting higher administrative posts, such as, the post of Principal of Postgraduate College, Director of Public Instruction, and Vice-Chancellor. These posts are obviously soul-killing. It is a testimony to the perseverance of Dr. Rout that even after accepting these posts, he has continued to maintain close link with research work in the Department of Chemistry. Nevertheless, I cannot help feeling that Dr. Rout could have achieved much more in research than he has done. Of course, being a dynamic and enthusiastic person, full of innovation ideas, he has proved his mettle also as an administrator.

Dr. Rout is extremely loving and lovable. He has a heart which overflows with the milk of human kindness. His love for students is exemplary.

It is the fitness of things the Chemists of Orissa, most of whom are students of Dr. Rout have thought of offering him their felicitations on his 60th birthday. I join them in wishing Dr. Rout a happy life which will continue to be enriched with further achievements. ■■■

Dr. M. K. Rout (Mahendra) – As I know him

Prof. P. K. Das
Additional D.P.I (Retd)
and Ex-President
Service Selection Board, Orissa

Ravenshaw College with its sprawling campus, its faculty members-their contributions to academic life and above all the contributions of Ravenshawvians to all spheres of national life is indeed awe inspiring. In 1938 a fresh batch of first year students joined Ravenshaw College with high hopes, high ambitions and colourful dreams to meet the challenge of being Ravenshawvians. One such student amongst us in that batch was Mahendra Kumar Rout (who is always Mahendra to me). My association with Mahendra extends from some day in August 1938 when he had cut his hand by glass while fitting a wash bottle in I.Sc. chemistry practical class, till this date, in various ways as a classmate, as a colleague, as a head of the department, as a principal, as a D. P. I. and above all as a friend. Other than the incident of the practical class, I being placed with him in the same tutorial batch, could know him better, that he hails from Bhadrak, is staying in West hostel, has taken up the same group combination as mine and could often score 5 out of 10 in tutorial exercise (our the then English professors had specialised in awarding 3 or 4 out of 10). He had a natural gift of knowing people and with his friendly treatment of others, was immensely popular with us. In B. Sc. classes we were together, having taken up chemistry honours. In this period he developed a love for the study of chemistry. As a classmate, he was always helpful in exchanging notes and books and also exchanging ideas in solving problems. He stood second in honours in the Patna University and thus made his mark as a chemistry student. We were again together in our post graduate study in Patna Science College, under Patna University. It was always a challenge to the few Oriya

students reading at Patna not only to conduct themselves properly but to score in a creditable manner in the examinations. I am happy to remember that all of us did extremely well on both counts and thus our formal student days were over.

In September 1944, myself and Mahendra joined Ravenshaw College as lecturers in chemistry. Dr. B. Prasad, who was our professor and head of the department and a keen researcher advised us that to become successful teacher one has to do research. Almost the same advice was given by our the then principal Dr. P. K. Parija. As a teacher Mahendra became successful immediately. His helpful attitude, his understanding nature, his generosity made him extremely popular with students, colleagues and subordinates. As a teacher and research guide he has moulded the careers of many who are highly placed in life and are scattered throughout the world. By his sheer zeal and perseverance he had kept the chemistry department of Ravenshaw College as one of the foremost centres of study and research in chemistry in the country.

As regards my relation with him, he is the best friend one can ever have. He has advised me in times of need, saved me from many a pit fall and stood by me at times of adversity. As a colleague he is the best, as a head of the department, as a principal, as a D. P. I., he is one of the very best. As a Vice-chancellor he made his mark as a dynamic and hardworking Vice-chancellor.

I have been very happy to write a few lines about my friend. I hope the young boy's hope, ambition and dream, who entered Ravenshaw College in 1938 have been fulfilled. I also hope that he will make further contribution to the society with his present assignment. ■■■

Dr. Mahendra Kumar Rout – As I know

Prof. G. N. Mohapatra
Retired Professor of Chemistry
Ravenshaw College, Cuttack

Dr. Mahendra Kumar Rout is known to me since my high school years, as we were reading in the same high school and passed from the same high school with same distinction. I joined Bhadrak High School after passing M. E. examination in the year 1937, when Dr. Mahendra Kumar Rout was in 11th class. He was known to me by his nick name Kunia. He was famous in those days as a good student and was expected to earn a good name for the school in the final high school examination. Expectation proved true, as he got the district scholarship which was a unique honour for the school. He passed from Bhadrak High School in the year 1938 and was admitted to Ravenshaw College. He got admission in science class which was a big thing in those days. In those days very few; students were coming to science as the percentage of success was very low in comparison to arts subjects.

In 1941, I passed the matriculation examination and joined Ravenshaw College, when Mahendra Babu was in 4th year B. Sc. He was in the West hostel. In the second year, I stayed in the same hostel and by that time he left for Patna to read M. Sc. there. When I was in 4th year taking chemistry honours, he joined Ravenshaw College as a lecturer in chemistry and was taking our honours class. He has taught us for a few months in the B. Sc. final year. After passing B. Sc. honours in chemistry, I went to Presidency College, Calcutta for M. Sc. studies and he continued in Ravenshaw College as a lecturer. When Dr. S. S. Guhasarkar joined Ravenshaw College as Professor of Organic Chemistry, Dr. Rout carried out research work under his guidance for his Ph. D. degree. In 1948, after passing M. Sc., I joined Ravenshaw College and he was continuing research

for his Ph D. degree. As lecturers, we were very close to one another as we come from the same place Bhadrak, our closeness was too near. Besides, I am well acquainted with his father and elder brother, and our relationship became still more closer. I came in his marriage party to get him married with Savitri, a classmate of mine in Ravenshaw College at Cuttack in the year 1948, the same year I joined Ravenshaw College.

In 1952, Dr. Rout got his Ph. D. degree from Utkal University and after that we worked together on thiazoles. At that time, the new block of chemistry department was not ready. The research was being carried out in my small room which was allotted to me by Dr. Prasad, the then head of the department of chemistry, to work on adulteration of mustard oil, which was a big problem on those days. The first independent problem of Dr. Rout and my first research paper came out in the Journal of Indian Chemical Society in 1953 and the joy we had cannot be expressed in letters. That was the beginning of the research school of Dr. M. K. Rout which we built together with a firm footing. Gradually our research school grew, when Dr. H. K. Pujari, Dr. Bhaskar Dash and Dr. B. K Patnaik joined the school. Dr. Rout was given a research room in the new extension block and I continued in the same old block and carried out research work. Gradually his research school grew and we had to face many criticisms from our senior researchers. They accused us that we are insincere in our teaching job as we devote more time to our research work. But this baseless allegation was proved incorrect and we continued our research work. The research school which was built by Dr. Prasad in Ravenshaw College, was strengthened by Dr. Rout. He produced the maximum number of Ph.D.s from this College. Many of the senior teachers in chemistry today are his students. He earned a good name for Ravenshaw College as a research centre in the country.

Dr. Rout is a good teacher and a good research guide. After coming back from USA, his teaching capability advanced a lot and he trained his research scholars in modern chemistry which was unknown in those days in Ravenshaw College. He is well versed in modern organic chemistry, which is quite evident from his teaching capability in post graduate classes. Dr. Rout as an administrator is quite efficient as he works hard in the offices. He is one of the few illustrious sons of Orissa and will be remembered well by the younger generation. ■■■

My Teacher Professor Rout

Prof. H. K. Pujari
Kurukshetra University

I feel honoured and pleased to have been asked to give my impressions in regard to the suave personality of Professor M. K. Rout. There are several aspects that one could write about but I propose to restrict myself to his contributions as a researcher, teacher and a humanist.

My first encounter with Prof. Rout, the then youthful and upcoming teacher was way back in the year 1948 when I was a chemistry honours graduate student at Ravenshaw College, Cuttack. My liking for him was rather instant and has grown from strength to strength over the last 35 years. Our association grew deeper, first, when I was a Post-graduate student with organic chemistry as my specialization and later on as his first doctorate research student. I| had further opportunity to learn at his feet as a fellow teacher when I joined Ravenshaw College as a lecturer in Chemistry in 1956. A lasting bond of affection and understanding developed between us and has sustained despite my long absence from Orissa since 1962.

Professor Rout is one of the founding fathers of meaningful scientific research in the early fifties in the state of Orissa. During these days, there was hardly any research activity here worth the name. Obstacles of all nature plagued any new venture-shortage of materials, bureaucratic apathy and the like-were ubiquitous. It was his unflagging zeal, selflessness and absolute dedication to work that brought laurels to Ravenshaw College, the premier educational institution of Orissa and made it a renowned centre of research in Chemistry. Despite several odds, the quality of research done here would be evident from the fact that we were able to publish our results as back as in 1953, in Journal of American Chemical Society, the most prestigious chemistry Journal of the world.

His achievements by way of research publications are many and well-known to need a recount here. A host of his Ph. D. students have made a mark to occupy top notch places in several Indian and foreign Universities/Institutions, and

brought credit to his dynamic research leadership.

Rest to Professor Rout is rust. For years on end, he did not know this languor of Sundays, holidays and vacations, working from morning till late evening has been his worship and the laboratory his temple. To me, he is devotion personified. Those of us who watched him with mixed feelings of admiration and awe, were filled with inspiration. We learnt the cardinal virtue of keeping our cool under the most adverse circumstances when we saw him taking various types of reverses and pin-pricks in his stride.

His contributions as a teacher have been no less spectacular. In early fifties, organic chemistry was taught as aggregation of facts. It was Professor Rout who first introduced in the teaching of organic chemistry, the conceptual approach and electronic reaction mechanism with the steric effects playing a vital role in determining the reaction path. He was the pioneer in exposing the students of Orissa to modern organic chemistry. His lucid style and easy manner attracted several bright students to his fold. With profundity and subtlety he planted the saplings of knowledge in many a virgin fields and nurtured them to maturity with all the love of and care.

During the yester years, when the pernicious practice of pampering and preferring me, the foreign trained graduates over Indian doctorates smothered the local talents, it was the single handed crusade of Professor Rout that stemmed the rot. In his laudable endeavour he was ably supported by Shri J. B. Patnaik, our present Chief Minister, who was then on the editorial staff of 'Prajatantra' and Prof. B. C. Das, the then Director of Public Instruction of Orissa.

An upright person, who has astutely blended humility and tolerance without yielding his honour and self-respect, Prof. Rout belongs to a generation which is fast becoming rare. He has given to the society in an ever increasing measure and would be cherished by the posterity with fondness.

I earnestly pray to the Almighty to spare him many more productive and fruitful years to enable him to enrich our lives. ■■■

A Friendly Guide

Dr. Ashoke Sankar Mittra
Retired Professor

The chemistry department of Ravenshaw College has come to occupy a distinguished position as a centre of research. Like most centres of its kind its rise has been gradual. Devoted teachers Sri Bhut Nath Bhaduri, Bawa Kartar Singh, Sri Lokanath Misra, and Professor Balabhadra Prassad worked here. Dedication to the noble profession of teaching over a period of almost half a century by these and other chemists had created a solid foundation on which Professor M. K. Rout established his own school. Some of the above pioneers have left this world, but in the folk-lore heard in the corridors of Mayurbhanj Laboratory in the leisurely evening hours among the gossiping groups, these names continue to be mentioned, Students remember their teachers long after leaving the educational institutions, not for their class room academic brilliance, but only when they feel that the teachers are interested in them as human beings. This personal touch can come only from a fund of goodwill. Late Sri Lokenath Misra has created for me a special type of chemistry in which everything is easy and demonstrable, as such, to any class of beginners. He bequeathed to his students love fur the subject and I value his contribution to be of the highest order even though he had no research papers to his credit. Dr. Balabhadra Prassad was possibly the first of this department to prove to the world at large that an undergraduate college laboratory can produce research work of the first order. Ravenshaw College chemistry department had B. Sc. Honours as its top class till 1944. Dr. Prasad was awarded D. Sc. degree of the London University in 1944 on the basis of work done in this department.

The above is not a complete account of the contribution of all the members of the team of teachers who preceded Professor Rout but can be taken as a synopsis in the cultural history of a country in

some particular age there appears an efflorescence. Sudden expansion of the frontiers of knowledge is noticed. On scrutiny, it is realised that the explosion of knowledge is rarely all that sudden but a visible manifestation of silent development which had preceded. It appears to me that labours of many had prepared the field on which Professor Rout brought out the final crop of talented chemists. This is not to minimise the contribution of Professor Rout. Those who have seen him taking numerous lecture classes, B. Sc. Pass, Hons. and P. G. during the day and returning to the laboratory in the evening to work till late in the night, with no change in his hours of attendance in the department, equally on weekdays as well as Sundays and vacations, have admired the sheer grit which he possess in his frail body. When a teacher works in one institution for many years it happens sometimes that two succeeding generations of students pass through his hands. Professor Rout had the genealogy of these students at his fingertips. Another talent he has is his memory for remembering the names of his numerous students. The only other person, who could rival him in this regard, amongst all the persons I have met in my long life was Professor Prankrishna Parija.

In the recent past a number of outstanding teachers have worked in Ravenshaw College.

Some schools of research have been built up in subjects other than Chemistry. What is unique about the academic leadership of Professor Rout is not merely the size, but the permanence of affiliation of the doctoral students to the guide long after they had dispersed to all the corners of India, as well as far off lands Ex-students in different Indian Universities, National Research Institutes, in America, and in Canada carry in their hearts fond memories of the times, they had spent many years back, in the masters Laboratory. The long sessions of chit chat in groups on the corridors of Mayurbhanj Laboratory, the times spent in leisurely strolls in the miniature quadrangle garden are not forgotten. A non-official custom had grown up that every doctoral student on winning the laurel would present an ornamental plant to this mini-garden. Late Sri Paramananda Pradhan, titular glass-blower, but a gardener by choice, was Zealous guardian of this little garden.

Seminar meeting, picnics, and receptions to visiting academicians from abroad were many and the Professor was present always. I have known many Principals and Professors who find their multifarious engagements leave them

no time to accompany students in their annual day-long picnics. Not so Dr. Rout, both as Head of Department and as Principal, he had readily spent whole days in the company of students for visiting Saptasajya, Narayani, Balukhand or any other chosen spot of the youngsters. His smiles, small talk and sly humour have endeared him to multitudes of his students and colleagues. Fate has not always been kind to him but he has never been overwhelmed by adversity.

He can look back with satisfaction on a career during which he has achieved the highest academic honours, infused spirit of enquiry in a growing body of research students, and built for the teaching profession a lovable and honourable image. Professor Rout is sixty years young and will retain his capacity for work for many more years. Homage is not a cheap commodity to be served on a platter but it is present in the hearts of his students, old or young, present near or in far off lands. ■■■

My Teacher

Dr. A. K. Panigrahi
Khallikote College

1 had the privilege of meeting Dr. M.K. Rout in August, 1963 when I was a student of M. Sc. Chemistry at Ravenshaw College, Cuttack. He was then a young Professor with the reputation of an eminent scientist and a brilliant teacher. I still vividly remember how clearly and interestingly he taught us the subject. It is his teaching and personality that has influenced many of us to become sincere and disciplined teachers of chemistry. As the Departmental Head he was awe inspiring. He might not be physically present in his room, but the mere opening of the windows of his room in the department was enough to make us work till late in the night. In 1967 I again had the rare opportunity of working under his guidance for my Ph. D. and staying at his residence as a member of his family. I felt absolutely at home in the company of Madam, Babu and Baby and it is always gratifying to recall their warmth and affection which I continue to cherish in my heart. While writing a few words about him it arouses a wave of emotions and I feel incapable in my humble effort to express my gratitude that I owe him and simultaneously I feel myself at a loss to depict bis many faceted personality.

He is a genius who gives serious attention to research. His outstanding contribution in the field of science is unique. His knowledge of chemistry, his awareness of the current literature, quick grasp of the subject, amazing memory, sincere devotion, bard work and love for his research associates and students are some of the unique features which is responsible for producing above forty Ph. Ds. As a result, many of his students occupy high academic and technical positions in this country and abroad.

He worked as the Principal of three premier colleges of the state i.e. G. M. College, Sambalpur, Khallikote College, Berhampur & Ravenshaw College, Cuttack. As a Principal of G. M. College

his love and affection won the hearts of students and teachers, The Khallikote College, Berhampur was taken over by Government when he was the Principal of this College (1971). In this regard, his influence, contribution and sincere efforts will be long remembered.

As a Principal of Ravenshaw College, Cuttack, he utilised his ability and talent to make it a model institution and improve the discipline and standard of academic activities. The Ravenshaw College building acquired a new look with his taking over as its Principal. Improvement of college lawn, playground, illumination of college and hostel buildings. construction of new hostels and quarters are some of his contributions. His years as a teacher and finally as the Principal of Ravenshaw College, would always remain a glorious chapter in the history of that premier educational institution.

He rose to the post of the Director of Public Instruction, Orissa and was honoured to be the Vice-Chancellor of Utkal University in recognition of his merit, calibre and educational and administrative abilities. Though he is an academician by profession, be proved himself as an excellent administrator with tireless energy, innovative approach to different problems facing the administration in its day to day life. The remarkable quality of his personality was to exercise strict vigilance over the administrative set up so that it ultimately served academic purpose well. His authority always combined with personal touch, sense of duty, benevolence and love. As administrator he was harmless and magnanimous even to his opponents and was on with his subordinates and gave who hearted protection to them. He always used to devolve more responsibility on b subordinates and used to trust them, who return would therefore, work still harder to justify his trust and responsibility.

He is a large-hearted, humanitarian, gracious God-fearing, dignifying, social, upright individual, which rare qualities of head an heart. In his life style simplicity is personified. He is always meticulously dressed but never gaudy and ostentatious. Trust, confidence, consideration and affection are hi natural traits.

It is not enough to bring about a souvenir on his sixtieth birth day. We shall be paying real reverence to his remarkable and dynamic personality if we follow the example of dedication, hard-work, human approach an magnanimity set by him. Though he is sixty he is always young in mind and heart. I pray “may God bless him with the same youthful spirit for many more decades to come”. ■■■

Reply of
Dr. M. K. Rout
to the felicitations

SIXTIETH BIRTHDAY CELEBRATIONS

REMINISCENCES AND EXPERIENCES

FEBRUARY 17, 1984

REPLY OF DR. ROUT TO THE FELICITATIONS SIXTIETH BIRTHDAY CELEBRATIONS REMINISCENCES AND EXPERIENCES FEBRUARY 17, 1984

1. My initial reluctance to accept the felicitations

I am grateful to my beloved students for having arranged this meeting to felicitate me. Initially I was evading the acceptance for certain reasons.

(a) I feel embarrassing when praises and encomiums are showered on me in my presence. On 27.11.82 (Utkal University Foundation Day), I was invited to inaugurate the drama customarily organised by Class-IV Association on behalf of the whole University. When the President of the Class-IV Associaton, on behalf of the University, paid me rich compliments in his written introductory speech, I said in my response 'I cannot accept these compliments in proper spirit. After I leave the office of Vice-Chancellor, if I am told that the employees of Vani Vihar remember me with deep gratitude, I shall feel real joy."

(b) Further, I feel that the felicitation should be for those who have retired from active channels of work and are above controversies. I am still in the midst of controversies. I am still an active element. I am still vigorous both in mind and body. On the day I relinquished the office of the Vice-Chancellor, I was offered Chairmanship of a certain Service Commission. I mention below what I wrote to Sri Mishra, Secretary to the Chief Minister, for the kind information of the Chief Minister.

"I am happy with the present situation (Chairman, Pollution Control Board). After long fifteen years, I am in an assignment in which Scientific activities constitute mainly my official work. If, however, there has been a commitment from the State Government for the assignment offered, I have to accept that, ofcourse,with great regrets." The Chief Minister was very kind not to insist on my acceptance.

I had an intuition that God desired me to continue in the assignment of Chairman, Pollution Control Board which, I thought, at the time, would be a great challenge to my scientific ability and sense of social service. I have served students for the last thirty-nine years. *This is for the first time that I have got a splendid opportunity to serve the common man by application of my scientific knowledge, which will help me in not only locating the source of pollution but also in suggesting remedies for abatement and control of pollution.*I decided to accept an honorarium and not pay. I thought, a little sacrifice may give me greater freedom to work. I look it as a mission to work in this area. This is a period when I enjoy my work most. This is perhaps the best period of my life with indeed a great opportunity to serve humanity through my scientific knowledge.

As the Board was then newly started, there was no office. Though the Board's budget had been passed by the Assembly in September 1983, money had not been placed at the disposal of the Board.

To fulfill my commitment as the Chairman of the Board, I had to attend conferences.For officeexpenses, travel expenses and purchase of books etc. I spent nearly Rs 8,000/- to Rs 10,000/- from my pocket. I had to diarise myself nearly 500 to 600letters.*Now, of course things are different.* The officehas started functioning normally and adequate staff and funds are available.

I started the above just to tell my students that when a new office is started, even the Chief has to function like an ordinary worker. The initial difficulties did not bother me and should not bother you.

I labour hard. I read for 10 to 12 hours a day from morning 6 till 10 at night, on all days in the year.If one sees the list of publications or the Ph.D. award list which appear in the Souvenir, one will notice that there have been several publications in international journals and seven students have got Ph.D. during the last five years when I was the D.P.I. and the Vice-Chancellor. Three candidates have submitted theses in September 1983 and the theses of four others are being made ready for submission. AcharyaP. C. Ray once said,"A busy man has enoughtime at his disposal."

My dear students, kindly work hard consistently and devotedly towards your specified goal. This is the most important advice I offer to you.

I continue labouring hard. Recognition has started coming. I am slowly establishing myself as a worker in Environmental Science - a discipline quite distinct from my previous disciplines.

(i) On the 3rd February, I gave, on invitation, a Theme talk in the National Seminar at the School of Environmental Sciences, Jawaharlal Nehru University.

Before I gave the talk, I was introduced by Prof. Nadar, Prof. and Head Chemistry Dept., Anna University, Madras, with whom I had just a brief acquaintance in a symposium at Annamalai University 20 years back in 1964. Prof. Nadar mentioned in his speech reference made with regard to my work in an International IlEuchem Conference held in London in 1982 which he attended but I did not attend. He also mentioned how my lecture in the symposium in 1964 gave sufficient insight into the work which he subsequently carried out. I felt moved by the touching references coming from almost a stranger. He has embodied his feelings in his message published in the Souvenir on my 60th birthday.

My dear students, this has one lesson. Sustained hard work attracts recognition from most unexpected and sometimes unknown quarters.

(ii) On the 10th February, I chaired the Technical Session on "Thermal Plant and Fertilizer Industry" in the ENVIROTECH '84-an International Symposium held at Bombay during February 8-12 in which nearly fifty foreign delegates participated.

(iii) The recent decision of the Indian Chemical Society to bring out a special commemoration volume of the journal on the occasion of my sixtieth birthday has infused in me tremendous zeal and stimulus to serve humanity through my scientific knowledge.*I pray to God to give me strength and energy to rise up to HIS EXPECTATIONS and HIS DESIRES.*

(c) The warmth, the love and the emotions of my beloved students overpowered me, I, therefore, ultimately decided to accept the felicitation and *utilise the occasion, to place before my students, or their benefit, the events or the episodes whose impact constituted fabric of what l am today*.

2. Faith in God: Faith in sustained consistent hard work directed towards a goal. Tolerance and objectivity.

I believe that man will be rewarded or will suffer during his life time, for the good or evil which he has done in the past. And sometimes, the children will suffer for the evil deeds of the father.

Because of this strong conviction, whenever I have been called upon to judge or decide punishment during my administrative career, I undertake self-analysis to find out if I amcapable of such offenses or what punishment I would have awarded if my own children or close relatives were involved in similar offenses.

Many people complain that I am unduly tolerantand magnanimous. This may be the outcome of my strong faith in God and consequent self-analysis of each of my actions.

I honestly believe that hard work directed towards a goal will pay rich dividends.

(a) When I left G. M. College, in a farewell function organised by the students, the President, Students' Union, Hossain Rabi Gandhi, while speaking, brokedown:"Dr. Rout is one Principal whom I had harassed most but he has been so magnanimous to me that I can not speak any further. I feel choked with emotions."

I was invited to inaugurate the Annual function of the College Union in 1971 March after I had left the College. I presume, that was in recognition of my contributions to the College.

In my farewell speech to the students and staff ofRavenshaw College on 26th April 1980, speaking about a serious incident in G. M. College,I hadstated as follows:

"Once in G. M. College, there was a strike and a students' procession had been lathi charged and many students had been injured. They were in the Police Hajat. I had gone there and the Additional S.P. Mr. Chatterjee was there and we were discussing how they could be released. They wanted a bond, a personal bond from me. While this was happening at Police headquarters, the G. M. College students took as hostage one ASI from a passing taxi near the College gate. Altaf Babu, Dr. Gangadhar Sahu and many teachers of this College were then in G. M.College. The Additional S. P. said, "nothing doing.We are now going to march into your campus. I have got orders from the I. G. that the A.S.I. must be released within half an hour, otherwise we are going with a force." The police force was ready. I came to the College and addressed the students. had prolonged negotiations with them since they were not willing. I told them. "Look, before the police enters the campus. I leave your College forever. I will come back within half an hour and if you agree to release the ASI of Police, well and good, otherwise I will also leave the College." To tell you honestly, many teachers are here, who were with me there at that time, When I returned,

my students said, "Sir, all right, you take him back and he was released."

(b) After I left Khallikote College, when I was the Principal of Ravenshaw College, Shri K. C. Panda who was the President of Students' Union during my Principalship at Khallikote College and who is now an Advocate of standing, came along with the then Chief Minister, Shri Biswanath Dash, who was the Chief Guest at the Diamond Jubilee celebration of Ravenshaw College East Hostel in 1972. After the function was over, before getting into the car of the Chief Minister, Shri Panda touched my feet and asked for my blessings. Many present there wondered how the Ex-President of the Khallikote College Union could behave so nicely.

I was invited to inaugurate the Students Union of Khallikhote College in March 1972 after I had left and the students expressed in the meeting deep gratitude to me for my contributions to the College.

The take-over of the College by the State Government was opposed by all Senior teachers and employees, as they had crossed the age of 58 and apprehended immediate retirement in the event of take-over. But God showed me the way to do things in such a manner that there was cheer and smile on all faces on 9th March, 1971, when the College was taken-over by the Govt. and nobody was retrenched.

In my farewell speech to the students and staff of Ravenshaw College on 26th April 1980, referring to a serious incident at Khallikote College. I had mentioned as follows:

"At Khallikote College, after the College Union election, after a certain incident, on 14th September 1970 morning, the party which was defeated cameto go upstairs to the College Office where 1 had kept hidden the newly elected President of the College Union I do not know what would have happened on that day. There were many teachers. While the infuriated students were coming, I stood there withboth of my hands stretched near the stair-case. Mr.G. S. P. Misra told me, "Sir, you alone can save the situation and nobody else." Therewere about onehundred teachers with me. My hands were stretched and discussion was going on to save the situation and after five minutes, I looked at one of the students, Bhagirathi Mishra. 'Bhagirathi, your father was a teacher. I am a teacher, you can trample over me but I will not allow you to enter the College Office and beat up the President, College Union." He said,"All right, we will not do so, with respect to you." But two days later, Santosh Mohapatra, Basanta Panda, Bhagirathi Misra, now well known advocates, told me, "you have done a good job for us. When we burnt the church (they had burnt a church, eight to ten years back), if one of our teachers or the Principal or any other senior teacher would have told us, "please do not do it, perhaps we would not have done that." I mention this with a purpose. The Principal and the teachers must have the image to control situations. Under difficult situations, police will not be adequate for the purpose, not the least.It is the image of the teachers, the image of thePrincipal which alone will count.

(c) On the 30th April, 1980, I was to reach the D. P. I, go office at 2.30 P.M. for taking-over charge as D. P. I., but I had to leave earlier. My colleagues, students and other employees gathered in such strength with tears in their eyes that I left hurriedly at 12.30 immediately after handing-over the charge quickly.

I was invited to inaugurate the Students' Union in1981 February when the students paid tributes to me for the services I had rendered to the College.

(d) On the 15th September, 1980, in a farewell meeting organised by the employees' Association of theD. P. I. office, the President of the Association remarked in his speech:

"Dr. Rout possesses all the qualities for which the term 'EDUCATION' stands for E-Enlightenment. D-Devotion; U-Understanding; C-Character; A-Action; T-Tolerance: I- Integrity;O-Objectivity: N-Nobility.

(e) On the 13th September, the day on which I relinquished the office of the Vice-Chancellor, I could not resist the sincere requests of the employees for attending a farewell dinner, the last of the many farewell functions organised during the week. Just before the dinner, I was informed that the dinner would be preceded by a brief meeting. The kind words which the speakers spoke about me, made me feel that all the labours I had put in for the improvement of the University have been amply rewarded.

The Chairman, U G. C., Dr.Mahtab, Sri R. N. Mishra, Judge, Supreme Court, Justice Harihar Mohapatra, Sri Digbijoy Singh, Minister of Environment, Govt. of India and many others have expressed pleasure for the services I have rendered to the Utkal University.

At the time of finally leaving the official residence of Vice-Chancellor on 13th September, 1983, the emotional scene of the employees, students and even some Professors touching my feet overwhelmed me. The President, the Secretary and others of Students' Union also wept bitterly. These touching events will always flash before my mind in future in quiet moments of recollection and reminiscences.*I consider all these as God's desire to stimulate me to greater efforts by bestowing on me recognition which can never be measured in earthly terms.*

3. Influence of parents :

My father, Late Laxmidhar Rout, who was an Advocate of good standing, was always reluctant to take up cases which were legally weak. He was very conscientious and never betrayed his clients.

My mother, Late Surjyamani Devi was really benevolent and magnanimous. In 1959, a servant wassuspected to have stolen money of my brother. He was beaten up severely by the police and taken into police custody. My mother sent for the Police Inspector and gave him Rs. 3/- for arranging food for the poor servant and commented that the poor servant should not suffer for the carelessness of her son. The Police Inspector did not pursue the matter any further and told us that our mother did not want any further action.*My parents had their great influence on me.*

4. Influence of teachers :

Dr. Balabhadra Prasad, both by his personal and scholastic qualities, made the greatest impact on me.He initiated me into research. I did the first research work under his guidance on 'Phosphate separation'.Recently a Professor of Patna University characterised Dr. Prasad as one of the greatest Biharis. I intervened and said "He is one of the greatest Oriyas." I have always tried to emulate his high sense of integrity, objectivity, fairness in administration and his zeal in promoting research.

My research work in Organic Chemistry started with Prof. Guha Sircar under whose guidance I got my Ph.D. He is my Guru. His photograph alone adorns my room.

Dr. Parija was a great man. He was my Principal both when I was a student and also a lecturer. At the time of my ad-hoc appointment for the post of alecturer, there were some difficulties. He inspected my class and sent a report to the D.P.I. without my knowing that he inspected the class. He listened to my lecture by standing in the adjoining room. Following his example, during my whole administrative career, I always inspected classes of teaching staff, standing outside the class room without letting the students or the concerned teachers know that I was inspecting the class. Dr. Parija's research earned international reputation. His idealism not only permeated the Colleges and the Universities but also the whole State, in all aspects of culture.

I have great respect for Prof. Bama Charan Das, Prof. Sadasiv Mishra, Prof. Bansidhar Samantray, Prof. Ramanath Mohanty, Prof. P. S. Sundaram and Prof. V. V.John, Prof. G. C. Mohanty, Prof. Brahmananda Mishra and many others. Each of them had talent in several areas. Each of them singly and collectively influenced my mind deeply by their high sense of integrity, objectivity, competence and scholarship.

5. Faith in God sustains me:

a. In April, 1945, I was selected for going abroad in Chemical Engineering. At the last stage, I was disqualified by the Medical Board.

b. In January, 1946, I was again selected by the PSC for going abroad in Agriculture Chemistry, but I was again disqualified by the Medical Board in March 1946.

c. Undeterred by these shocks, after Prof. Guha Sircar joined as Professor at Ravenshaw College, I worked on Mercury compounds and their antibacterial properties. I got my Ph. D in 1952.

d. To my great disappointment, in 1952, a student of mine was granted study leave for going abroad and my case was overlooked.

e. Then began a serious controversy if Indian Ph.Ds. and foreign Ph.Ds. should be considered on par. Ph.D., A. M. and M. S. from foreign countries were given six and five advance increments respectively, while Indian Ph.Ds. were not given any increment and were considered inferior to A. M. and M. S. from abroad. Ultimately the Indian Ph.Ds. (Dr. K. C. Panigrahi, Dr.N. K. Sahu, Dr. A. P. Obrien, Dr. G. Misra myself and Dr. S.Aditya) won. Indian and foreign Ph. Ds. were declared to be on par by the State Government. It was a historic decision and this paved the way for accelerated intellectual work in Ravenshaw College and the State. Dr. Radhanath Rath, Editor, Samaj, was then the Minister of Education. We felt grateful to him.

f. In 1952 Dr. H. K. Pujari and Dr. G. N. Mohapatra started their Ph. D. research under my guidance.They got their Ph.D. in 1956 and 1957 respectively.

g. In 1955, the PSC conducted interview assisted by an eminent expert Prof. P. Ray of Calcutta University and I was selected for the Readership.

h. Although in 1952, my case for study leave was overlooked, in 1956 I was selected by the U.G.C. as one of the six Professors and Readersforadvanced study tour in USA. Others included Prof.Jaikrishna, Prof. of Civil Engineering, RoorkeeUniversity and Prof. Mirza, Prof.ofZoology, Aligarh University.

i. In USA, I did some collaborative research with Prof. Harold Conroy under the general supervision of Prof. Woodward, Harvard University.There were three publications containing the substance of my work in Journal of American Chemical Society on the Alkaloid "Aspidospermine". I stayed in USA for nine months.

j. In 1958, I submitted my thesis for D. Sc. independently and was awarded D. Sc. in 1959. Sir Alexander Todd, Nobel Laureate, Head of Chemistry Department, Cambridge University was one of the examiners. I was walking on the road with a student of mine Dr. P. B. Tripathy, when Sri D. P. Barai, Controller of Examinations at the time, got down from the rickshaw and congratulated me and informed me about the decision of the Syndicate, the same evening for award of the D. Sc. degree without any oral examination, as recommended by Sir Todd. When I returned to my residence after a while, my wife told me that my daughter had high temperature. There was no further occasion to share my joy with my family.

k. In 1961 when Dr. Mahatab was the Chief Minister, a second post of Professor was created in view of my academic attainments and I was appointed as Professor. While I was conducting local enquiry at Balasore College along with Dr. Damodar Mishra and Dr. Radhanath Rath, during the tea arranged for us, I received a telegram from Prof. B. K. Sabat, now Prof. at I. I. T.Bombay, a student of mine about issue of my appointment letter as Professor. When I reached home the next day after inspecting Baripada College, just when I got down from the car, Iwas informed that my daughter had temperature of 104^{o} and this continued for four months-B.Coli and Typhoid alternately.

l. I was deputed to USSR by the U. G. C. and Govt. of India in 1969 for a month and had the opportunity of visiting nearly 100 Universities and Scientific Institutes. This visit gave me considerable insight into many scientific problems.

m. In 1977, I was selected by the U.G.C. and USEFI as one of the six educational administrators to visit Universities in the USA.We visited nearly100 Universities and Colleges. The synopsis of my report to the Govt. of India and USEFI has already come out in a cyclostyled form. I am yet to complete the writing of the book.

n. One who failed to go abroad two times on medical grounds, was deputed abroad three times on prestigious international programmes. *God willed that way.*

o. I mention all these just to indicate that God always created situations of an admixture of joy and sorrow for me which taught me to be humble, to be a worker and not to act like a big Boss. There were never movements of complete joy nor moments of complete depression and frustration.

My life has been an even one without much perturbation.

6. My wife has been always unexpectedly with me, whenever a bad news which might have upset me came to me suddenly.

(a) I was working concurrently as a Principal and D.P.I.from November 19, 1976 to February 17, 1977. Afterconducting inspection at MPC College, Baripada, I was in the midst of a tea party when I was informed that I must have to hurry back and hand-over charge the next day at 10 AM to Prof. B. Das. I felt bad. My wife had gone with me very surprisingly for that tour only.

(b) I started at 8 PM and reached Cuttack at 2 AM. The next day, I handed over the charge at 10 AM and returned immediately to Cuttack in my own car, driven by my brother. My driver went mad from that day for nearly four months.

(c) I had prepared my mind for the present assignment of Chairman, Pollution Control Board which appeared to me quite challenging at that time.(Of course, now I find it much more exciting and challenging than what I had thought earlier). Notwithstanding that, 1 had foregone my Earned Leave and as such, complete rest for three months just to see that the Annual Intermediate, Degree and theP. G. results were published in time in the interest of the students. I had to do a coolie's job sometimes in transporting bundles of answer books at the time of employees' strike. But yet when the appointment of the next Vice-Chancellor was hurriedly announced within sixteen hours of the holding of the meeting of the committee, I might have felt momentary sorrow. I got the information and also simultaneously the official letter, while 1 was in the midst of a selection committee in the Syndicate room for the post of Lecturer in Sanskrit. My wife was also there as a member of the selection committee and 1 took the news with ease.

7. Easy accessibility to students:

My career as an educational administrator has already ended. But I recall with great satisfaction thathave saved the careers of quite a number of bright students who were in trouble either on account of addiction to drugs or alcohol or deep attachment to some exploiting girls or boys. Without informing their parents, I used to advise them in a most sympathetic manner. There was transformation and they corrected themselves under my constant advice and care. Whenever they see me now, they are full of gratitude to me.

I refer to one incident in 1978. When I was the Principal, Ravenshaw College, a Deputy Superintendent of Police came to my office room after giving a slip. I was studying some files without taking notice of him but when he mentioned to me about his daughter whose husband, a lecturer of Talcher College, had committed suicide, without letting him know what I proposed to do, still appearing to be absorbed in files, I sent for the

dealing assistant and after I read out the written orders which I gave in the files that the unfortunate girl would get a seat both in Pass and Honours out of turn, tears spontaneously rolled down the eyes of the D.S.P. (her father) in gratitude and choked with emotions, he left the office room. The whole episode was over within 3 to 4 minutes. The students did not ever object to this action of the Principal though a seat in Ravenshaw College is highly competitive. The students are reasonable in most circumstances.

*One does not face difficulties if one's intentionsarehonest, even if the action may appear arbitrary.*This is just one of the many out of turn decisions I have taken during my administrative career with faith in God.

My quarters was stoned two times during the four month old strike in 1964; just because the sixth yearM. Sc. Chemistry students attended the classes on all days. On the second occasion, my daughter narrowlyescaped injuries. I did not allow police to guard my quarters. I had no malice against the students. The students who stoned my quarters expressed sincere regrets, of course six to eight months after the incident.

Justice Burman who presided over the Commission of Enquiry has mentioned in his report as follows at Page 957.

"Dr. Mahendra Kumar Rout, Professor of Chemistry, Ravenshaw College, Cuttack, while holding that rigid application of the law of the land and enforcement of disciplinary provisions would not solve the problem nor cure or remove the psychological cause which is responsible for the manifestation of lawlessness and indisciplined conduct among students, suggests that the problem requires psychological approach: when the students indulge in criminal acts the law may take its course and the unlawful assembly may be dispersed by police. The question is posed. Will it solve the problem?The answer given by the Professor, with which the commission agrees, is: No. The particular trouble or incident is not so much material as the psychology of which the troubles are the manifestations: every child is a product of the environment in which he is brought up-teachers, parents, guardians and everybody has failed to give the correct environment to the students".

A candidate's result was cancelled just before publication on the basis of my report that the answer-scripts must have been substituted. Two years later, the order was rescinded and the student got Distinction.The student insulted me in the office room in the most disparaging terms after declaration of the result. But a year later, he came and expressed regrets to my wife, revealed the whole truth and wanted an opportunity to apologise to me personally.

Some students may misbehave under certain impulses but they also repent for their actions. The repentance and remorse are read and genuine.

8. My spontaneous concern in solution of the problems of the State and the Nation.

(a) As the Secretary of the Students' Enquiry Committee in 1980 December with Dr.Mahtab as Chairman, Dr. Rath, Editor, Samaj, Justice H. Mohapatra, Justice R. K. Das, Justice B. K. Patro, Dr. S. Mishra, Ex-Vice-Chancellor, Sri S. Supkar and Late Prof. Pradhan, evolving a consensus for submission of an unanimous report

with pragmatic suggestions for solution of students' problems within a fortnight was a stupendous task.

(b) As a Member of the three-men committee, I played an effective role recently (7th February 84) in conducting negotiations to resolve the dispute between the two groups in Indian Chemical Society. The Court cases have practically paralysed the normal functioning of the Indian Chemical Society.

(c) On 1st July, 1981, a meeting of Senior Educationists of the State was held in the Secretariat Conference Room under the Chairmanship of the Chief Minister. Notwithstanding my persistent protest that it was irrelevant and unnecessary to spell out parity between Intermediate and Plus Two, the meeting reiterated the earlier decision of the State Govt. taken on December 9, 1979 that plus Two or and Intermediate would be considered equivalent.Subsequently I sent two or three communications to the Chief Minister. Ultimately my argument that if the two batches which had been merged would not be split up, no regular student would pass theDegree examination in 1987 and further there will be no student in V year in 1987-88 and no student in VI year in 1988-89. It would also be difficult to hold the H. S. C. examination. The argument ultimately cut ice, at the highest level and my suggestions were accepted. 1.5 lakhs students who took theAnnual H. S. C. examination of 1983 in the senior batch regained the loss and seniority of one year they had suffered by the merger. It was a great personal satisfaction to me.

My dear students, many of you are now senior scientists. 1 request you not to confine yourself only to your scientific problems, but extend your help in solution of problems, outside your area of specific interest by applying your scientific and objective approach. The talent of a Scientist in identification of the problem and its answer will be very helpful. Precise objective assessment and correct perception of the various issues involved through the vision of a Scientist will be very useful in the formulation of the appropriate strategy.

9. Vice Chancellor functions effectively through image and prestige of the office and not through the powers vested to him.

To refute certain allegations regarding mal-administration of the Utkal University published in the press, I gave a statement on 17th January, 1983 and requested the Hon'ble Chancellor to institute a committee or commission of enquiry. If it was proved that there was deterioration, I should be dismissed. I had a long discussion with the Hon'ble Chancellor for 31/2 hours, i.e. 11 AM to 2.30 PM on the 28th January, '83. I argued that the step I had taken was the only appropriate one for vindication of my prestige.

I was glad that the Chief Minister thought differently. On the 26th Jan '83, the Chief Minister saw me at Raj Bhawan and stopped near me for a whileand said:

"Dr. Rout, your statement in the Press was most welcome.One should do so to vindicate one's prestige."

Many students wrote to me, congratulating me for the statement which struck headlines in almost all All India newspapers.

I am grateful to God that I am now out of the University and am now involved in a predominantly scientific assignment with a specific social purpose-perhaps, the bestassignment of my life to serve thecommon man.

I should, however, honestly confess that I feel embarrassed and humiliated, when important persons including persons at U. G. C. level ask me why pressure was exerted to change the U. G. C. nominee and why announcement of the appointment of my successor was made within 16 to 18 hours of the submission of the panel by the Committee. These somewhat out of the way procedures naturally created an impression that there might have been some allegations against me for which I was treated so unceremoniously.

I had requested Hon'ble Shri C. M. Poonacha on August 2, 1983, kindly to grant me an interview, so that I could learn from him directly my deficiencies and imperfections, but the Secretary to the Governor wrote to me asking me and Mrs. Rout to meet Hon'ble Shri. & Smt. C. M.Poonacha at tea on August 9, 1983.We met Hon'ble and Smt. Poonacha and offered our respects. While we were leaving, Hon'ble Poonacha blessed me and repeated two or three times "May God be withyou."

Naturally, there was no scope to know If there were any allegations against me. I am still anxious to know how and where I erred and If 1 deserved such atrocious propaganda against me in the press.

However, I remember with profound joy that when I left the University, the students, theemployees and theteachers paid rich tributes to me in a series of farewell functions which, in the opinion of many, did not happen ever in the past.

There are reasons to feel sorry that theevil forces which maligned the University and myself have got strengthened in the process, but that is for the authorities to look into.

In view of what I had to suffer by way of mental strain and agony, there may not befurther attempts at exposingevil and corruption in the Universities.

10. Hazards of official positions :

Hazards of official positions emanate from administrativedecisions which may act adversely against certain interests or from conflicting interests of potential contenders for futureelevations. Children and the wife also become the target of the attack.

(a) My son was assaulted by a rowdy student who was reported against by me as Principal for adopting malpractice. There were two vigilance enquiries against my son to probe how he was awarded the Science Talent scholarship (I was hot associated with the award in any manner) and how he could revert to the lecturer job after joining UCO Bank (He never joined UCO Bank).

(b) My daughter had to take her Honours examination at S. B. Women's College centre under orders of the Directorate. She went to the examinations in tears.

(c) The students of a College stormed into the official residence of my wife, damaged the telephone, insulted my son and daughter-in-law just, because, during my Vice-Chancellorship, the examination in the College was cancelled, of course, for the first time since the inception of the College in 1946.

(d) Certain Adverse Entries were made in my C. C. R. for1974-75 In my representation

for expunging the adverse entries in 1978, I mentioned as follows:

"I am prepared to retire voluntarily from my service, if any of the statements in this 25 pages representation is found incorrect. This representation should be considered as asking for punishment by way of premature retirement or downgrading me to the post of Professor." The CCR adverse entries were expunged.

(e) I was appointed Vice-Chancellor, Utkal University on 28th June, 1977. For some reasons, my appointment was cancelled on 30th June. I give below what I spoke about this in my farewell speech to students and colleagues of Ravenshaw College on 26th April 1980.

"In 1977 on 28th June at about 12 noon, I got a phone call from Mr. Nair, Secretary to the Governor.He told me "Dr. Rout, you have been appointed the Vice-Chancellor of the Utkal University." I said"What! Utkal University. I am not prepared for it." He said "The appointment has been made and you have to join on 1st of July." On 30th June, I was sitting in my office preparing to hand over charge.At about 1.30 PM., I got a phone call from the Secretary, Education Department Sri Gian Chand that there was some difficulty. I took it easily. I say this because I want to tell you that the job of a teacheris much better. I am speaking from my own experience which can be verified. When I was in the United States in 1977 April-June, one of the persons who was associated with the panel for the selection of the Vice-Chancellor, rang up Prof. M. M.Nanda, who was acting as the Principal in absence for my biodata. Prof. Nanda could not give it. He told my wife. My wife said, "He may not be interested and we should not give the biodata without his consent. I returned on the 14th of June 1977 from the United States. On 16th June evening, I was sitting in my residential office room 1 got a phone call from Sri Gatikrishna Mishra, ex-ChiefJustice. He wanted my biodata. I said, "Sir, kindly excuse me" but he insisted. I gave the biodata. On the 8th of July after the appointment of Vice-Chacellor was cancelled, I had gone to Delhi for attending a meeting in U. G. C and while I was at Bhubaneswar aerodrome, collecting my baggage, I got a phone call from Mr. Nair that I was wanted by the Governor, "Please come and meet the Governor" I said, "I am tired. I cannot go just now. I will go in the afternoon". When I went, Governor Brar felt very sorry, almost apologised. In the words of Justice Harihar Mohapatra who told me many months later, the Governor almost shed tears for the cancellation of my appointment. Justice Mohapatra told me this. I told Governor Brar "Sir, I can still stay as Principal with my students for 4 to 5 years. I was not that interested in the post of Vice-Chancellor.My name has figured in the list. That is enough."But he was sorry." I say this because these jobs are of little or no concern to me. God's desire will be fulfilled. I do not know whether I will be better off as the D. P. I. I do not know if I can do something as the D.P.I., or if some chance comes, as theVice-Chancellor.But I will always like to comeback to my research laboratory. My research students know how sad I feel these days. Yet then, I hopetocome to the College on most

evenings to do myresearch work, (Clapping), I must continue myresearch activity.

(f) When I as Vice-Chancellor on one plea or another, did not implement the Hon'ble Chancellor's written direction given three or four times to undertake"Review" to weed out undesirable persons. I do not believe in "Review". Yet I was maligned in an All India Magazine for initiating "Review" to get rid of persons whom I did not want.

(g) My dear students, you should be prepared for such hazards when you occupy administrative positions.*Consider the stories others throw at you as building blocks for a strong mental fabric which is essential for inner satisfaction.*

11. Loneliness of an administrator:

An Administrator has to be a lonely man. If the administrator relies on the stronger group on considerations of expediency, he will succeed for a while, but will lose ultimately. One should use his discretionary powers very rarely. One who uses his powers actually abuses power. Good administration iscarried out through consensus and general approval and not through assertiveness of one's ego and dogmatic approach.

A good administrator is held in high esteem and judged in the correct perspective only sometime after he goes out of the scene. While I was the Vice-Chancellor, I had assured my Driver whom I liked very much for his qualities to allot a quarters of the type which one of his juniors was occupying. Inspiteof my many assurances, I cancelled the allotment after it was notified. The driver did not talk to me for sometime, but subsequently he appreciated my predicament.

Some of my most favourite students who have organised this function misunderstood me for a while.Unlike many other Professors I did not do any thing out of the way to helpthem in becoming Professors.Now they appreciate me. They have acquired confidence that they have come to the position of Professors through their own merit and not through somebody's help.

12. Concluding Advice to students :

My dear students, you are now high up in the teaching profession. Please love your studentsThestudents may be critical, but they are very loving. They will adore you.

I am grateful to God that situations were always created for me to accept all events with equanimity.That perhaps happens because of my abundant faith in God.

On 25th August, 1980, while I was returning fromBerhampur, there was a serious car accident. The car rolled down the road and turned upside down. I escaped unhurt. *God is Great.*

I am a worker, I do not distinguish between friends and enemies. Praises and denigration have the same impact on my mind. I love those who are efficient and dedicated, even if they may be hostile tome.

My dear beloved students, I must say, your warmth, love, your deep attachment to me have all overwhelmed me. I have a few advice to offer.

- Have faith in God.
- Be tolerant and objective.
- Spell out your goal and work towards it consistently with devotion.
- Convert your proficiency into efficiency and calamities into opportunities.

May God bless you! ■■■

Indian Chemical Society

Special Commemoration Issue

Journal of the Indian Chemical Society

in honor of

Prof. M. K. Rout's Sixtieth Birthday

Edited by

Prof. H. K. Pujari and **Prof. G. B. Behera**

Journal of Indian Chemical Society
December – 1984

CONTENTS

Journal of Indian Chemical Society

December – 1984

In this issue (38 articles)

11. **Effect of Sugars on CMC of Aqueous Solution of Cetyltrimethylammonium Bromide**
S. K. KANUNGO; B. K. SINHA

12. **Role of Defects in Recovery of Radiolytic Damage in Irradiated Potassium Nitrate**
B. M. MOHAPATRA; D. BHATTA

13. **A Quantum Mechanical Approach to the Theory of Cancer from Polynuclear Molecules. Metabolic Activation and Carcinogenicity of Methylphenanthrenes**
S. NOOR MOHAMMAD

14. **Search for New Fungicides. Part-I. Synthesis and Mercuration of Some New 2-Thio-4 -thiazolines and Their Possible Use as Fungicides and Bactericides**
(Mrs.) JUTHIKA MOHANTY; G. N. MAHAPATRA

15. **Aminocarbonylation with Ethyl Carbamate : An access to Nitrogen Heterocycles**
D. P. CHAKRABORTY; SWAPAN KUMAR ROY; U. P. JANA; T. KARMAKAR

16. **Synthesis and Biological Activity of Some Haloanilido Pyrazoline and Isoxazoline Derivatives**
N. K. MANDAL; R. SINHA; K. P. BANERJEE

17. **Heterocyclic Compounds. Part-IX Syntheses of N-Nitrosoureas and N-Nitrosothioureas as Possible Antitumor Agents**
J. SAHU; S. N. DEHURI; S. K. NAlK; A. NAYAK

18. **Solvent Effects on Electronic Spectra of Some Amino Salts of d-Camphor-??ß-Sulphonic Acid**
S. K. KHANNA; B. C. PANT; H. P. TIWARI

19. **Evaluation of New Substituent Parameters to Explain 13C Chemical Shift for para-Substituents in Benzene Ring**
L. R. NAYAK; B. K. MISHRA; G. B. BEHERA

20. **Syntheses of 3-Bromochromones**
A. K. D. MAZUMDAR; G. C. SAHA; T. K. SINHA; K. D. BANERJI

21. **Kinetics of Vapour Phase Oxidation of 1-Phenylethanol over Ferric Molybdate Catalyst**
NARAYANASWAMY SUNDARARAMAN; M. VlVEKANANDA BHAT; M. RAVINDRAM

22. **Chemical Constituents of Garuga pinnala Roxb.**
MENA HARIBAL; J. B. HANUMAN; A. K. MISHRA; B. K. SABATA

23. **On the Chemistry of Indian Orchidaceae Plants. Part-III. Dendroflorin, a New Fluorenone Derivative from Dendrobium densiflorum Wall.**
SUNIL TALAPATRA; SRABANI BOSE; ASOK K. MALLIK; BANI TALAPATRA

24. **Synthesis of 2-Methyl-2-(m-methoxyphenyl)-cyclohexanone**
SHIBA NARAYAN MAHAPATRA

25. **Synthesis of 1-Acetyl/ Pentafluorophenyl-3-fluorinatedaryl-5-phenyl/ furfuryl-4H-4,5-pyrazolines as Antifertility Agents**
KRISHNA C. JOSHI; V. N. PATHAK; SHARDA SHARMA

26. **Some Aspects of Protoberberine Alkaloids**
D. S. BHAKUNI

27. **A Facile Synthesis of 4-Propyl-Psoralene and Angelicin Derivatives**
V. K. AHLUWALIA; R. P. TRIPATHI

28. **Synthesis in 3-Azafluorene Group. Part-III**
J. N. CHATTERJEA; S. C. SHAW; Y. PRASAD; R. P. SlNGH

29. **13C Nmr Spectra of Acutangulic and Tangulic Acids from Barringlonia aculangula Gaertn.**
K. DHAVEJI; G. K. A. S. S. NARAYAN; D. S. RAO; L. RAMACHANDRA ROW

30. **Stereochemical Assignment by Nmr Spectroscopy. Diels Alder Adducts of p-Benzoquinone with Cyclic Dienes**
SUBODH MAHANT; HAWALDAR MAURYA; SHIVA M. VERMA

31. **Synthetic Studies in Diterpene Series. Part X 1.A Synthesis of 2-Oxygenated (±) - Podocarpa-8,11,13- triene by Transposition of Ketonic Function**
DHANONJOY NASlPUR; SATINATH BANERJEE

32. **Physico-Chemical Studies of Catechins and Epicatechins**
JOGINDER SINGH; N. K. RALHAN; T. K. PANT

33. **Synthesis of N-Allyl-2-oxocycloalkanecarbothioamides, Functionalised Organic Intermediates via Enamines**
HARJIT SINGH; PARAMJlT SINGH; R. K. MEHTA

34. **Heterocyclic Systems Containing Bridgehead Nitrogen Atom. Part-XLVII. Syntheses of Thiazolo[2,3-b]quinazoline and Thiazino[2,3-b]quinazoline**
G. D. GUPTA; H. K. PUJARI

35. Reaction of 2-Mercapto-4-chloro-6-bromobenzimidazole with Chloroacetic acid, ???? a -Halogenoketones and Alkyl Bromides
(Miss) KIRAN JAIN; K. K. JAIN; V, K. CHADHA; R. N. HANDA

36. **Protease Activity of Rabbit Brain Tissue**
MOHAN LAL; (Miss) KAMLESH MIGLANI; HARI SINGH

37. **Fungicidal Activities and Mass Spectral Studies of Some Schiff Bases Derived from para-Hydroxybenzaldehyde and Their Derivatives**
B. DASH; P. K. MAHAPATRA; D. PANDA; (Mrs.) J. M. PATTNAIK

38. **Kinetic and Mechanistic Study of Nitrite by Bromate and Ruthenium(III) Catalysed lodate**
P. S. RADHAKRISHNAMURTI; B. K. PANDA; G. K. MOHANTY

Journal of Indian Chemical Society

Special Commemoration Issue

in honor of

Prof. M. K. Rout's Sixtieth Birthday

Edited by

Prof. H. K. Pujari and **Prof. G. B. Behera**

Journal of Indian Chemical Society
Vol. LXI, November, December 1984, pp 923-1068
(38 Articles)

(Full-length papers in PDF format are downloadable on the Indian Chemical Society web page: http://indianchemicalsociety.com)

ABSTRACTS OF THE PAPERS

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 923-925

Synthesis and Physico-chemical Studies of Some Binuclear Mixed Carboxylates of Copper(II)

B. P. BARANWAL[†], G. K. PARASHAR[‡] and R. C. MEHROTRA*
Chemical Laboratories, University of Rajasthan, Jaipur - 302004
[†] University of Gorakhpur, Gorakhpur
[‡] Shradhanad College, Delhi University, Delhi

Anhydrous copper(II) acetate undergoes substitution reactions with higher carboxylic acids refluxing in toluene, yielding soluble copper(II) carboxylates with general formula $Cu(OOCCH_3)_{2-n}(OOCR)_n$ (where R= $C_{13}H_{27}$, $C_{15}H_{31}$, $C_{17}H_{35}$ and $C_{21}H_{42}$ and n=1 or 2). These complexes on recrystallisation from benzene-alcohol mixtures from alcoholate complexes with the formulae $Cu(OOCCH_3)(OOCR).R'OH$ and $Cu(OOCR)_2.R'OH$ (where R' = Me, Et and Pr^i). Elemental analyses, infrared and electronic spectra, magnetic measurements and ebullioscopic molecular weight determination of all the above complexes indicate their dimeric nature with carboxylate groups acting as bridging ligands.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 926-929

Gold Drugs

KAILASH C. DASH
Department of Chemistry,
Utkal University, Vani Vihar, Bhubaneswar -751004

Rheumatoid arthritis, a progressive disease involving destruction of joint cartilage issue, has been controlled in many cases over the past fifty years by the parenterally administered gold (I) compounds, *e.g.* gold sodium thiosulphate, $Na_3Au(S_2O_3)_2$ (*Sanocrysin*); gold disodium thiomalate, Na, Autm (*Myocrisin*); gold thioglucose, GTG (*Solganol*) and gold thipolypeptides (*Aurodetoxin*). An orally administered form of gold, [(2,3,4,6-tetra-*O*-acetyl-1-thio-*β*-D-glucopyranosato-S)(triethylphosphine) gold] (*Auramofin*) is presently undergoing extensive clinical trial for the treatment of rheumatoid arthritis. Recent advances in biological, chemical and medical disciplines now provide better understanding of the processes whereby the gold complexes exercise their physiological and pharmacological effects, resulting in exciting new developments in their therapeutic application.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 930-935

Polarographic Study of Complexes of Cadmium(II) and Lead(II) with Ethoxyacetate Ions

RAM PARKASH*, S. K. REHANI and RENU BALA
Department of Chemistry, Panjab University, Chandigarh - 160014
*Pro-Vice-Chancellor, Kurukshetra University, Kurukshetra -132119

Reduction of the complexes of cadmium(II) and lead(II) at d.m.e. in aqueous and aqueous-methanol media at μ=1.0 *M* ($NaClO_4$) at 15±0.1 and 25±0.1° is reversible and diffusion-controlled. Four complex species are formed in either case. The overall stability constants of 1:1, 1:2, 1:3 and 1:4 complexes have been determined by DeFord and Hume, and Mihailov's mathematical treatment. Lead (II) complexes have been found to be much stronger than the corresponding cadmium (II) complexes. Thermodynamic parameters have been determined. Percentage distribution of cadmium (II) and lead (II) present in various forms in equilibrium as a function of the ligand concentration have been calculated.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 936-939

Tetranuclear Metal Complexes of Copper(II) with *m*-Bis(1,3,5-trioxohexyl)benzene and *m*-Bis(1,3,5-trioxo-5-phenylpentyl)benzene and Corresponding Macrocyclic Schiff Base Complexes Formed with *o*-Phenylenediamine

A. K. JANA and B. SAHOO*
Department of Chemistry, Indian Institute of Technology, Kharagpur - 721302

Tetranuclear copper (II) complexes with the hexaketonate ions of *m*-bis(1,3,5-tri-oxohexyl) benzene (THB) and *m*-bis(1,3,5-trioxo-5-phenylpentyl) benzene (TPPB) have been isolated. Reaction of the metal complexes with *o*-phenylenediamine gives their respective tetranuclear macrocyclic complexes. The structures of the compounds have been established on the basis of infrared and electronic spectra. Cryomagnetic studies show that the compounds possess negative J values and are antiferromagnetic.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 940-942

Copper and Silver Catalysed Oxidation of Glycinatopentaaminecobalt(III) by Potassium Perdisulphate

ANADI C. DASH, RABINDRA K. NANDA* and PRAKASH MOHANTY
Department of Chemistry, Utkal University, Bhubaneswar - 751004

The kinetics of oxidation of glycinatopentaaminecobalt(III) ion was investigated at 60° and 1 mol dm^{-3} perchlorate medium. The reaction is first order in [complex] and fractional order (0.5) in [peroxydisulphate]. Slight rate retardation is observed when $[H^+]$ increases from 0.1 to 0.7 mol dm^{-3}. The products of the reaction are Co^{II}, HCHO, CO_2, and NH_4^+. The reaction is catalysed by Ag^I and Cu^{II}. It is presumed that these catalysts produce species of their higher oxidation states which are more effective than peroxydisulphate. Increase in rate constants in presence of catalysts under nitrogen atmosphere is observed.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 943-945

Studies on Complexes of Copper(II) and Nickel(II) with Alkyl Xanthates and Their Mixed Chelates with Oxine and 2-Picolinic Acid

R. N. MURTY, R. N. DASH** and D. V. RAMANA RAO***
Department of Chemistry, Regional Engineering College, Rourkela - 769008
** Research and Control Laboratory, Rourkela Steel Plant, Rourkela - 769011

Sample complexes of Cu^{II} and Ni^{II} with xanthates of isomeric alcohols of the composition ML, have been prepared, where L=isopropyl or isobutyl or isoamyl xanthate. These simple complexes on reacting with hetero donor ligands (X), like oxine and 2- picolinic acid in 1:1 molar ratio form mixed ligand complexes having general formula MLX. All these complexes have been characterised on the basis of chemical analyses, molar conductance, magnetic moment, and Infrared and electronic spectral data. The magnetic and electronic spectral studies provide evidence for the existence of square planar structure for CoL_2, CuLX and NiL_2, and tetrahedral structure for NiLX.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 946-950

Metal Complexes with N^1-Benzoyl-N^2 -(5-phenyl or 5-p-anisyl-1,3, 4-oxadiazole-2-yl)thiocarbamide

K. C. SATPATHY*, B. B. JAL; R. MISHRA and (Mrs.) S. PRADHAN
P.G. Department of Chemistry, Sambalpur University, Jyoti Vihar, Burla - 768017

The thiourea derivatives *N*[1]-benzoyl-*N*[2]-(5-*p*-anisyl-1,3,4-oxadiazole-2-yl) thiocarbamide (BPODTC) and *N*[1]-benzoyl-*N*[2]-(5-*p*-anisyl-1,3,4-oxadiazole-2-yl) (BAODTC) are utilised for the preparation of Co^{II}, Ni^{II} and Cu^{II} complexes in ethanol medium. The structure of the complexes has been studied with the help of analytical and magnetic susceptibility data, uv and ir spectral measurements, conductometric and thermogravimetric analyses. The crystal field parameters of Co^{II} and Ni^{II} are also calculated. BPODTC acts as a bidentate ligand whereas BAODTC a tridentate one. $[M_2 (BAODTC)_2 X_4)]$ and $[M(BPODTC)_2 X_2]$ where M=Co^{II}, Cu^{II}, X= Cl^-, Br^-, NO_3^- and ClO_4^- have octahedral and distorted octahedral and $[Ni(BPODTC)_2]X_2$ square planner in nature. Low molar conductance values in acetone except that of $[Ni(BPODTC)_2]X_2$ which is iconic, indicate that all these complexes are non-electrolytic.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 951-955

Organophosphonic Acids as Complexones. Part-VII. Divalent Metal Derivatives of 1-Aminoethylidenediphosphonic Acid and 1-Aminobenzylidenediphosphonic Acid

B. VENKATESWARA RAO, NEELAM PALTA, S. N. DUBEY and D. M. PURI*
Department of Chemistry, Kurukshetra University, Kurukshetra - 132119

Reactions of 1-aminoalkylidene-/arylidenediphosphonic acids with bivalent metal salts, Mn^{II}, Co^{II}, Ni^{II}, Cu^{II}, Zn^{II}, Cd^{II} and Pb^{II} yielded solid products of general formula $M_2L.xH_2O$, in which metal is hexa-coordinated as has been inferred from their electronic spectra. Coordination sites have been established from infrared studies. Subnormal magnetic moment values and other physical properties suggest them to be polymeric in nature.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 956-959

Dissociation Constants of Acetic Acid in Methanol-Water Media at Different Temperatures and Related Thermodynamic Quantities

D. C. BHATTACHARYYA, A. K. BASU and S. ADITYA***
Department of Chemical Technology, University of Calcutta - 700009
** Department of Chemistry, Midnapur College, Midnapur

Dissociation constants of acetic acid in methanol-water media containing 30, 45, 60, 75 and 90% by weight of methanol at 15, 20, 25, 30 and 35° have been determined using the cell

Pt, H_2(g)	HOAc(M^1), NaOAc(m^2), NaCl(m_2) methanol (X), water (100−X)	AgCl, Ag

At any temperature, the pK_a increases as the solvent becomes enriched in methanol. In media with any particular composition, pK_a over the temperature range passes through a minimum. ΔG^o, ΔH^o, ΔS^o and ΔC^o_p for the dissociation process at 25° have been calculated.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 960-963

Thermodynamics of Acid Dissociation Equilibria of Some N- Substituted Anilinium Ions in Formamide

K. ACHARYA and B. NAYAK*
Department of Chemistry, Indian Institute of Technology, Kharagpurpur - 721302

The acid dissociation constant of N-substituted anilinium ions have been determined accurately in formamide over the temperature range 10-50° (283.15-323.15K) from the measurement of the e.m.f. of the cells,

Pt, H_2/B(m_1), BHCl(m_2)/AgCl-Ag.

The dissociation constants at 25° (298.15K) have been checked by determining the same with the help of the cells,

Pt, Q/QH_2/B(m_1), BHCl(m_2)/AgCl-Ag.

Thermodynamical changes, ΔG^o, ΔH^o and ΔS^o for the dissociation processes have been evaluated. The result show that the dissociation constants of these conjugate acids are in general lower (pK_a's higher) in formamide than their corresponding values in water.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 964-966

Effect of Sugars on CMC of Aqueous Solution of Cetyltrimethylammonium Bromide

S. K. KANUNGO and B. K. SINHA*
P. G. Department of Chemistry, Sambalpur University, Jyoti Vihar - 769019

The effect of glucose, fructose and sucrose on the critical micelle concentration (CMC) of a cationic surfactant, i.e. cetyltrimethylammonium bromide (CTAB) has been studied conductometrically at 35°. It has been observed that on addition or varying concentration of D-glucose and sucrose (0.05-0.3 *M*) the CMC of CTAB increases. The first CMC of CTAB in pure water is found to be 9.0 x 10^{-4} M at 35° by this method. However, in presence of varying concentration of D-fructose the CMC decreases initially and then increases.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 967-968

Role of Defects in Recovery of Radiolytic Damage in Irradiated Potassium Nitrate

B. M. MOHAPATRA and D. BHATTA*
Department of Chemistry, Utkal University, Bhubaneswar - 751004

The role of lattice defects introduced by doping and crushing In the thermal annealing of γ -irradiated potassium nitrate as well as the effect of crushing in the recovery process of doped (Ba^{2+}) crystals has been studied. It is seen that the doped crystals are more susceptible to recovery than the pure substance above the temperature of crystal transition

$$\text{(rhombic} \overset{400K}{\leftrightharpoons} \text{trigonal).}$$

The data show that in both the substances crushing prior to irradiation enhances the rate of recovery, whereas subsequent to irradiation lowers the rate.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 969-972

A Quantum Mechanical Approach to the Theory of Cancer from Polynuclear Molecules. Metabolic Activation and Carcinogenicity of Methylphenanthrenes

S. NOOR MOHAMMAD
Molecular Biology and Biophysics Programme, Department of Physics and Meteorology,
Indian Institute of Technology, Kharagpur - 721302

Metabolism and cancer-inducing ability or methylphenanthrenes are determined using quantum mechanical method in the MINDO/3 approximations of Bingham *et al*. Several reactivity and molecular parameters are used for the purpose. Results of the calculations indicate that none of the isomeric methylphenanthrenes are active as cancer initiator and that 1,2-diol-3,4-epoxide which is the ultimate metabolite for each of them is very weak. The predictions are in striking agreement with the experiment.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 973-974

Search for New Fungicides. Part-I. Synthesis and Mercuration of Some New 2-Thio-Δ^4-thiazolines and Their Possible Use as Fungicides and Bactericides

(Mrs.) JUTHIKA MOHANTY and G. N. MAHAPATRA*
Department of Chemistry, Ravenshaw College, Cuttack - 753003

A series of new 2-thio·3·*p*-ethoxyphenyl·4,5-disubstituted-Δ^4-thiazolines (l) have been synthesised by condensing ammonium *p*-ethoxyphenyldithiocarbamate with a number of ketones In the presence or bromine In an alcoholic medium. The thiazolines have been mercurated with one equivalent of mercuric acetate In acetic add medium. All the compounds have been assayed against the fungus *Pyricularia cryzae* (Cav) and the bacteria *E. coli* and *S. aureus*.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 975-978

Aminocarbonylation with Ethyl Carbamate: An access to Nitrogen Heterocycles

D. P. CHAKRABORTY*, SWAPAN KUMAR ROY, U. P. JANA and T. KARMAKAR
Bose Institute, Calcutta - 700009

No abstract.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 979-981

Synthesis and Biological Activity of Some Haloanilido Pyrazoline and Isoxazoline Derivatives

N. K. MANDAL, R. SINHA and K. P. BANERJEE*
P. G. Department of Chemistry, Bhagalpur University Bhagalpur - 812007

Halogenoacetoacetanilide on condensation with aromatic aldehyde yielded the corresponding haloanilido α,β-unsaturated ketones which on heating with hydrazine hydrate/phenylhydrazine and hydroxylamine hydrochloride gave the corresponding haloanilidopyrazoline and isoxzoline derivatives. The biological activities of the compounds were evaluated.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 982-984

Heterocyclic Compounds. Part-IX† Syntheses of *N*-Nitrosoureas and *N*-Nitrosothioureas as Possible Antitumor Agents

J. SAHU, S. N. DEHURI, S. K. NAIK and A. NAYAK*
Department of Chemistry, Sambalpur University, Joyti Vihar, Burla, Sambalpur - 768017

The synthesis of several novel *N*-nitrosoureas and *N*-nitrosothioureas from various heterocyclic and alicyclic amines have been described. Nitrosoureas were prepared by nitrosation of ureas using $NaNO_2$ in formic acid whereas nitrosothioureas were obtained by nitrosation of thioureas under slightly acidic condition. The higher acidic reaction condition of thioureas favoured nitrosation at more reactive sulphur leading to urea derivatives *via* thionitrosyl intermediate. The antitumor activity of some compounds has been evaluated against leukemia L1210.

† Part - VIII, *Indian J. Chem., Sect. B*, 1984, **23**, 127.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 985-990

Solvent Effects on Electronic Spectra of Some Amino Salts of d-Camphor-*β*-Sulphonic Acid

SK. KHANNA, B. C. PANT and H. P. TIWARI*
Department of Post-Graduate Studies and Research in Chemistry,
Rani Durgavati Vishwavidyalaya, Jabalpur - 302004

The electronic spectra of amino salts of d-camphor-*β*-sulphonic acid were examined in a series of solvents covering a wide range of polarity. The transition energies (E_T) were plotted against Z-values, a solvent polarity parameter. A linear relationship was observed between transition energy and Z-value for the n→π* transition. Solvent sensitivities of the amino salts have also been calculated and found to be in the increasing order as the inductive nature of the side chain increases, with the anomaly lo ammonium salt. The anomaly in ammonium salt has been explained in terms of hydrogen bonding.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 991-995

Evaluation of New Substituent Parameters to Explain ^{13}C Chemical Shift for para-Substituents in Benzene Ring

L. R. NAYAK, B. K. MISHRA and G. B. BEHERA*
Department of Chemistry, Sambalpur University, Jyoti Vihar, Burla - 768017

The ^{13}C chemical shift data of 1,4-distributed benzenes have been used to evaluate para-substituent constants (α^4_x and β^4_x) and their applicability has been examined in 39 different sets of data. These parameters have been found highly suitable to correlate the ^{13}C chemical shifts of aromatic, aliphatic and heterocyclic systems.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 996-997

Syntheses of 3-Bromochromones

A. K. D. MAZUMDAR; G. C. SAHA; T. K. SINHA and K. D. BANERJI*
Chemical Laboratory, Bhagalpur University, Bhagalpur - 812007

Fifteen 3-bromochromones have been prepared by brominating the corresponding hydroxyaroyl aroyl/heteroyl methanes and cyclization. Direct bromination of chromones to yield 3·bromochromones has been studied by three different reagents, (i) bromine, (ii) *N*-bromosuccinimide and (iii) cupric bromide. Cupric bromide gives the best result. The chromone structures have been established by analysis, spectral data and their conversion to the corresponding coumaran-3-ones.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 998-1006

Kinetics of Vapour Phase Oxidation of 1-Phenylethanol over Ferric Molybdate Catalyst

NARAYANASWAMY SUNDARARAMAN†, M. VIVEKANANDA BHAT†* and M. RAVINDRAM**
Indian Institute of Science, Bangalore - 560 012
† Department of Organic Chemistry
** Department of Chemical Engineering

Kinetics of the vapour phase oxidation of 1·phenylethanol over ferric molybdate was studied in an isothermal, differential, fixed-bed reactor in the temperature range 240-300°. The sole product obtained was acetophenone. Twentyfour different models including redox, Langmuir-Hinshelwood and Rideal were examined to fit the experimental data. These models were compared and the redox model was found to be more satisfactory than the others.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1007-1009

Chemical Constituents of *Garuga pinnala* Roxb.

MENA HARIBAL, J. B. HANUMAN, A. K. MISHRA and B. K. SABATA*
Department of Chemistry, Indian Institute of Technology, Powai, Bombay - 400076

Hydrocarbons, n-alkanols, esters, ketone, fatty acids, sterols and a new branched secondary alcohol, 6-propyltetradecan-7-ol, have been isolated from the petrol extracts of *G. pinnata* leaves and stem bark.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1010-1012

On the Chemistry of Indian Orchidaceae Plants. Part-III†. Dendroflorin, a New Fluorenone Derivative from *Dendrobium densiflorum* Wall.

SUNIL K. TALAPATRA*, SRABANI BOSE, ASOK K. MALLIK‡ and BANI TALAPATRA*
Department of Chemistry, University College of Science, Calcutta - 700009
‡ Department of Chemistry, Jadavpur University, Calcutta - 700032

Dendroflorin, a new fluorenone derivative has been isolated from Dendrobium densiflorum Wall. In addition to dengibsin (1), scopoletin methyl ether, psoralene, oleanolic acid and *β*-sitosterol. The structure of dendroflorin has been established as 1,2,5-trithydroxy-7-methoxy-9-fluorenone (3) from the spectral properties of itself and its diacetate and triacetate.

† For Parts I and II see Refs. 1 and 2

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1013

Synthesis of 2-Methyl-2-(m-methoxyphenyl)-cyclohexanone

SHIBA NARAYAN MAHAPATRA
Regional Research Laboratory, Bhubaneswar - 751013

Synthesis of 2-methyl-2-(m-methoxyphenyl)-cyclohexanone, an important intermediate towards the synthesis of resin acids has been described.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1014-1015

Synthesis of 1-Acetyl/Pentafluorophenyl-3-fluorinatedaryl-5-phenyl/ furfuryl-4*H*-4,5-pyrazolines as Antifertility Agents

KRISHNA C. JOSHI*, V. N. PATHAK and SHARDA SHARMA
Department of Chemistry, University of Rajasthan, Jaipur - 302004

Various substituted fluorochalcones were prepared from appropriate ketones and aldehydes and two new chalcones are reported. On condensation with hydrazine hydrate or pentafluorophenylhydrazine in acetic add, the chalcones gave the title compounds, 1-acetyl/ pentafluorophenyl-3-fluorinatedaryl-5-phenyl/furfuryl-4*H*-4,5-pyrazolines (IIa-i). The compounds were screened for anti-implantation activity in adult female rats at 10 mg/kg.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1016-1022

Some Aspects of Protoberberine Alkaloids

D. S. BHAKUNI
Central Drug Research Institute, Lucknow - 226001

Several protoberberine alkaloids have been isolated from *Corrdalis mosfolia*, *C. govanianna*, *Stephania glabra* and *Cocculus pendulus*. The structure and stereochemistry of new bases have been assigned. Biosynthesis, and positive and negative chemical ionization mass spectral studies of some protoberberine alkaloids have been carried out.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1023-1027

A Facile Synthesis of 4-Propyl-psoralene and Angelicin Derivatives

V. K. AHLUWALIA* and R. P. TRIPATHI
Department of Chemistry, University of Delhi, Delhi - 110007

7-Hydhoxy-4-propyl-2*H*-l-benzopyran-2-one (1) on allylation followed by Claisen migration of the intermediate allyloxycoumarin 2 with *N,N*-dimethylaniline gives 8-allyl- and 6-allyl-7-hydroxy-4-propyl-2*H*-l-benzopyran-2-ones (3 and 4) which on oxidation with OsO_4 – KIO_4 and subsequent cyclodehydration with PPA yield 7-propyl-5*H*-furo[2,3-h][1]benzopyran-5-one (7) and 5-propyl-7*H*-furo[3,2-g][1]benzopyran-7-one (10), respectively. However, these allyl coumarins 3 and 4 on cyclisation with sulphuric acid followed by dehydrogenation with DDQ afford 2-methyl-7-propyl-5*H*-furo[2,3-h][1]benzopyran5-one(9)and2methyl-5-propyl-7*H*-[2,3-g][1]benzopyran 7-one (12) respectively. Similarly, 9-methyl-5-propyl-7*H*-[2,3-g][1]benzopyran-7-one (16) and 2,9-dimethy)-5-propyl-7*H*-furo-[2,3-g][1]beozopyran-7-one (18) are synthesised starting from 7-hydroxy-8-methyl-4-propyl-2*H*-l-beozopyran-2-one (13).

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1028-1031

Synthesis in 3-Azafluorene Group. Part-III

J. N. CHATTERJEA*, S. C. SHAW, Y. PRASAD and R. P. SINGH
Chemistry Department, Patna University, Patna - 800005

The Hey-Elks route to arylated pyridines has been utilised in the synthesis of 3-azafluorenes. The pyrido-coumarin (23) and the related chromene (24) have been synthesized.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1032-1033

^{13}C Nmr Spectra of Acutangulic and Tangulic Acids from *Barringlonia aculangula* Gaertn.

K. DHAVEJI, G. K. A. S. S. NARAYAN, D. S. RAO and L. RAMACHANDRA ROW*
Department of Chemistry, Andhra University, Waltair - 580003

^{13}C nmr spectra of acutangulic and tangulic acids are now presented in support of the structures 1 and 2 proposed earlier. The effect of the 18β-hydroxyl on the C12-13 olefinic bond is discussed.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1034-1037

Stereochemical Assignment by Nmr Spectroscopy. Diels Alder Adducts of *p*-Benzoquinone with Cyclic Dienes

SUBODH MAHANTI; HAWALDAR MAURYA and SHIVA M. VERMA
Department of Chemistry, Banaras Hindu University, Varanasi - 221005

Nmr spectroscopy has been employed to demonstrate the Stereochemistry of Diels-Alder adducts of *p*-benzoquinone with substituted anthracenes by transforming the mono adducts into bis adducts. Restricted rotation about N-CO bonds and a preferred trans arrangement has been proposed for the C(1)-diacetamido group in 1-diacetamidoanthracene-*p*-benzoquinone adduct. It has been observed that the spectral pattern may not be diagnostic in configurational assignment of bis adducts of p-benzoquinone with similar dienes but may provide valuable information about the adducts with dissimilar dienes.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1038-1043

Synthetic Studies in Diterpene Series. Part X[1].A Synthesis of 2-Oxygenated (±)-Podocarpa-8,11,13-triene by Transposition of Ketonic Function

DHANONJOY NASIPURI* and SATINATH BANERJEE
Department of Chemistry, Indian Institute of Technology, Kharagpur - 721802

Carbanions generated in situ through de-ethoxycarbonylation of ethyl 2-cyano-3,3-dimethyl-5-oxohexanoate (11) and ethyl phenethylcyanoacetate (7) by heating with lithium chloride in hexamethylphosphorus triamide according to Krapcho have been submitted respectively to alkylation reaction with phenethyl bromide and to Michael addition with 4-methylpent-3-en-2-one with a view to utilising the resultant 5-cyano-4,4-dimethyl-7-phenylheptan-2-one (10) for a convenient synthesis of 2-oxopodocarpa-8,11,13-trienes (6). The yields of the reactions are, however, poor (15-20%), presumably due to adverse Steric effect of tile geminal methyl group in the reactants. Use of sodium hydride under phase transfer catalysis considerably Improves the yield of alkylation reaction (with the keto group in 11 protected by cyclic acetal formation) and the product (14) undergoes de-ethoxycrabonylation; but the resultant nitrile (15) is found to be resistant to hydrolysis leading to an impasse.

2-Oxopodocarpa-8,11,13-triene (20) is finally synthesised from the easily accessible 3-oxo-derivative (18) by transposition of the ketonic function through a two step process, namely oxidation with molecular oxygen in presence of potassium I-butoxide to 2,3-dioxo-derivative and its subsequent reduction with boiling hydriodic acid. The ketone (20) on treatment with lithium aluminium hydride affords 2β (axial) and 2α (equatorial) alcohols in a 60:40 ratio.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1044-1047

Physico-Chemical Studies of Catechins and Epicatechins

JOGINDER SINGH and N. K. RALHAN *
Department of Chemistry, Panjabi University, Patiala -147002
and
T. K. PANT
Sri Ganesh Research Institute, A-9, Meerut Road, Ghaziabad

The physico-chemical properties of (-) epicatechin, (+) catechin have been found to be at variance from those reported in literature, and have been corrected after confirmation by elemental analysis, TGA etc. A quasiracenate ($C_{15}H_{14}O_6.3H_2O$) or (-)-epicatechin and (+)-catechin (1 : 1) has also been isolated and characterised.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1048-1049

Synthesis of *N*-Allyl-2-oxocycloalkanecarbothioamides, Functionalised Organic Intermediates *via* Enamines

HARJIT SINGH, PARAMJIT SINGH and R. K. MEHTA
Department of Chemistry, Guru Nanak Dev University, Amritsar - 148005

Cyelopent-1-enylmorpholine (1a)/pyrrolidine (1b) and cyclohex-1-enylpyrrolidine (1c)/aniline (1d) with allyl isothiocyanate furnish N-allyl-2-oxo-cyclopentanc-and N-allyl-2-oxo-cyclohexanecarb othioamides (3, n=3/4), respectively after hydrolysis of the product mixture.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1050-1052

Heterocyclic Systems Containing Bridgehead Nitrogen Atom. Part-XLVII. Syntheses of Thiazolo[2,3-*b*]quinazoline and Thiazino[2,3-*b*]quinazoline

G. D. GUPTA and H. K. PUJARI*
Department of Chemistry, Kurukshetra University, Kurukshetra - 132119

2-Mercapto-8-methyl-3,4-dihydroquinazolin-4-one (2a), obtained by the reaction of 3-methylanthranilic acid (1) with ammoniumthiocyanate, on condensation with chloroacetic acid gives the acid (3a) which on treatment with acetic anhydride and pyridine undergoes cyclodehydration to furnish a single product to which 9-methyl-2*H*-thiazolo [2,3-*b*]quinazolin 3,5-dione (4a) and not 5-methyl-2*H*-thiazolo[3,2-*a*]quinazolin 3,9-dione with 1,2- dibromorthane and 1-dibropropane yields 2,3-dihydro-9-methylthiazone [2,3-*b*]quinazolin-5-one(5a) and 4*H*-2-3-dihydeo-10-methyl[1,3]thiazino[2,3-*b*]quinazolin-6-one (6), respectively.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1053-1056

Reaction of 2-Mercapto-4-chloro-6-bromobenzimidazole with Chloroacetic acid, α-Halogenoketones and Alkyl Bromides

(Miss) KIRAN JAIN; K. K. JAIN; V, K. CHADHA and R. N. HANDA***
Department of Chemistry, Kurukshetra University, Kurukshetra - 132119
** Department of Biochemistry, College of Medicine, University of Iowa, Iowa 52242, U.S.A.

The syntheses of 6-bromo-8 chlorothizolo [3,2-a] benzimldazol-3(2H)-one (4), 3-aryl-6-bromo-8-chlorothiazolo [3,2-a] benzimidazoles (6), 2,3 dihydro-6-bromo-8-chlorothiazolo [3,2-a] benzimidazole (7) and 4H-2,3-dihrdro-7-bromo-9-chloro [1,3] thiazino-[3,2-a] benzimidazole (8) have been achieved starting from 2-mercapto 4-chloro-6-bromobenzimidazole (2). Compound 2, obtained by the reaction of 4-bromo-6-chloro-1,2- diaminobenzene (1) with carbon disulphide, on condensation with chloroacetic acid gives the acid 3, which on cyclisation with acetic anhydride furnishes 4, and not the other isomer 9 as revealed by pmr spectral data. Condensation of 2 with α-halogenoketones followed by PPA cyclisation of the intermediate ketone (5) yields 6. Similarly, the reaction of 2 with 1,2-dibromoethane and 1,3-dibromopropane gives 2,3-dihydro-6-bromo-8-chlorothiazolo [3,2-a] benzimidazole (7) and 4H-2,3-dihydro-7-bromo-9-chloro[1,3] thiazino [3,2-a] benzimidazole (8), respectively.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1057-1060

Protease Activity of Rabbit Brain Tissue

MOHAN LAL, (Miss) KAMLESH MIGLANI and HARI SINGH*
Department of Chemistry, Kurukshetra University, Kurukshetra - 132119

The complete spectrum or protease activity of rabbit brain homogenate was not revealed by traditional protease substrates, haemoglobin and casein. Whereas, these two substrates sufficed for detecting protease activity at acidic and alkaline pHs, azocasein, a chromogenic substrate was needed to demonstrate an important protease activity peak at slightly acidic pH values. The brain homogenate contains protease activity over the entire pH range from 2.0-10.0 with peaks of activity around pH 3.5, 5.0 and 8.5. Pepstatin, a specific inhibitor of cathepsin D was utilised to show that almost entire protease activity in peak I was due to this protease. That the second peak consisted of cathepsin B and BANA-hydrolase was shown by using BANA as substrate and leupeptin as inhibitor. Leupeptin, a specific inhibitor for cathepsin B could not completely abolish the BANA-hydrolase activity at 1.0 μM concentration sufficient to completely inhibit the activity of pure cathepsin B. Further, Z-L-Arg-L-Arg 4$m\beta$NA. a highly specific chromogenic substrate for cathepsin B was utilised for the first time to demonstrate the presence of cathepsin B in rabbit brain. At 1.0 μM concentration or leupeptin, the complete inhibition or Z-Arg-Arg-4$m\beta$NA activity confirms the presence of cathepsin B.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1061-1064

Fungicidal Activities and Mass Spectral Studies of Some Schiff Bases Derived from *para*-Hydroxybenzaldehyde and Their Derivatives

B. DASH*, P. K. MAHAPATRA, D. PANDA and (Mrs.) J. M. PATTNAIK
Department of Chemistry, Utkal University, Bhubaneswar - 751004

A new series of Schiff bases derived from 4-substituted, 4,5-disubstituted-2-aminothiazoles, substituted 2-aminobenzothiazoles and *p*-hydroxybenzaldehyde was synthesised. Condensation of the Schiff bases with chloroacetylchloride and subsequent reaction with piperidine and morpholone yielded corresponding acetoxy derivatives. Cycloaddition of the Schiff bases with thioglycollic acid yielded thiazolidionone derivatives. The compounds were characterised by elemental analysis, ir and mass spectra and screened for their fungicidal activity.

J. Indian Chem. Soc.
Vol. LXI, November, December 1984, pp. 1065-1068

Kinetic and Mechanistic Study of Nitrite by Bromate and Ruthenium(III) Catalysed Iodate

P. S. RADHAKRISHNAMURTI, B. K. PANDA and G. K. MOHANTY
Department of Chemistry, Berhampur University, Berhampur - 760007

Kinetic studies of the oxidation of nitrite by bromate at pH≈3 and Ru^{III} catalysed iodate at 0.01M [$HClO_4$] have been studied. The reactions are acid catalysed. Ionic strength effects and effect of added salts are found to be marginal. The rate laws for the bromate oxidation and Ru^{III} catalysed iodate reaction have been discussed.

THE BHOPAL TRAGEDY

Analysis of Related Issues

By

Dr. M. K. ROUT, D.Sc.

Chairman
Orissa State Prevention and Control of Pollution
&
Ex-Vice-Chancellor
Utkal University

Published by :

ORISSA STATE PREVENTION AND CONTROL OF POLLUTION BOARD

Printed at :

PUSPAGIRI PRESS
Cuttack-2

[Sale Proceeds of booklet will be contributed to the Relief Fund in aid of Bhopal victims.]

Price : Rs 6/-

SHRI JANAKI BALLAV PATNAIK
Chief Minister, Orissa

1st January, 1985

I am glad to learn that a booklet "Bhopal Tragedy - Analysis of Related Issues' written by Dr. M. K. Rout, Chairman, State Prevention and Control of Pollution Board is being brought out by the Board shortly. It is a priced publication, the sale proceeds of which will be contributed to the relief fund in aid of the victims of the Bhopal tragedy.

I am sure, the Booklet which analytically discusses the related scientific, technological and medical aspects, legal aspects relating to prompt payment of compensation to the victims and preventive measures to eliminate possibility of recurrence of such disasters in future in other hazardous industries in the country etc. will prove highly useful and interesting not only to casual readers but also to experts in the field.

J. B. Patnaik

Acknowledgement

I am grateful to Sri S. B. Mishra, I.A.S., Commissioner-cum-Secretary to Government of Orissa, Department of Science, Technology & Environment who, even in his saddest bereavement in his life, yet suggested to me and pressed me to write something about the Bhopal Tragedy. The outcome is the present booklet.

I am thankful to Dr. S. P. Rout for collecting and supplying me all relevant documents and also sorting out the salient points for my information. Recipient of the Science Talent Scholarship, Fullbright Fellowship and Senior Academic Fellowship of the U.G.C. on the basis of Al! India selections, he had the further advantage of working with MIC at the University of Florida under Professor Butler during 1978-79 and Professor Mc Dowell in the University of British Columbia, Canada during 1975-76. His help and valuable suggestions are acknowledged with pleasure

Dr. M. K. ROUT
Chairman,
Orissa State Prevention and
Control of Pollution Board

CONTENTS

BHOPAL TRAGEDY

I. A Brief Introductory Note

1. Leakage of Methyl Isocyanate (MIC) gas from one of the three storage tanks (Storage Tank 610) of the Union Carbide Plant at Bhopal occurred on the night of 2nd December.

   For the next three days, the scene was one of mounting casualties, more cremations and burials and survivors looking for their relatives. The situation was heart-rending.

   It was perhaps the worst industrial and environmental tragedy not only in this country but in the world. It left nearly 1,500 people dead and several thousands disabled.

2. Situation desperate - Lack of Effective Antidote :

   Thousands of people exposed to the deadly gases continued to suffer for a fortnight after the disaster due to want of a proved effective antidote for MIC.

   In the absence of any effective antidote, the treatment which was given to gas poisoning victims was purely symptomatic. It consisted of a package of hydrocortisone against inflammation, antibiotics (tetracyclin and ampicillin) against lung infections, eye drops against irritation and corneal ulcers and in acute cases, oxygen respiration.

   It was a very distressing and frustrating situation for the doctors when, in some cases, in spite of the continued treatment, new symptoms had begun to appear with a delay of four to seven days after exposure to MIC.

   In the first three of four days, the victims complained of severe, almost unbearable throat and eye irritations, chest pain and laboured breathing.

   All the early deaths were caused by acute pulmonary edema (swelling of lungs and huge secretions of fluids in them) accompanied by perforation of lung tissues.

   The latter deaths indicated failure of the central nervous system and also in some cases, brain damage.

   The patients went into convulsion and coma leading to death.

   The doctors felt desperate and helpless.

3. Next to medical treatment and relief operation, the immediate problem was how to dispose of the remaining 16 tonnes of MIC (at that time it was estimated to be that amount). It subsequently turned out to be 23.5 tonnes.

   A team of scientists headed by Dr. S. Varadaranjan, Director General, Council of Scientific and Industrial Research, undertook the process of disposal of MIC (Operation Faith) which was started on December 16. By December 21, the entire stock of 22 tonnes of Methyl Isocyanate (MIC) in the underground storage tank and pipelines in the Union Carbide Plant were converted into Pesticide. Operation Faith was continued on December 22 to convert another nearly 1.5 tonnes of MIC stored in stainless steel drums.

II. Some relevant data about the Nature of the intermediates (Phosgene and Methyl Isocyanate MIC) used in the Preparation of the Pesticide 'Carbaryl' :

Before the possible causes of this grim tragedy are discussed, it may be relevant to describe the preparation and toxicological properties of the two possible killer gases which are intermediates in the preparation of pesticides.

1. Phosgene ($COCI_2$)

It is a highly poisonous gas which was used by the Germans against the Soviets during the first World War.

It becomes a gas at 8.2°C. It is not normally stored. Storing, if, at all, it is found essential, is done under refrigeration.

When phosgene reacts with water elsewhere or in the human lungs, it produces carbon dioxide (CO_2) and hydrochloric acid (HCI) which corrodes the lungs.

Due to relative shortage of oxygen, along with carbon dioxide, some carbon monoxide (CO) may also be formed. Carbon monoxide is known to be notorious as a killer gas.

There is practically no antidote to phosgene.

2. Methyl Isocyanate (MIC) (CH_3NCO) :

Preparation and manufacture of MIC is a one-step reaction. When methyl amine (CH_3NH_2) is mixed with phosgene in a solvent like toluene at an appropriate temperature and pressure, methyl isocyanate is formed.

Phosgene is an intermediate in the preparation of methyl isocyanate.

MIC boils at 39° Celsius under ambient conditions. There is, however, considerable

controversy on the matter.

It is heavier than air and hence it travels along the ground. Pollution caused at ground level is, therefore, much higher than at higher altitudes.

When mixed with water, MIC is hydrolysed to Methyl Amine (CH_3NH_2) and carbon dioxide. Water soluble ureas and biurets are also formed.

After a severe exposure, MIC causes lung edema and suffocation, constriction of the chest and tightness in the throat.

MIC affects the eyes leading to "Carcoto conjunctivitis."

Cortico steroids are not useful for treatment, as complications are caused. There is practically no antidote to MIC. Only supporting treatment can be given to patients.

In pregnant women, MIC causes damage to the foetus and embryos.

Victims may develop lung fibrosis and respiratory insufficiency.

A report by Mr. W. A. Rye in 1973 which appeared in the Journal of Occupational Medicine says that respiratory response is imminent, when workers are exposed to breathing 0.5 ppm concentration of MIC.

The document on "Threshold values" (4th edition) published by the American Conference of Governmental industrial hygienists says that inhalation of MIC vapour is dangerous even at high dilution. Inhalation results in injury to the lungs and pulmonary edema.

The document also reports investigations conducted on human beings. At 2 ppm (parts per million), no odour is detected but irritation of the nose and throat and lacrymation (tears in the eyes) are experienced. At 3 ppm, the symptoms of irritation are more marked.

At 21 ppm, the irritation of eyes, nose and throat becomes unbearable. The investigators suggest that for eight hours of exposure, the concentration should not exceed 0.02 ppm.

MIC is a skin irritant and can cause severe eye damage.

Exposure at 2 ppm level for two hours has no effect on rats.

The boiling point of MIC is in dispute. The boiling point of MIC has been given differently ranging from 30.1 degree C to 40 to 45 degree C in various reference books. Th. document on Threshold values (referred above) give the highest boiling point of 59 degrees C for MIC.

3. **Preparation of Pesticide:**

MIC is reacted with alpha-naphthol (after going through a minor stage of processing to yield what is termed 'MRS' make) in the Carbaryl plant to give the final pesticide. The carbaryl plant has a capacity of about 22 tonnes a day between its two reactors. Actually it usually operates at a much lower level of out-put producing about 13 tonnes.

Union Carbide was using another process based on alpha naphthoxide and phosgene reactions until recently.

III. Controversy About the Killer Gas

1. Dr. Varadarjan's report to the press on December 18 evening, that there was some Phosgene in the Union Carbide Plant has given an added boost to the arguments of the scientists who had maintained that the gas leaked was Phosgene.

2. The post mortem reports of victims could be one way of resolving the dispute. The effects of phosgene and MIC on the human system specially the lungs, are different. These reports have been seized by the CBI and sent to Government pathologists and forensic scientists for comments.

3. Preliminary comments are inconclusive: The experts have reportedly found evidence of both phosgene and MIC poisoning in the lungs of the victims.

4. Dr. Varadarajan had said that Dimethyl urea, which is produced when MIC reacts with water in the lungs clogs the passage that takes air into the lungs.

   The autopsies, according to CBI, have shown evidence of this clogging.

5. The autopsies also indicate that most of the victims' lungs have been corroded, as they would be by an acid. That strengthens the argument that the leaked killer gas was phosgene.

6. In the Hamida Hospital where most of the victims have been treated, the doctors have differing views about the nature of killer gas. One group says that the patients have died due to construction of their air passage or later due to pneumonitis which point to MIC poisoning.

7. Dr. Varadarajan has reported later that MIC used in the factory was not pure and contained a small quantity of phosgene. Only 'Commercial' MIC was being prepared in the factory. The quantity of phosgene in the gas is said to be between 200 and 300 parts per million.

8. However, Central Government Scientists who carried out tests after the gas leak had not found any trace in the atmosphere.

9. In Bangalore, researchers at the Indian Institute of Science assert that the gas responsible for the Bhopal tragedy was not MIC, but phosgene, the War gas.

   It be noted that production of MIC involved phosgene as a precursor.

   The documented symptoms of phosgene gas used during World War II matched well with those of the Bhopal victims.

   Both MIC and phosgene produce long range neurological problems.

10. Three experts on polymers from Hindustan Organic polymerisation reactions possible in MIC.

    Scientists trying to make the plant safe have found that the unspent MIC liquid in the tank has polymerised into a messy substance. Samples of the polymerised material have been flown to several laboratories for analysis.

    The heat created during the leakage had rendered part of MIC liquid into polymers, while the rest has vapourised and escaped into the air.

    There was no gas left in the tank and what remains is a polymer.

    Polymer is the scientific name for plastics that are mad by combining short molecules (monomer) into a long chair (polymer).

11. Since post mortems have failed to reach any conclusion the conflict and the controversy can be resolved after the storage tank is opened and examined.

12. My opinion :

It seems to me, such an exercise will be merely of academic interest. It is now acknowledged that the MIC prepared at the Bhopal plant is not pure. "Commercial MIC' containing 200 to 300 parts per million of phosgene are produced at the Carbide Plant.

It is now nearly certain that both MIC and phosgene were responsible for the Killing. MIC is not certainly lethal at 21 ppm, as has been decisively established by experiments on human beings.

But when the concentration increased to terrible limits, the gas showering on the city as liquid due to low temperature on the cold night, the substance MIC acted as a lethal and killer gas.

The relative concentration of phosgene in MIC also increased substantially, when MIC gas condensed. At that concentration, the lethal action of phosgene was quite manifest on the human systems of the victims.

IV. Cause of Mishap

There are several speculations about the cause of the mishap.

1. The commonest theory is that the scientists of Union Carbide were conducting some experiments with the dangerous chemical phosgene which went out of hand and caused the holocaust.

2. On the evening of December 2, the Carbide management had begun the process of restarting the plant. One of the first step would have been the production of phosgene, as this is an intermediate compound in the production of MIC and subsequently pesticide. When some phosgene had been prepared, the uncontrollable emission of MIC from the storage tank was noticed. In their anxiety to do something about the emission, the officers rushed there, leaving the phosgene plant sealed.

3. For the entire 40 tonnes of MIC to boil over, about two tonnes of water are required to enter into the tank. One possibility is that nitrogen had not been dried properly, before being let into the storage tank. But this can not account for two tonnes of water.

   There is another possibility. The water might have leaked in, when an inlet pipe was being cleaned which would again establish extreme negligence.

4. According to Dr. Varadarajan, Director General, CSIR, who headed the team of Indian Scientists to enquire into the leakage, there are definite indications that polymerisation has occurred and the leaked storage tank contains polymeric material. Heat of polymerisation would cause liquid MIC to vaporise leading to development of pressure.

   It is not known if there was provision of inhibitor in the plant to prevent polymerisation. If there was no inhibitor, it only reflects the negligence of the management.

5. Other possible reasons may be some of the defects pointed out in their report "Business Confidence" by the team of experts from the Union Carbide, West Virginia Plant, submitted in 1982 after thorough inspection of the Bhopal plant spread over fifteen days during 1981.

   (a) Possible contamination of the tank with material from the vent gas scrubber. During depressurisation, reactive quantities of water vapours and other gases from the scrubber are likely to be let in to the feed tank.

   (b) Location of the tank inside room and lack of water spray protection facility to tackle toxic vapour cloud.

   (c) Manual control of filling up of MIC feed tank with no instrumentation back-up. Created a possibility of accidental over-filling.

   (d) Defective Control Valve in the Carbaryl (Sevin) Plant, where improvement had been suggested by the team of experts in 1982 report.

   (e) No early warning systems for the kind of abnormal conditions that appear during accidents.

   (f) Malfunctioning of most of the Control and instrumentation system.

   (g) Disconnection of the scrubber from the flare tower and pilot flame also put out.

6. Deadly Inversion:

The deadly inversion aggravated the situation dangerously.

The leak occurred at 11 PM and the escaped gas hugged the ground because of the inversion. The slow southerly winds spread the gas over the populated area. As the outside temperature was only 14°C, the gas once again became liquid and showered on the city. Had the winds been blowing north, deaths would have been much less, as that side of the plant is barren land.

The 'Operation Faith' was done during day-time, when there are no inversions.

7. Version of the Union Carbide Staff about the cause of Mishap:

(a) It is said that at about 10 pm, a Supervisor, on duty, who was new to MIC Unit, routinely asked an Operator to wash the inside of a length of piping near the MIC reactor.

It is standard procedure of maintenance department to insert a metal sheet called a "Slip Blind" near a valve to seal off the rest of the system from the tube being washed.

It is suspected that the slip blind was not inserted, when the Operator connected the water hose pipes to the tubes he was required to wash.

The shift change a few minutes later brought a new set of Operators.

The Union Carbide Manual warns that if water leaks into the system, it results in evolution of a lot of gas (thereby increasing equipment pressure) and liberation of a lot of heat (thereby raising temperature). This, in retrospect, appears to be what actually happened was required to wash.

(b) Failure of all preventive devices :

(i) Failure of Vent Gas Scrubber (It looks like a tall metal rocket).

The MIC is passed through the scrubber where its toxicity is destroyed by caustic soda in the scrubber.

It is said that though the scrubber was turned on, the caustic soda present there was already weak as a result of earlier reaction. In the panic, the flow of fresh caustic soda was not turned on.

(ii) Flare Tower :

A 30-Metre high pipe which is used to burn toxic gases high in the air.

The flare tower was corroded and was, therefore, under maintenance. It was, therefore, not available to the Operators to divert at least some of the escaping MIC vapour into it.

(iii) The refrigeration system :

The MIC storage tanks were connected to a 30-tonne refrigerator system. This included FREON 22 which kept the coolant brine at between-15°C and -10°C.

It seems the refrigerant had run out of stock.

The non-functioning of the refrigeration system is certainly deplorable. The Carbide Manual of 1976 on MIC makes clear its vital role.

"The pressure in the tank will rise rapidly, if MIC is contaminated. This reaction may begin slowly especially if there is no agitation but it will become violent. Bulk systems must be maintained at low temperature. The low temperature will not eliminate the possibility of a violent reaction, if contamination occurs. It will, however, increase the time available for detection of the reaction and safe disposal of the material, before the reaction reaches a dangerous speed."

(iv) The Water Curtain :

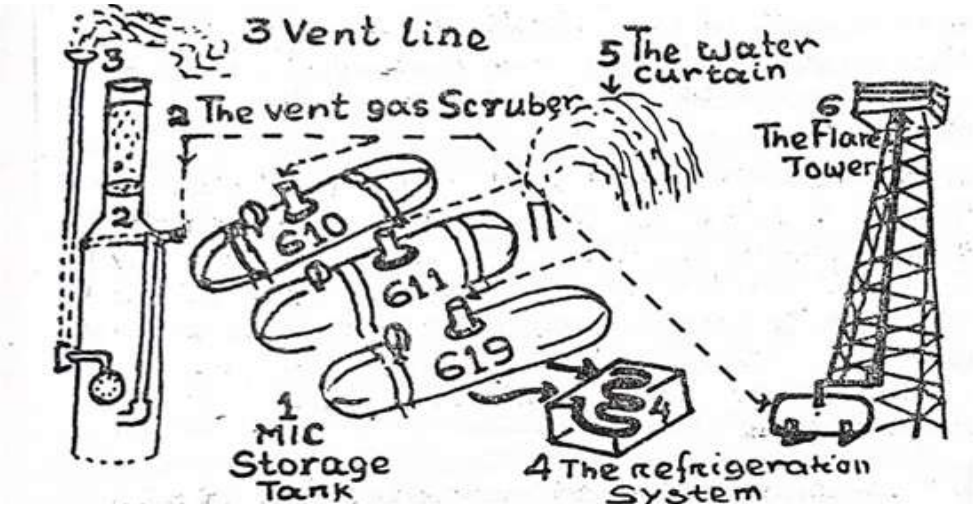
There was an extensive network of water outlets which could shoot a jet of water some 10 to 12 metres into the air to drop like a water curtain around sensitive areas. Depending on the amount of water, MIC could be converted into dimethyl urea or trimethyl biuret. They were operational but they were not designed to reach a height of 39 metres at which MIC gushed into air.

(v) The Spare Tank :

According to the Manual, one tank must be always kept empty for contingencies. Tank 610 is the one that leaked. Tank 611 which contained MIC is the one involved in the Operation Faith. Tank 619 was empty as required under the instructions of the manual.

If the valve connecting Tank 610 and 619 had been opened, the build-up of pressure and the higher level of liquid in 610 would have moved the MIC into 619 from Tank 610. It seems, in the confusion, the valve, which would have taken hardly three minutes for opening, was not opened.

8. If the employees would have kept their wits about them and heads cool and utilised usefully their training acquired in emergency drills, most of the MIC escaping into air would have been rendered harmless and the horrible disaster would have been averted.



It is argued that the design deficiencies are so serious that even if all the safety equipments had functioned properly, the disaster could not have been averted. In support of this, it is argued that critical equipment, the vent das scrubber, which represented the penultimate and in fact, the most important line of defence, was inadequately designed. It could neutralise only small quantities of the gas at fairly low pressures and temperature. The maximum allowable working pressure of the scrubber is only 5 PSIG (pounds per square inch) above the atmosphere pressure of 14.7 pounds at 120 degree C. It was pathetically small in relation to the violent release of hot high pressure release of MIC which occurred on December 2/3.

Further, where there should have been multiple alarms or warning signals prior to the point where a parameter such as temperature, pressure or level reaches a critical level, there was none. There was only one temperature alarm.

There was no automatic or coordinated activation of safety systems in a sequence.

A highly sophisticated computerized control system would not have helped overcome all these design deficiencies.

These are valid arguments. Undoubtedly the design of safety measures requires considerable improvement to meet abnormal uncontrollable emissions. The parent US Company has seriously faulted and has to accept the main responsibility.

In my opinion, however, if all the preventive devices like (i) Vent Gas scrubber, (ii) flare tower, (iii) the refrigeration system and (iv) the water curtain had functioned properly and if the Union Carbide staff had acted promptly to connect Tank 610 with the empty tank 619 and if the deadly inversion had not occurred, the disaster could have been nearly averted. Certainly it would not have assumed such serious proportions.

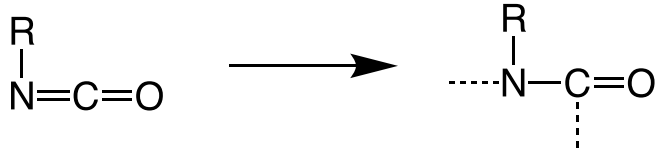
9. Dr. Varadarajan had told reporters on December 14, that the accident was caused either by :

(i) Water entering the tank OR

(ii) Due to the polymerisation of the liquid MIC.

To this another possible cause, i.e., the over-filling of the storage tank of MIC due to poor instrumentation and non-functioning of the indicator gauge must be added. Contamination of the storage tank with material from the vent gas scrubber can be a possibility.

It is very difficult to speculate about the initiator which caused polymerisation. It may be attainment of a critical pressure and temperature. The polymeric material will perhaps represent derivatives of the unknown, 1-Nylon



Whatever be the cause, any one of the above three or all three combined, it happened that the temperature inside the tank exceeded 90 C and pressure rose above two atmospheres.

V. Operation Faith

Operation Faith (Conversion of MIC into pesticide) was started on December 16 and ended on December 22. The entire stock of 22 tonnes of MIC in the Storage Tank and pipe lines and 1.5 tonnes in the steel drums were converted into pesticide.

The additional safety measures instituted at the Union Carbide Plant at the instance of the team of scientists in the action programme "Operation Faith" were for public demonstration for boosting up public confidence.

The action programme called Operation Faith' was claimed to be a "Zero Risk Operation". The Indian Scientists' team was fully satisfied that the transfer of MIC from the storage tank to the reactor and subsequent fairly simple conversion of MIC to Carbaryl would not cause any problem in operational or safety terms. The working of the plant and the "Operation Faith", as a whole, was, therefore, left in the hands of managers of Union Carbide (USA) and the Indian Subsidiary.

1. Safety System One : "SS One" comprised the operation of converting MIC to the pesticide in the Carbaryl plant. It was a routine procedure and not a safety system.

2. "SS two" was the already existing Vent Gas Scrubber. It is doubtful if it, at all, did function at the time of the massive leakage. It was a routine second line of defence which was put in operating order during Operation Faith.

3. "SS three" (Water Tank) consisted of three blankets strung together by a string at the top of MIC scrubber round the outlet.

   It seems the third line of defence of the existing configuration i.e., FLARE TOWER, where any gas that the scrubber failed to neutralize could be incinerated.

   The line further top of the scrubber to the flare tower still remained disconnected. As reported, Dr. Varadarajan and the Indian Scientists felt that it was not advisable to flare a large quantity of gas. In their opinion, the products of combustion could be harmful. They were anxious to conduct the operation at "Zero Risk".

4. "SS four" was a series of water hoses (monitors) which would have been employed in an emergency to cool vulnerable parts of the plant.

5. "SS five" was jute sacking fastened over a stretch of the boundary wall of the plant. The sacking was meant to trap the gas, in case there was an accidental release.

6. "SS six and the last" were the hovering eight helicopters with a pay load of 8 to 10 tonnes of water.
   There was a chilling and refrigeration system in the storage facility to keep the tank cool and guard against a volatile reaction. It must have been put in working order during Operation Faith.

VI. Disposal of MIC

1. The team of scientists headed by Dr. Varadarajan should be congratulated for the bold decision they took to neutralise the MIC stock by conversion into the pesticide to Carbaryl.

   Those who opposed this proposal argued that it would be tantamount to granting Union Carbide some sort of safety approval or certificate and to letting its management run the plant. Environmentalists were highly critical of the proposal which they thought, would be a kind of capitulation to the Company responsible for the death of over 1,400 person.

2. Two other suggestions :

   Two other suggestions had been made :

   (i) One involved incinerating MIC under pressure and controlled conditions. The toxic releases from the MIC combustion such as amines can not be deemed to be entirely safe even tentatively. Justifiably this proposal was rejected.

   (ii) The other proposal was gradual neutralisation of MIC with caustic soda right inside the Plant and without transferring it to another. The whole stock of MIC would have been rendered useless.

3. The bold pragmatic decision of the team of Scientists, notwithstanding possible violent public reaction and resentment provided the country with the much needed pesticide, demand for which would be much greater in view of the temporary suspension of manufacture of pesticides.

VII. Prompt Payment of Adequate Compensation to Victims and Their Families - Legal Implications

1. Representative suit (Class Action) :

Sri. P. M. Bakshi, a member of the Law Commission in an article entitled "Justice After Bhopal-Mass Rights for Mass Wrongs" in Statesman dated the 25th December has expressed the opinion that Courts may hesitate to award damages in Class Action or Representative Cases, even though the Code of Civil Procedure allows representative suite.

Representative Case (known as Class Action in USA) permits a person to litigate on behalf of every one who might be affected, thereby avoiding time, expense, repetition of arguments and the possibility of conflicting and inconsistent judgements, Class actions have gained popularity in USA especially as a means of protecting consumers. Without reforms to facilitate the institution of Class Actions in this country and also to empower the courts to grant monetary compensation to plaintiffs, this legal remedy (Representative suit) may not be very helpful to the victims of the Bhopal disaster.

2. Damages merely on the basis of breach of regulations not tenable:

Damages after the grim episode can not be claimed merely on the basis of breach of preventive and precautionary regulations. These could have been enforced earlier at the instance of any individual through a writ of mandamus in a public interest litigation.

An injunction for prevention of emission of poisonous gas to atmosphere could also have been sought through the civil courts.

3. Damage on the basis of rule of Common Law :

Damages can, however, be claimed on rule of common law which has become part of our non-statutory law of Torts.

A person who, for his own purpose, brings on his land and collects and keeps there anything likely to do mischief, if it escapes, must keep it at his peril and is answerable for the damage which is the consequence of its escape. This is based on the decision given by the House of Lords in Rylands vs. Fletcher case. This certainly would apply to poisonous gases.

The three exceptions to which this rule is subject are:

(a) fault of the person concerned.

(b) wrongful act of a stranger.

(c) consequence of an Act of God.

All the three exceptions do not hold good in this case.

Union Carbide did not observe the safety precautions required by the Central Air Pollution Act of 1981 and Insecticides Act of 1968.

Thus the third exception (consequence of an Act of God) is ruled out.

Suits have to be filed by victims (or their relatives) and not by Madhya Pradesh Government.

Justice K. N. Goyal in an article published in Statesman on December 24 says "The mirage of obtaining astronomical damages in the USA should not be allowed to let suits here become time-barred". All suits have to be filed in the Bhopal Courts. For expeditious disposal, they can be jointly tried. The question of negligence and the principle of determining the quantum of compensation can be decided on the basis of common issues, on common evidence and arguments.

4. The Question of Negligence-Liability of the Company - Criminal Negligence:

These do not seem to admit of any doubt.

a. The Company's Director of Health and Environment has reportedly admitted that the computerised early warning system which has been installed in the US Pesticide Plant has not been set up at Bhopal.

b. It is unfortunate that till December 24, neither the nature of the toxic gas nor its concentration in atmosphere during the fateful hours have been made public.

c. It is doubtful if any one really measured the level of even MIC in the atmosphere at the time of the leak, not to speak of specific tests for identifying the gas.

d. It is understood that there are no air monitors in the Union Carbide Factory at Bhopal.

e. Perhaps the whole city should have been flushed with water immediately after the leak. This should have been organised by the Union Carbide Company.'

f. Mr. Solarz, Chairman of the US House of Representatives Sub-Committee on Asia and the Pacific admitted that there was a lot of resentment against the multinational "for not having adopted adequate safeguards".

g. Report of the team of experts from the **Union Carbide, West Virginia Plant:**

A team of experts from the Union Carbide, West Virginia plant had warned that there were possibilities of serious exposure to toxic material during routine maintenance and operating situations. They had inspected the factory in 1981 for a fortnight and released the report in 1982. The report marked "Business Confidence" is now being examined by CBI.

i. Lack of a fixed water spray system for fire prevention or vapour cloud disposal in the operating area of MIC Plant.

ii. Possible back flow of phosgene.

iii. Leaking valves could create serious exposures during filter cleaning operations which were being performed with slip-blinding process.

iv. Possibility of trapping of gas between the flangs and valve and subsequent release, when flangs were removed.

v. Absence of water spray protection in the MIC truck unloading area.

vi. Non-functioning of pressure gauge on the phosgene tank.

vii. Possible contamination of the tank with material from the vent gas scrubber.

During depressurisation, reactive quantities of water vapour and other gases from the scrubber are likely to be let in to the feed tank.

viii. Location of the tank inside room and lack of water spray protection facility to tackle toxic vapour cloud.

ix. Inadequacy of the tank relief valve to relieve a runaway reaction or fire exposure.

x. Manual control of filling up of MIC feed tank with no instrumentation back-up created a possibility of accidental over-filling.

xi. The flare seal pot liquid level gauge was found valved in.

xii. The answers of the Works Manager of the plant to questions asked by The Times of India news service reveal that :

"Perhaps the scrubber in which Caustic Soda is used as the neutralising agent was not working. The indicator of the flow of caustic soda was not in order."

xiii. The Works Manager admitted that improvement in the Central Valve in the Carbaryl (Sevin) Plant, where several electrical connections were recommended as a back-up device, had not been made, though it was suggested by the team of experts.

xiv. There was no gas detector, although such devices are not only mandatory in many countries, but are routinely installed in many contemporary Indian plants.

xv. The Works Manager also admitted that there were no early warning systems for the kind of abnormal conditions that appear during accidents.

xvi. The Works Manager also indirectly admitted that many of their control and instrumentation systems were malfunctioning.

xvii. The Works Manager also admitted that they had disconnect the scrubber from the flare tower and also put out the pilot flame too- which were violative of elementary safety requirements.

xviii. Dr. Varadarajan, after study of the partial inventory of all the chemicals stored in the plant, revealed to the press on December 18 evening that there was some phosgene in the Union Carbide Plant.

This discovery has established that Union Carbide management is guilty of not only acts of criminal negligence but also gross criminal violation of their own rules.

Due to the very poisonous nature of phosgene, it should not have been stored at all under any circumstances. It has to be under refrigeration, if there is any necessity for storing the gas. It is a measure of negligence of the Union Carbide that they had run out of the supply of the refrigerant freon 22, ten days before December 2 and had not bothered to replace it.

(xix) The MIC storage tank should have been put under refrigeration, as soon as the emission was noticed but once again there was no coolant.

(xx) The President of the Company, Mr. Warren Anderson who released the details of a report submitted by a team of American Experts in 1982 at a Press Conference in Danbury (Connecticut) admitted that several safety measures were not in operating condition.

The instrumentation in the plant was poor and inadequate and this meant that there was an ever present danger that Methyl Isocyanate storage tank would get overfilled (a most likely cause of the present tragedy).

The feed pipes and the safety valves were poot, with a high potential of developing leaks.

The maintenance procedure were lax. One would conclude that Bhopal plant continued to produce pesticides without rectifying the defects and had taken up the task in a lackadaisical way.

(xxi) Contrary to all safety regulations, when the plant was shut down on October 22, there was a lot of gas in the two tanks and one of the tanks was nearly full.

Due to non-functioning of the indicator, it was not known exactly how much of the gas was present in the tanks.

(xxii) As reported in the Press, the maintenance master card (No. 6156), the vent line from the scrubber to the atmosphere was closed since December 1 for a line modification DIS of valve. It is, therefore, not clear if the scrubber could neutralise leaking gases and if there was any outlet open from it at all from the un-neutralised fluids.

The very design of the way the scrubber operates was very poor and defective. The malfunctioning of the principal motor pump and stand-by motor was certainly most unfortunate.

There can be no doubt in any one's mind about the negligence of the Union Carbide management.

5. Government liability :

The issue of liability of the State Government which licensed the Union Carbide unit to function at a specified place (close to the city) has been raised.

The Union Carbide would not have divulged to the appropriate authorities in the State Government in clear precise terms, the lethal nature of the substance the unit was handling and also the extent of damage it could bring to the population in the area around the factory. The lethal nature of MIC below a particular concentration is still in dispute.

6. Corporate Responsibility of the Union Carbide, USA:

Non-implementation of the recommendation of the American Team by the Union Carbide India would not absolve the Union Carbide, USA of even a tiny shred of its corporate responsibility for the following reasons:

(a) The parent company USA owns more than 50 per cent of the shares in the Indian branch. It had, therefore, the power to bend the irresponsible management to its will.

(b) The parent Company USA could have directed the Indian branch to shut down the plant, until all the safeguards and instruments had been fully modernised and operational and maintenance procedures upgraded.

(c) Union Carbide received its license for the Bhopal plant in 1975 and the plant went on stream in 1980. This means that the instruments, pipes & valves must have been installed earliest in 1978.

The entire technology embodied in the Bhopal Plant must not have become obsolete in just four years, i.e. by 1982. One may infer that second rate equipments, were installed in the first place.

Critical factors like plant design and equipment purchase must not have been left in the hands of the Indian branch.

(d) The disregard for maintenance in a plant dealing with utterly lethal and volatile products is completely inexcusable.

7. Civic Body Claims :

The local Municipal Committee may be justifies for taking recourse to legal measure in its claims for reimbursement of its expenditure in relief operations. Damage to plants and vegetations, water pollution in the area close to the Union Carbide unit, loss of cattle and long-term environmental effects of the massive gas pollution can be covered under the Compensation claims.

8. Negotiated Settlement Preferable :

The legal battle with the Union Carbide for compensation including punitive damages running into crores of rupees will be a prolonged one.

In my personal opinion, this should be considered as the last resort. Of course, one of the victims or his relatives or a person disabled should file a case for damage in a Court, so that the case may not be time-barred.

A negotiated settlement for reasonable compensation for the pain and suffering and also for the loss of income suffered by the gas victims should be taken up immediately by the State Government, and the Central Government with the Union Carbide and the US Government.

Compensation norms for pain and suffering should not be different for Indian & US citizens.

VIII. After-Effects of MIC Gas Poisoning

Scientists from the Industrial Toxicology Centre, Lucknow and Indian Council of Medical Research and doctors of various hospitals and research institutes have started working on the possible long-term effects of the MIC gas.

The possible break-down of MIC to cyanide in the system should be studied in details, since indications of cyanide poisoning have been obtained from the following (i) Prussian blue and Picric Acid tests, (ii) Unpleasant colour of oil of bitter almonda (smell of cyanide) coming out when lungs are cut open, (iii) thickening of blood etc. Therapy by sodium thiosulphate strongly recommended by an Indian forensic scientist and a German toxicologist should have been given a trial, since it would not have done any more harm to patients who were already in critical stage. On the other hand, it could establish, if MIC at all breaks down into cyanide in the system.

Top American medical experts who have rushed to Bhopal to make an on-the-spot assessment of the damages suffered by the victims and the harmful long-term effects have expressed that it was too early to suggest any prognosis of the people who suffered exposure to MIC gas.

Dr. Hans Weill, Director of the largest research programme supported by the National Institute of Health (similar to Indian Council of Medical Research) on pulmonary diseases caused by occupational and environmental factors said that human exposure to MIC is still very limited and only animal toxicology is available.

The US Centre of Disease Control would examine samples from Bhopal to determine the long-term effects of chemical contamination.

Samples of soil and vegetation of the city have been already taken by a team of CDC (Centre of Disease Control) Scientists to Atlanta.

Dr. Weill admitted that the Bhopal tragedy was the first such episode of human exposure to MIC and "No one can say with any degree of certainty what the future holds for the victims."

However, experience with other toxic gases like Chlorine which is heavier than air and tends to settle on the ground shows that the victims might not suffer any major damage, taking into account modern methods of treatment and the ageing factor.

The Bhopal tragedy is similar to the one that occurred, when some wagons of a train carrying chlorine derailed in New Florida in the Gulf of Mexico in January 1978. The accident occurred at about the same time (about 1 AM) with weather similarities- thermal inversion and very little wind.

A German toxicologist Dr. Daunderer has however, warned of serious delayed effects with long term consequences developing within six weeks. These complications may cover five stages. The symptoms in the first three stages covering four days to a week will be irritation of eyes, skin and lungs. In the fourth stage which may develop after three or four weeks, the central nervous system (CNS) will be seriously affected. The fifth stage would show up delayed symptoms of CNS disorders, including paralysis and other complications.

Research Studies which have been taken on hand in our country and USA are awaited with great interest. In the unlikely event of adverse findings, effective antidotes will also certainly be discovered by researchers.

IX. [A] Discussion on the Present (Continuance of Pesticide Manufacture in the Country) and Related Environmental Issues Warranting Public Debate : Continuance of Manufacture of Pesticides :

It is understood that on the recommendation of the Committee headed by Dr. Varadarajan (Director General, C SIR) who enquired into the gas leakage, decision has been taken to suspend the manufacture of the MIC-based pesticides.

It is understood that there are seventeen MIC-based pesticide plants in the country, all of them being in the small sector. All these small pesticide plants use the MIC supplied by the Union Carbide plant of Bhopal. Suspension of manufacture of MIC in the Bhopal Carbide Plant will automatically lead to the closure of these small pesticide plants. Without further manufacture of pesticides, agricultural production, particularly of the high yielding variety, will be severely affected.

A shift from the MIC process and new pesticide-making process employed in advanced countries are being considered. Some of the petroleum-based pesticides may be less lethal. But after all, it is a question of degree. At higher concentration, it may be at least as lethal as MIC. A shift from the MIC process would be at great cost to the pesticide industry and would also be time-taking.

As reported in the Press, Dr. Varadarajan had said earlier that MIC would continue to be produced as it has other uses. But the safety measures have to be reviewed. It is certainly a very bold statement, considering the time when it was publicly expressed.

It is sincerely hoped that suspension of manufacture of MIC is only an interim measure, till a comprehensive review of safety measures is completed.

Operation Faith is essentially what the Union Carbide plant was doing; manufacturing MIC and converting it into pesticide Carbaryl.

Operation Faith programme was carried out in very safe conditions from 16th to 22nd December. Spraying of water by helicopters and jute covers wetted with water were measures taken only to boost up public confidence.

The actual safety measures were those which existed in the factory but were not functioning. They were made operative.

Maintenance was shockingly poor and the poor maintenance and the recklessness of those who were associated with the restarting of the plant after temporary suspension over three or four weeks were squarely responsible for the disaster.

It is hoped, pragmatic and bold decisions would be taken and agricultural production must not be permitted to suffer for lack of pesticides due to the shocking and appallingly criminal negligence of the Union Carbide Company USA and the Indian subsidiary which acted recklessly in implementing the safety measures.

It is hoped that these views will stimulate fresh public thinking and a public debate.

A number of related environmental issues are discussed in the descriptions that follow.

IX. [B] Production of Caustic Soda by Mercury Cell Process in Chlor-Alkali Industries :

Caustic Soda is the essential chemical used in the manufacture of Rayon, Soap, Textile, Paper, Aluminium, Petrol refining and hydrogenated edible oils etc.

It is manufactured by three processes :

(i) Mercury Cell, (ii) Diaphragm Cell, (iii) Membrane Cell

More than seventy per cent of the caustic soda industries are based on mercury cell process. The remaining units are Diaphragm cell based. There are only two or three Membrane Cell Units.

Mercury which was regarded as an indispensable and inalienable friend for over 2,300 years was discovered as a cruel enemy of man-kind, when a human tragedy of the worst kind called Minamata tragedy (outbreak of a cripling disease) was reported in Japan.

The Minimata disease cast a gloom over the world. Minimata Bay received the discharge of methyl mercury which caused the cripling disease from a vinyl chloride manufacturing plant at the Bay.

Methyl mercury is soluble in water (5 gm/litre) and is readily assimilated by aquatic animals. This is how the poison entered the food chain to cause the Minimata epidemic.

In the presence of oxygen in water, mercury is oxidised into divalent mercury, which undergoes conversion into methyl and dimethyl compounds by means of a microorganism, **Methanobacterium Amelanskis**.

This fact was first reported to the Human Environment Conference (Stockholm 1972).

Japan, immediately after the episode, notified in a Government decree that all the mercury cells units have to be replaced by membrane ceil units.

In our country, replacement of all mercury cell units by membrane cell units which will not only be expensive but also time-taking, does not seem to be a practicable proposition.

Caustic Soda has to be produced in this country, otherwise many industries in the country will have to be closed down. Ban on production of caustic soda by mercury cell process will be harmful to the country's interests.

However, licenses for all future caustic soda industries must be subject to manufacture based on membrane cell process.

In the existing mercury-cell based units, the limiting standards for, discharge of mercury by the solid and liquid routes and gaseous emissions should be strictly enforced. The defaulting industries should not be permitted to operate.

In view of the risks involved (mercury being a highly toxic silent hazard), continuance or otherwise of mercury cell units should be a matter for public debate.

IX. [C] - Production of Sulphuric Acid :

Acid rain is a serious environmental pollution arising from sulphur dioxide (SO_2) and nitrogen oxides (NO_x). The rain in some parts of Sweden has pH = 2.5, (pH 7 being neutral). This acidity is attributed to the oxides of sulphur that belch out of England's and Northern Europe's industries and are carried to Sweden. Half of the more acid lakes in Southern Norway have no fish at all.

Sulphur dioxide is emitted mainly from Sulphuric Acid Plants and Thermal Power generation from coal.

Adverse health effects like increased mortality from bronchitis and lung cancer are associated with Sulphur dioxide (SO_2) concentrations of 115 $\mu g/m^3$ (annual average or 300 $\mu g/m^3$ (24-hour average) (Hill, Power Generation, M. I. T. Press, 1978).

In Japan, sulphuric acid plants operate at 50 ppm (parts per million) SO_2 in exit gas. In our country, in conventional plants (Old plants), the stack emission is 2000 to 3000 ppm SO_2.

With the double catalysis double absorption (DCDA process), the stack emission is reduced to 500 ppm SO_2. With further scrubbing of gas, the exhaust stack emission can be controlled to 200 ppm.

DCDA process for any Sulphuric acid plant below 100 Mt/day is not economically viable.

The old Sulphuric Acid plants have to be closed down, if the emission standards are strictly enforced. Like Caustic Soda, Sulphuric acid is a basic chemical for several industries.

A pragmatic view should be taken. The new industries should be located at suitable sites, where the ambient air quality is fairly good and the necessary pollution control measures should be built into the design of the plant.

But for the old units, the emission standards should be progressively enforced. Even in case of old plants, the ground level SO, concentration should be monitored to ensure that during the plant operation, it is at all times below the 80u gm level. I do not advocate immediate rigid implementation of emission standard for the old plants. It should be done in phases.

However, this is an appropriate subject for public knowledge and public debate.

IX. [D] Manufacture in India of Chemicals whose production has been discontinued in United States and Western Europe:

(a) On account of environmental reasons, the manufacture of a number of toxic chemicals has been discontinued in U.S. and Western Europe.. In the advanced countries, the pollution control measures necessary for implementation to comply with the Government statutory regulations in respect of these chemicals are not only very expensive but also uneconomic.

Further, the ambient air quality in these industrialised centres is sufficiently bad, the gaseous concentrations being around threshold limits. Any further contribution, however small, from fresh industries, raises the pollution load beyond the permitted level.

(b) In India, the ambient air quality, specially in backward areas and in 'No Industry' districts, is fairly good. Location of industries in these areas does not practically alter the air quality. Aggravation, if any, is only marginal.

On the other hand, these industries enable the country to earn valuable foreign exchange and provide considerable employment opportunities.

(c) In my opinion, the manufacture of these chemicals in our country, providing for greater international trade and significant foreign exchange earnings, should continue, since here industrialisation can be achieved with adequate care of environment.

However, there are many, specially environmentalists, who violently resist the very idea of producing in India chemicals, whose manufacture has been discontinued in U.S. and Western Europe.

I, therefore, feel that this Is an Appropriate Subject for Public Knowledge and Public Debate.

(d) However, the production of highly carcinogenic azo dyes which are so deadly that trade unions in the advanced countries would not risk their manufacture in their own country should not be made in India for export, just for the sake of earning the much needed foreign exchange. The gutters of Kalyan, 54 Km. from Bombay, have been poisoned by effluents from these factories. The manufacture of these dyes in India should be immediately banned.

IX. [E] Thermal Plants

Thermal Plants based on coal emit sulphur dioxide and fly ash.

Adverse health effects like increased mortality from bronchitis and lung cancer are associated with sulphur dioxide and particulate concentration of 115 $\mu g/m^3$ and 160 $\mu g/m^3$ respectively (annual average) (Hill, Power Generation, M. I. T. Press, 1978).

An order of magnitude calculation of the emission of sulphur dioxide in the whole of India has been computed to be about 600 mg/square meter year (Terrill et at J. Ind. Med. and Surgery, 1967).

At present, emission control in coal fired power stations in India is not at all satisfying. Only a few power stations (like the ones in Vijawada and Singrauli) can meet international standards (Report of German expert (F.R.G).

I do not desire to discuss the most unsatisfying situation regarding input coal, pulverisers, operation control and fly ash disposal systems etc.

I shall concentrate only an Electrostatic precipitators (each costing more than 1 crore of rupees) which provides the main emission control system. They have been rendered in-operative in most of the old plants, thus causing very serious environmental impacts in the ambient area. The stack emission of particulate matter is in the range of several grams/m^3 as against the prescribed limit 50 mg/m^3 i.e. at least five hundred to one thousand times the prescribed limit.

When one considers the adverse health effects at 160 $\mu g/m^3$, the irresistible conclusion will be to ask the old Thermal Plants to close down, till the stack emission is effectively controlled by installation of new 99.8 per cent efficient Electrostatic Precipitators (ESP), each of which may cost nearly Rs. 2 crores. At the rate of one E. S. P. for each boiler, the total cost will run into several crores of rupees. Further, their installation will take at least one to two years time.

These facts are placed for public knowledge and for stimulating a public debate in view of the acute power shortage in the country.

IX. [F] Cement Factories based on Wet Technology

Most of the old Cement factories are based on Wet Technology.

The problems which arise because of this technology are :

1. There are persistent complaints from the public that the dust emitted out of the Cement factories is causing bronchitis and tuberculosis in human beings and damaging crops and vegetation

   The cement factories, in their defence, advance arguments which are based on detailed studies conducted by the Central Public Health Engineering Research Institute, Nagpur.

   The Cement factories have furnished the following relevant extracts from the report of Central Public Health Engineering Research Institute.

   "Reports on the investigations carried out at various cement factories in different countries could not so far confirm the effect of emissions, if any, on the health of the people or any vegetation damage. The high concentration of cement dust in the respiratory tract, fibrous changes in lungs of people residing in the vicinity of the cement plant is not contributed by the presence of silicon dioxide, because of its relatively low quartz content in the cement dust. Instances of bronchitis cannot be attributed totally due to cement dust in this area.

   Although the cement dust may not be a serious hazard, it is advisable to reduce the emissions from the cement factory in order to minimise the irritation caused to the people which may be the real cause of the complaint from population in the neighbourhood."

2. With regard to the problem of disposal of kiln dust within the premises of the factories, the Cement factories argue that this problem can be sorted out, if kiln dust is allowed to be mixed with cement.

   "Mixing of kiln dust up to 5 per cent is allowed in other countries, but recent research done in the U.S. A. showed that kiln dust up to 20 per cent can be used without any deleterious effect on the quality of cement."

   "The proposal for mixing 5 per cent kiln dust in cement was considered by Cement Research Institute, who in 1981-82 requested for introducing use of kiln dust up to 5 percent in manufacture of cement. It is learnt that though the study was completed by the Cement Research Institute and they have advised use upto 5 per cent kiln dust in cement, the same has not met favour by way of amendment in I. S. I. Specifications till now by the I. S. I. authorities."

3. The utilisation of dust is, thus, a problem in wet process cement plants, where higher efficiency dust collectors are installed. On the other hand, if efficient dust collectors are not used, the community suffers the nuisance of dust emissions, whose harmful effects on the health of people and on the vegetation remains a highly sensitive issue.

4. **My opinion :**

   (a) Cement factories should be asked to change from the "Wet" technology to the "DRY" technology by installing pre-calcinator suspension cyclone preheater kiln, in which case, an ESP will be provided to arrest the dust of the flue gases emitting out of the kiln. This kiln dust collected will be utilised in the plant itself and further, more than 54 per cent of the energy used at present will be saved.

   (b) Setting up of Mini-Cement plants should be encouraged in a big way. It is understood that China produces nearly 66 per cent of its total cement production from its over 3,400 Mini Cement plants.

   The dust emissions from the Mini-Cement factories will be relatively in much smaller quantities and in view of their location over a larger spread of area, the nuisance of dust emission will be relatively very much reduced.

5. **These facts are placed for public knowledge in the hope that there will be a fruitful public debate.**

IX. [G] Iron and Steel Works

Under the Inter-German Technical Cooperation scheme, a team of German experts inspected the four Iron & Steel Works at Durgapur, Rourkela, Jamshedpur and Bokaro.

The report exposes the many sorts of pollution arising, at different sites in steel works and states unambiguously that the present handling of the pollution problem in the four steel works is far from satisfactory.

Environmentalists, after perusal of the report, will assertively demand that the industries be immediately closed down. But in my opinion, that should be an extreme step.

I suggest that the Managing Directors should immediately take over the responsibility of implementing the pollution control measures.

The recommendations of the German team and the more detailed suggestions of the State Board (which runs into several pages) should be executed within a targeted period of six months to one year.

The Information is placed for public knowledge for stimulating a fruitful public debate on the issue.

X. Precautionary and Preventive Measures :

These have been classified into two categories - Specific and General:

(A) SPECIFIC :

1. After the Bhopal tragedy, on behalf of the Pollution Control Board, I wrote to the Managing Dire tors of all the Industries in the State vide letter No. 4297-4447 dated the 15th December, 1984.

   The points emphasized and highlighted in the letter are

   (a) If any mishap happens in your Industry, the whole industry will be closed, as has happened in the case of Union Carbide. I request you to kindly streamline the pollution control cell and undertake monitoring every day for both air and water pollution.

(b) The conditions specified in the Consent Order must be strictly adhered to, otherwise in the public interest, we will be compelled to ask you to close the Industry, if consent conditions are not implemented.

(c) In view of the seriousness of the situation, I request that the Managing Directors should take upon themselves the responsibility of pollution control in their Industries.

2. The following Consent Conditions subject to which Consent and No Objection Certificates are granted by the Board to the Industries are given below. The items have been incorporated in the General Printed Consent Order.

(a) An ambient air quality monitoring station has to be maintained by the Industry at a convenient place inside the premises of the Industry and qualified analysts must be appointed to monitor daily the ambient air quality.

(b) The ambient air quality at a distance of 100 meter from the periphery of stack should conform to the following standards:

(i) SPM - 500 microgram/m^3

(ii) SO_2 - 120 microgram/m^3

(iii) CO - 5,000 microgram/m^3

(iv) NO_x - 120 microgram/m^3

(c) The Industry must purchase stack emission sampling and analysis equipments and water pollution monitoring equipments.

(d) Emission from all stacks should be monitored daily and the data recorded in a Register for inspection by Board Analysts.

(e) Data about ambient air quality be furnished every month to the Board.

(f) Holes must be provided at all chimneys and stacks at convenient and easily approachable heights (of course, subject to technical requirement on the exact location) to facilitate collection of samples.

(g) Full compliance of relevant consent conditions, particularly in regard to provision of treatment of effluents, measurement of effluent streams, sampling arrangement, terminal manholes and terminal outlet etc. shall be made within a month of the receipt of the Consent Order.

3. Green Belt :

Green belt and effective in-plant control measures and house-keeping practices abate and check pollution upto the extent of fifty per cent and should, therefore, be insisted upon.

At least ten times the number of trees which have to be cut down for creating infrastructural facilities and the factory and colony buildings must be planted.

Broad leaved trees, which arrest about 70 tonnes of dust per hectare, be planted all along the boundary of the factory and also on the vacant spaces inside the factory premises.

Plants which have the ability to absorb significant quantities of pollutants like sulphur dioxide, nitrogen oxides, ozone, chlorine and hydrofluoric acid gas from the air be planted.

4. In-plant Control measures and House-keeping Practices :

The importance of the in-plant control measures lies in the fact that they can reduce nearly 50 per cent of the pollution.

Maintenance of gas detectors, air monitors, safety valves. pressure gauges, control and instrumentation systems, feed pipes and process lines, safety equipments and their automatic and co-ordinated activation in a sequence etc. are absolutely essential to avoid mishaps and disasters.

A list of house keeping practices insisted on by the Board by way of illustration are mentioned at page 29 of the booklet, entitled "Control of Pollution in Industries in Orissa" published and released by the Board on World Environment Day, June 5, 1984.

5. Strict enforcement of the legal provisions of the Act:

(a) The legal provisions in the Air (Prevention and Control of Pollution) Act, 1981 and the Insecticides Act, 1968 should be strictly enforced.

(b) If the Industry does not take all preventive measures, the State Board, as early as possible, should cause such remedial measures to be taken as are necessary to mitigate the emission of such air pollutants and expenses may be recovered by the Board from the Industry as arrears of land revenues or of public demand under Section 23 of the Central Air Pollution Control Act of 1981.

6. Action under Public Nuisance Act :

The Government can give orders for closing down the Industry under the Public Nuisance Act as was done in the case of Zuari Agro-Chemicals Limited.

7. Amendment of Pollution Control Acts:

Forced closure by the State Board in consultation with the State Government is the only way of making the polluter act and take preventive steps.

The Air and Water Pollution Control Acts should be amended accordingly.

8. Strict Liability Principle:

The principle of Strict Liability without proof of mensrea (guilty mind) applies to offences under Special Legislation like the Pollution Control Act.

This Strict Liability Principle should be clearly incorporated in the Act by appropriate amendment.

9. To check the rowing degradation of urban development throughout the country, the juxtaposition of the industrial and urban complexes which had become inevitable in a modernised city must be avoided in all circumstances.

In situations which cannot be rectified, the preventive and precautionary standards in all hazardous industries must be enforced in the strictest possible manner. Failure of industrial safety should be considerable inexcusable and attract deterrent punishment.

10. The Industries must prepare an Instruction Manual for Disaster Management.

(B) GENERAL

1. The Bhopal tragedy has revealed that knowledge of toxicology among technical and medical personnel. is abysmally low.

   Even production managers, let alone workers or technicians did not know the toxicity of substances used and were ignorant about the exposure and other harmful effects of by-products.

   The immediate training of the staff. employed in the chemical industries in toxicology is absolutely essential.

2. The development of toxicology in the country has not kept pace with the growth of the chemical industry. There are few qualified toxicologists in India. There is one Industrial Toxicology centre at Lucknow. Further facilities be created as quickly as possible.

   Toxicology be introduced as a component of the Courses of Studies for M.Sc. in Chemistry and related disciplines.

3. To spread environmental awareness amongst the masses, a course in Environmental education should be introduced both in the School, College and University curricula.

   For developing the necessary infrastructure like training of teachers and provision of equipment, I would suggest that environmental science be introduced immediately as a Special Paper at the M. Sc stage in most of the scientific disciplines in the Universities and Post-graduate Colleges. The State Government in the Education Department and the Pollution Control Boards should support these academic programmes in the Universities by way of providing the necessary equipments to the Universities and by providing training facilities to the students in the use of sophisticated equipments in the Board's Laboratories.

   M. Sc.s with special paper in Environmental Science will be most suitable in teaching the course in Schools and in the Colleges at least up to the Degree stage. The message of environmental awareness will thus spread.

4. Like the Industrialised countries, there should be Poison Information Centres from where the doctors can get information about antidotes and the mode of treatment.

5. There are many chemicals, either products or intermediates, which act as silent hazards.

   Symptoms of mercury poisoning may develop long after the exposure has ceased. Chances of cure are considered remote in system effects like damage to kidneys, circulatory or nervous systems.

   Asbestos, dyes and aromatics are highly carcinogenic and act silently.

   It is here that the Occupational Health Physician (OHP) has to play a big role. Industries release into the air large quantities of pollutants which may not kill quickly but has serious adverse effects on health, as is happening around the Petrochemical, Thermal plants, Iron Steel works (specially coke ovens), Fertiliser factories and Synthetic fibre plants etc.

   The main job requirements of Occupational Health Physicians should be to monitor the health of each worker and take remedial steps, both therapeutically and by intimating the management, the

risks in continuing certain process technologies and the precautions to be taken (as long as it is not possible to change the technology).

Consent Condition 32 under the heading "Occupational Safety & Health" prescribed by the Orissa State Pollution Control Board for all Industries states as follows:

"A system of medical examination, both pre-employment and at early intervals, should be formulated either within the plant or with outside medical help together with the environmental management staff."

6. Role of Pollution Control Board's Laboratories to prevent such disasters:

In the 'PREFACE' to the Booklet "Control of Pollution in Industries in Orissa" published by the Board released by the Chief Minister on June 5, 1984, World Environment Day, as the author of the booklet, I had made the following observations:

"Process technology is intimately linked up with pollution control technology. During the last three decades, in many advanced countries, several process technologies have undergone changes and replacement. Products produced by dirtier technologies have been substituted by-products produced by cleaner technologies. Many innovations involving pollution-free process technologies have resulted from research investigations on pollution control measures. One of the main functions of the Central and State Boards is to carry out investigations and research relating to problems of air pollution, water pollution and utilisation of waste.

The Board Laboratory should not be merely a routine Analytical Laboratory but should be a Research Laboratory or Institute involved not only in research on Pollution Control but also in process technology. If this new outlook is accepted, the pollution control laboratories will develop into important Research Centres of Industrial process and pollution control technologies and will catalyse investigations on similar lines in the Universities. The State Government and the University Grants Commission should sponsor starting of courses in Environmental Pollution Control in the Universities.

The Board like Consultancy Agencies should have infrastructural facilities to be in a position to extend technical expertise and advice in many problems facing the industries."

7. It is my immense pleasure to record that the construction of the first story of a six-storied building at an estimated cost of Rs.12 lakhs (first phase) is going to commence next week or so. **This has been possible for the farsighted vision of the Hon'ble Chief Minister and the grant kindly sanctioned by the State Government.**

8. **It is my hope that through the Grace of God, the commencement of construction of the building will mark the foundation of the nucleus of a large multi-disciplinary research institute of the country which will devote itself to the study of all the problems, which the Bhopal tragedy has thrown up.** ■■■

OUR SCIENCE AMBASSADORS

Prof. Jyotirmayee Dash

Senior Professor

Indian Association for the Cultivation of Science, Kolkata

School of Chemical Sciences, Jadavpur, 700032

E-mail: ocjd@iacs.res.in

Homepage: http://iacs.res.in/athusers/index.php?navid=0&userid=IACS0034

Dr. Jyotirmayee Mohanty

Senior Scientist

Radiation & Photochemistry Division

Bhabha Atomic Research Centre, Mumbai-400094, INDIA

Email: jyotim@barc.gov.in

Bio-Sketch

Prof. Jyotirmayee Dash

Senior Professor

Indian Association for the Cultivation of Science, Kolkata

School of Chemical Sciences, Jadavpur, 700032

E-mail: ocjd@iacs.res.in

Homepage:
http://iacs.res.in/athusers/index.
php?navid=0&userid=IACS0034

Professor Jyotirmayee Dash obtained her MSc. from Ravenshaw College (now University), Ph.D. in Organic Chemistry from IIT Kanpur, India. She was awarded Alexander von Humboldt fellowship at Freie University, Berlin, a postdoctoral fellowship at ESPCI-Paris, and Marie Curie fellowship at University of Cambridge, UK. She first joined IISER, Kolkata as an Assistant Professor in 2009 and is currently working as a Senior Professor at IACS-Kolkata. She received DST Swarnajayanti (2015-2016) and DBT Wellcome Trust (2020) Fellowships and Shanti Swarup Bhatnagar Prize (2020) as well as other prestigious awards. Her research interests include new organic transformations, structure and function of nucleic acid targets.

Prof. Jyotirmayee Dash is the Winner of OPPI Scientist of the Year-2023 Award. The Organization of Pharmaceutical Producers of India (OPPI) established in 1965, represents the research-based global pharmaceutical companies in India.

Our Science Ambassadors

Felicitation Lecture - I

Bioorthogonal Synthesis of Anticancer Agents Targeting DNA Secondary Structures

Jyotirmayee Dash*

Indian Association for the Cultivation of Science, Kolkata
School of Chemical Sciences, Jadavpur, 700032
(E-mail: ocjd@iacs.res.in)

Bio-orthogonal chemistry refers to a set of chemical reactions that can occur inside living systems without interfering with the native biological processes. The term 'Bio-orthogonal Chemistry' was first coined by Prof. Carolyn R. Bertozzi who was awarded the Nobel Prize in Chemistry 2022 for developing bioorthogonal reactions in living organisms. In 1997, Bertozzi and group first demonstrated that an unnatural oligosaccharide-N-acetylmannosamine modified with a ketone group could be transformed to the corresponding sialic acid by the cellular enzymes, and the resulting compound was then inserted into the cell membrane. Notably, the ketone group exposed on the cell surface could undergo chemical ligation with biotin-tagged complementary hydrazide functional group. This cell surface reaction enabled the targeted delivery of toxins conjugated to avidin molecules in cancer cells that showed a high expression of sialic acid.[1] Since then, bioorthogonal chemistry has become an essential tool for chemical biologists to perform controlled chemical reactions in presence of biological functional groups within living cells and organisms. This has opened up new avenues for biological investigations including labeling of biomolecules for imaging and diagnostic studies, targeted drug delivery, protein and metabolic engineering and more.

Till date, a wide range of bio-orthogonal reactions have been developed, each offering unique characteristics and applications (Figure 1).[2] One of the first reported bio-orthogonal reactions was the Staudinger ligation that is based on the classical Staudinger reaction betweenan azide and triphenylphosphine. The copper-catalyzed azide-alkyne cycloaddition (CuAAC) has also become a widely used bio-orthogonal reaction due to its high efficiency and orthogonality in biological systems. Other bio-orthogonal reactions, such as carbonyl ligation, strain-promoted azide-alkyne cycloaddition (SPAAC), tetrazine ligation and inverse-electron-demand Diels-Alder cycloaddition (IEDDA) also offer specific advantages that make them suitable for different experimental needs. Recently, Sharpless in 2014 discovered Sulfur-fluoride exchange (SuFEx) click chemistry that gained significant attention as a metal-free click reaction. It involves the formation of new covalent bonds through the exchange of sulfur and fluoride with nucleophiles, resulting in the creation of S-N, S-O and S-C bonds. SuFEx's exceptional significance lies in its ability to be compatible with biological systems.[3]

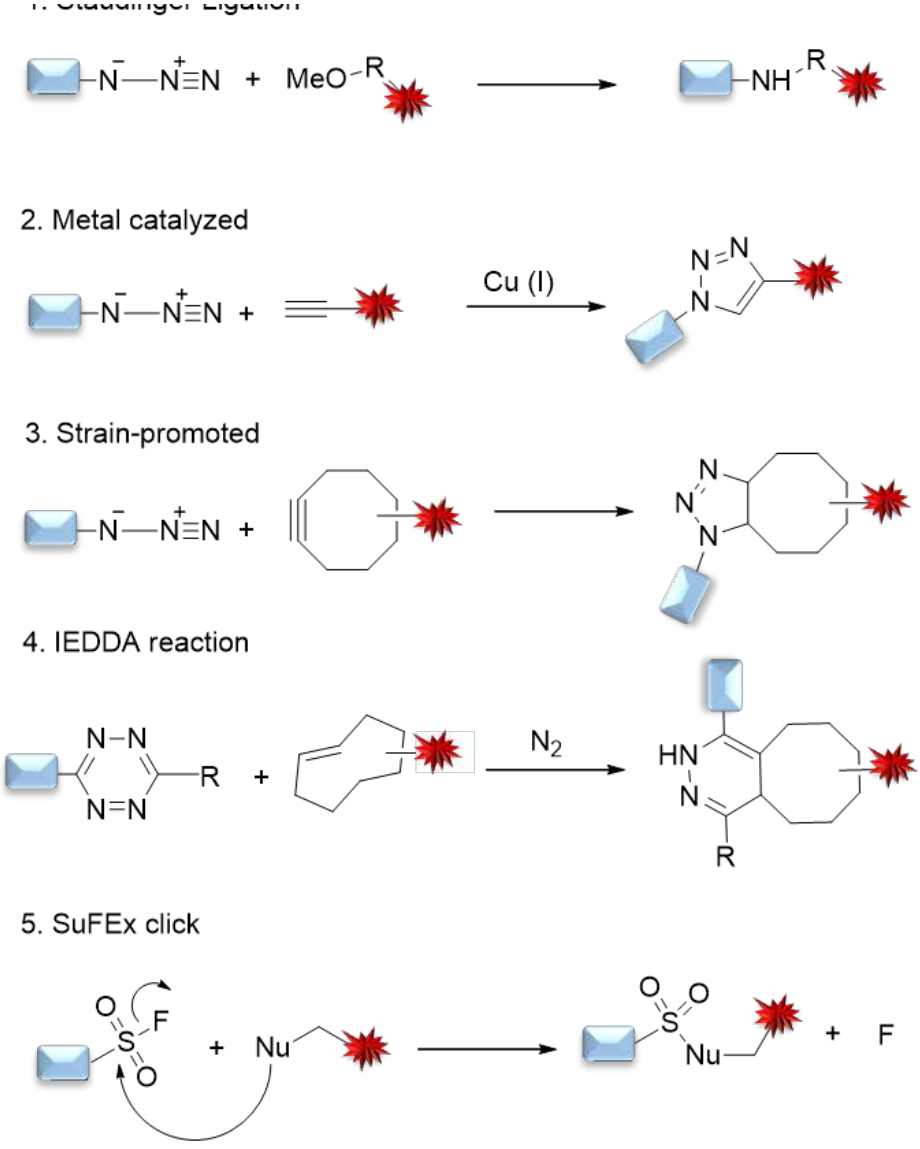


Figure 1. Commonly used bioorthogonal reactions.

DNA-templated bioorthogonal reactions have emerged as a promising strategy for the detection and imaging of biomolecules, owing to their high chemoselectivity and tunable kinetics. Nucleic acids can serve as adaptable templates to synthesize their own inhibitors.[4] This concept of target guided synthesis was first introduced by Sharpless and Finn in 2002 against a protein target, where they demonstrated that the enzyme acetylcholinesterase could be utilized as a reaction vessel to conjugate an azide and an alkyne. By incorporating groups that bind to adjacent positions on the protein surface, a 1,2,3-triazole adduct was generated. This innovative approach resulted in the development of the most potent non-covalent inhibitor for the enzyme.[5] Since then, this strategy has been widely adopted utilizing protein targets as reaction templates to synthesize inhibitors. However, the utilization of nucleic acids as reaction templates remains limited, with only a few reported examples. Poulin-Kerstien and Dervan were the first to demonstrate the utility of in situ click chemistry for designing complex bimolecular ligands for targeting duplex DNA in a sequence-specific manner.[6] Later on, ligands were also designed and synthesized against non-canonical DNA structures utilizing click chemistry.

It is already well known that apart from the double helical structure, DNA can form a variety of non-canonical secondary structures including G-quadruplexes, i-motifs, etc. G-quadruplex (G4) and i-motif (iM) are four-stranded non-canonical nucleic acid secondary structures formed from guanine (G)-rich and cytosine (C)-rich sequences, respectively (Figure 2). These structures are found throughout the human genome, particularly over-represented in telomeres and promoter regions of several oncogenes, indicating their potential role in gene regulation.[7,8]

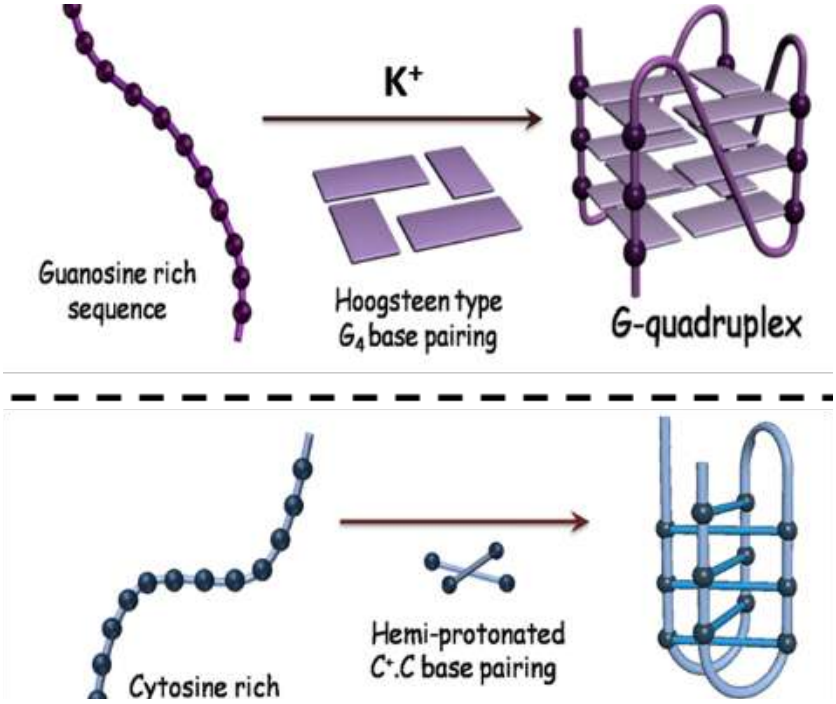


Figure 2. G-quadruplex and i-motif structures

Balasubramanian *et al.* in 2012, first reported the use of *in situ* click chemistry to identify selective ligands for telomeric DNA and RNA G-quadruplexes (G4s). They showed that the triazole leads, obtained by *in situ* click chemistry using DNA and RNA G4s as templates, exhibited inhibitory effects on telomere length maintenance.[9]

Dash and group introduced an innovative approach for the target guided synthesis (TGS) of G-quadruplex ligands in which Cu free in-situ click reaction, using DNA as a nano-template, has been employed (Figure 3).[10] The DNA nanotemplate has been devised by immobilizing *c-MYC* G-quadruplex gold coated magnetic nanoparticles. The DNA nanotemplate facilitates the cycloaddition of azide and carbazole-alkyne fragments, generating selective high affinity quadruplex ligands. The generated ligands can easily be isolated by magnetic decantation and the G-quadruplex nano-template can be easily recovered and recycled. The major lead compound shows greater binding affinity for *c-MYC* G-quadruplex DNA and exhibits promising anti-proliferative activity in HCT116 colorectal adenocarcinoma cancer cell line by inducing apoptosis. Using this methodology, they have also generated carbazole ligand specific for *BCl2* G-quadruplex DNA that represses *BCL2* gene expression in cellular system.[11]

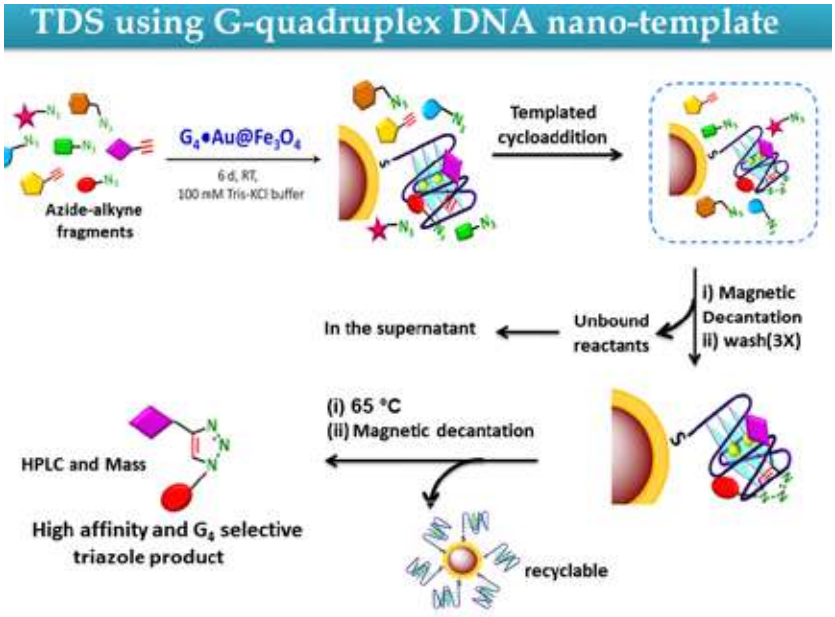


Figure 3. Target-guided synthesis using G-quadruplex DNA nano-template

This approach has also been used to develop specific ligands for i-motif structures.[11] The design and synthesis of ligands capable of binding to i-motifs are challenging due to the pH-dependent structural complexity of i-motif DNAs. In this regard, target guided synthesis (TGS) appears to be a promising methodology for the discovery of specific and high-affinity i-motif ligands. Dash et al. have used *c-MYC* and *BCL2* i-motifs as the templates to generate selective ligands from a pool of reactive azide–alkyne building blocks. Thiolated DNA targets are immobilized on the surface of gold-coated iron nanoparticles to enable efficient isolation of the newly generated ligands from the solution mixture by simple magnetic decantation. The in situ cycloaddition provided triazole leads for *c-MYC* and *BCL2* i-motif DNA. *In vitro* cellular studies revealed that the *c-MYC* i-motif lead downregulates the *c-MYC* gene expression whereas the *BCL2* i-motif lead upregulates the *BCL2* gene expression.[11]

Recently, Dash and co-workers demonstrated that DNA G4s can promote macrocyclization-like challenging reactions, enabling the synthesis of molecules specifically designed for modulating gene function.[ref] The planar G-quartets present within DNA G4s provided a size complementary reaction platform for the macrocyclization of bifunctional azide and alkyne fragments from a pool of reacting fragments. G-quadruplexes were grafted on magnetic nanoparticles for easy identification of the best binder from the reaction mixture.[30c] The peptidomimetic macrocyclic ligand exhibited excellent binding affinity for G-quadruplexes. The bio-orthogonal *in situ* click reaction occurred without interfering with the DNA G-quadruplex biomolecules. The resulting macrocycle exhibited inherent blue fluorescence which was utilized to track its cellular localization. Immunocytochemistry studies using G4-specific antibody revealed co-localization of the macrocycle with the endogenous G4s present in the nucleus. As the macrocyclization occurred in 48 h and was templated by two G4s (*c-MYC* and *h-TELO*), which are overrepresented in HeLa cells, they subsequently conducted the reaction using the corresponding azide and alkynes in live HeLa cells. ESI-MS analysis of cell lysates incubated with bisazide and bisalkyne revealed the formation of macrocycles by endogenous G4s in living cells. The macrocyle along with its unreacted azide demonstrated excellent downregulation of oncogene expression in cancer cells. Thus, bioorthogonal reaction between bifunctional azide and alkyne fragments enabled selective and controlled synthesis of macrocyclic ligands in a biologically compatible manner.

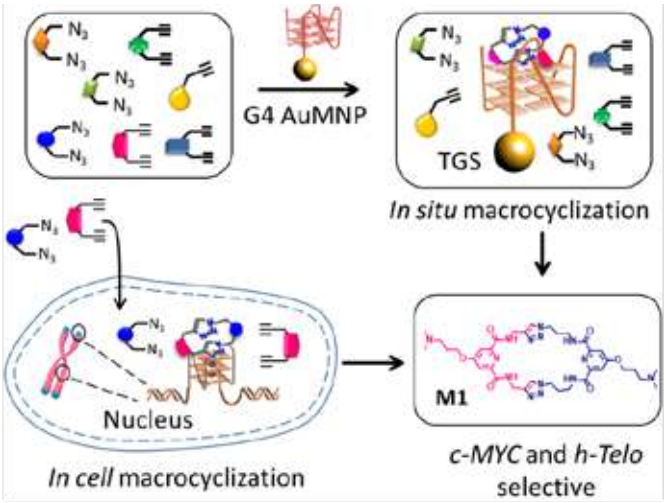


Figure 4. Bioorthogonal synthesis of ligands within cells

This approach combining the unique properties of DNA G4s and the selective synthesis enabled by biorthogonal chemistry provides new avenues for designing and optimizing anticancer drugs with enhanced efficacy and specificity.

Bioorthogonal synthesis of ligands is a powerful synthetic tool that can facilitate the rapid discovery of drug-like candidates by circumventing typical organic synthesis, purification, individual characterisation, and screening processes. Thus, this approach allows the development of target-selective ligands with minimum synthetic efforts within a shorter time period. Therefore, it is highly desirable to explore the scope of in situ click chemistry in living system for the development of efficient drug candidates useful for clinical studies.

References

1. L. K. Mahal, K. J. Yarema, C. R. Bertozzi, *Science*, 1997, 276, 1125-1128.
2. M. M. A Mitry, F. Greco, H. M. I. Osborn. *Chem. Eur. J.,* 2023, 29, e202203942.
3. J. Dong, L. Krasnova, M. G. Finn, K. B. Sharpless, *Angew. Chem. Int. Ed.,* 2014. 53, 9430-9448.
4. P. Saha, D. Panda, J. Dash, *Chem. Commun.* 2019, 55, 731–750
5. W. G. Lewis, L. G. Green, F. Grynszpan, Z. Radić, P. R. Carlier, P. Taylor, M.Finn, K. B. Sharpless, *Angew. Chem. Int. Ed.* 2002, 41, 1053–1057.
6. A. T. Poulin-Kerstien and P. B. Dervan, *J. Am. Chem. Soc.,* 2003, 125, 15811
7. S. Balasubramanian, L. H. Hurley, S. Neidle, *Nat. Rev. Drug Discov.* 2011, *10*, 261–275.
8. J. A. Brazier, A. Shah, G. D. Brown, *Chem. Comm.* 2012, *48*, 10739-10741.
9. M. Di Antonio, G. Biffi, A. Mariani, E. A. Raiber, R. Rodriguez and S. Balasubramanian, *Angew. Chem. Int. Ed.,* 2012, 51, 11073
10. D. Panda, P. Saha, T. Das, J. Dash, *Nat. Commun.* 2017, *8*, 1-11.
11. P. Saha, D. Panda, D. Müller, A. Maity, H. Schwalbe, J. Dash, *Chem. Sci.* 2020, *11*, 2058-2067.
12. R. Chaudhuri, T. Prasanth, J. Dash, *Angew. Chem. Int. Ed.,* 2023, 62, e202215245.

Department of Chemistry, Ravenshaw University, Cuttack, Orissa Chemical Society & Professor Mahendra Kumar Rout Birth Centenary Celebration Committee

Felicitate

Professor Jyotirmayee Dash

Senior Professor
Indian Association for the Cultivation of Science, Kolkata
School of Chemical Sciences, Jadavpur, 700032
As

Science Ambassador of Odisha

Ravenshaw University, Cuttack **CITATION** **4th January 2024**

Prof. Jyotirmayee Dash's illustrious journey, starting from M.Sc. (1997) at Ravenshaw University to current position as a Senior Professor at the Indian Association for the Cultivation of Science (IACS), Kolkata, is remarkable. After completing Ph.D. in Organic Chemistry from IIT Kanpur (2003), India, she was awarded Alexander von Humboldt fellowship at the Freie University, Berlin (2004-2006), a postdoctoral fellowship at ESPCI-Paris (2006 to 2007), and Marie Curie fellowship (2007-2009) at the University of Cambridge, UK. She first joined IISER, Kolkata as an Assistant Professor in 2009 before moving to IACS-Kolkata. Her research interests include new organic transformations, structure and function of nucleic acid targets.

Her tireless efforts and contributions have not only earned her the respect and admiration of the global scientific community but have also garnered prestigious accolades and awards, including being elected as a Fellow of the Indian Academy of Sciences (IASc), Bangalore, receiving the Fellowship of the Royal Society of Chemistry (FRSC) in 2020 and editor/editorial advisory board member of prestigious national and international journals.Her work in the domains of chemical biology, medicinal chemistry, and drug discovery has not only advanced scientific knowledge but has also had a profound impact on our society. Her research in developing novel anticancer agents, specifically targeting DNA secondary structures through the regulation of gene functions, represents a significant milestone in anticancer therapeutics. Furthermore, her work in developing new synthetic routes to natural products and exploring the supramolecular chemistry of nucleic acid derivatives for the development of sensors and antimicrobial agents demonstrates her dedication to addressing societal challenges, particularly in healthcare. Her notable achievements, such as the SwarnaJayanti Fellowship from the Department of Science and Technology in 2015-2016, Wellcome Trust/DBT India Alliance Senior Fellowship Award 2019, andBronze Medal from Chemical Research Society of India (CRSI) further highlight her contributions to the scientific community.

Prof. Jyotirmayee Dash is the Winner of OPPI Scientist of the Year-2023 Award. The Organization of Pharmaceutical Producers of India (OPPI) established in 1965, represents the research-based global pharmaceutical companies in India.

May her continued endeavors in research and academia continue to pave the way for groundbreaking discoveries and advancements in the realm of Chemical Sciences. On this august occasion of Prof. Mahendra Kumar Rout Birth Centenary Celebration, Orissa Chemical Society and Members of Centenary Celebration Committee covey her heartiest congratulations on being awarded the esteemed Shanti Swarup Bhatnagar Prize for outstanding research in the structure and function of nucleic acids felicitates her with best wishes for a glorious future.

Prof. Rupasree Ragini Das
President
Orissa Chemical Society

Prof. Prabhat Kumar Misra
Chairman
Prof. Mahendra Kumar Rout Birth Centenary Celebration Committee

Bio-Sketch

Dr. Jyotirmayee Mohanty

Senior Scientist

Radiation & Photochemistry Division

Bhabha Atomic Research Centre, Mumbai-400094, INDIA

Email: jyotim@barc.gov.in

Dr. Jyotirmayee Mohanty obtained her M. Sc. in Chemistry from Utkal University, Odisha in 1992 and joined Bhabha Atomic Research Centre, Mumbai, India, as a Scientific Officer in 1994 after one-year advanced orientation course conducted by the institute. After her Ph.D. from the University of Mumbai in 2002, she carried out her postdoctoral research at Max-Planck Institute for Biophysical Chemistry (MPIBPC), Göttingen and Jacobs University Bremen (JUB), Bremen, Germany, 2002-2004. She visited Jacobs University Bremen under AvH Fellowship during Nov. 2013-Jan 2014. Her current research interests focus on the dynamics of noncovalent supramolecular/biomolecular assemblies, tuning their molecular properties and exploring their functional activities towards various applications such as on-off sensors, catalysts for H_2 generation, aqueous dye lasers, ^{99m}Tc generator bed, anti-cancer/anti-amyloidosis/antibacterial agents, etc. In her career,

Dr. Mohanty has come up with a number of publications in high impact international journals like *Angew. Chem. Int. Ed., J. Am. Chem. Soc., ACS Appl. Mater & Interface, Chem. Commun*., etc. including two Patents and six Book Chapters which have attracted more than 5500 citations with h-index 38 (Google Scholar). Her research contributions have been recognized in various national and international fora, such as *IUPAC 2023 Distinguished Women in Chemistry or Chemical Engineering Award, Fellow of the National Academy of Sciences (FNASc)-2014, Fellow of the Royal Society of Chemistry (FRSC), POWER Fellowship-2022 from SERB, DST, Homi Bhabha Science & Technology Award from DAE (2019), Asian-Oceanian Photochemistry Association (APA) Prize-2010, Bronze medal from CRSI, Distinguished Lectureship Award-2009 from the Chemical Society of Japan, Humboldt Fellowship for Experienced Researchers*, *Samanta Chandra Sekhar Award-2011 from Odisha Bigyan Academy*, etc.

Our Science Ambassadors

Felicitation Lecture - II

Macrocyclic Host-based Supramolecular Assemblies: Applications in Catalysis, Aqueous Dye Laser, Sensing and Drug Delivery

Jyotirmayee Mohanty

Radiation & Photochemistry Division
Bhabha Atomic Research Centre, Mumbai-400094, INDIA
Email: jyotim@barc.gov.in

Of late, there has been an upsurge in the research of supramolecular assemblies of organic guests using various macrocyclic receptors and biomolecules as they provide a unique way to control the nanoarchitectures to create supramolecular functional assemblies. Among many different strategies for making such functional assemblies, non-covalent host-guest interactions have recently received great attention in a variety of scientific fields due to their unique assembly characteristics, functional performances, and potential applications in catalysis, fluorescent sensors, drug delivery, adsorbents, etc. Macrocyclic hosts such as cucurbiturils (CBs), calixarenes (CXs) and cyclodextrin (CD) derivatives have gained immense research interest because of their ability to host, in a highly selective manner, certain types of guest molecules such as metal cations, protonated alkyl and aryl amines, cationic dyes, amino acids and drugs through ion-dipole interaction and hydrophobic interactions.[1-4] This abstract will briefly cover our overall work on the spectacular molecular properties of macrocyclic host-assisted functional assemblies of a few organic dyes/drugs having technological and biological importance and their projected applications toward the H_2 generation, aqueous dye laser, ^{99m}Tc radionuclide separation, on-off sensor, controlled drug delivery, antibacterial agents and amyloid fibril inhibitors.[1-11]

Supramolecular Catalytic Hydrolysis of Ammonia Borane using Cucurbituril

Ammonia borane (AB) is considered a potential "on-board" hydrogen storage material. However, its implementation as a hydrogen reservoir in fuel cells is lacking due to the extremely slow release of hydrogen at room-temperature hydrolysis. In this study, a metal-free supramolecular strategy is demonstrated at room temperature to increase the hydrolysis rate and yield of hydrogen along with a significant reduction in ammonia release by using cucurbit[5/8]uril (CB5/CB8) macrocycles as catalysts (Fig. 1).[1] The complex of AB with CB stabilizes the ammonium ion at the host portals, which reduces ammonia release and enhances hydrogen

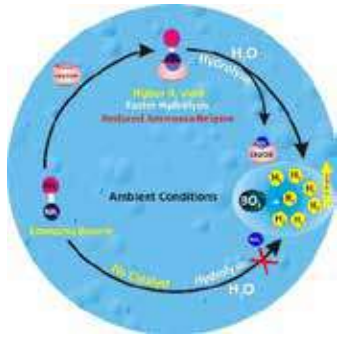


Fig. 1 Schematic representation of the hydrolysis of ammonia borane in the absence and presence of CB5 and CB8.

yield.[1] The complexation brings down the activation energy of hydrolysis from 103.8 to ~27.5 kJ mol^{-1} (for CB5), a value close to the Pt/Pd nanoparticle-based catalysts reported so far.[1] The high catalytic performance and reusability of CB catalysts at very low concentrations make AB a promising supramolecular alternative for a sustainable "on-board" energy source.

Supramolecular Aqueous Dye Laser

Employing a supramolecular strategy, the enhanced photostability and solubility of technologically important rhodamine dyes with cucurbit[7]uril (CB7) in water have been achieved.[5] These beneficial features have been applied to demonstrate highly efficient water-based supramolecular dye laser systems with better thermo-optical properties, environmental and safety benefits, and an impressive beam shape, by avoiding the use of volatile/hazardous organic solvents.[6]

Hybrid Material for ^{99m}Tc Generator

A novel recognition-mediated cucurbit[7]uril-heptamolybdate hybrid material has been fabricated and successfully demonstrated its application as a generator bed for the facile separation of the ^{99m}Tc radionuclide from the radioactive ^{99}Mo solution.[7] This novel technology is based on the striking distinction in the anionic charges of $Mo_7O_{24}^{6-}$ and $^{99m}TcO_4^-$ in combination with the subtle anion receptor propensity at the peripheral carbons of the CB7. The lab scale 'milking' procedure demonstrated is highly promising and using suitable optimization procedures the method is scalable to obtain ^{99m}Tc the utmost radionuclidic and radiochemical purity, required for a clinically acceptable ^{99}Mo/^{99m}Tc generator.[7] Importantly, such hybrid materials using benign macrocyclic hosts will hold the key to the construction of various functionalized polyoxometalates having diverse practical applications.

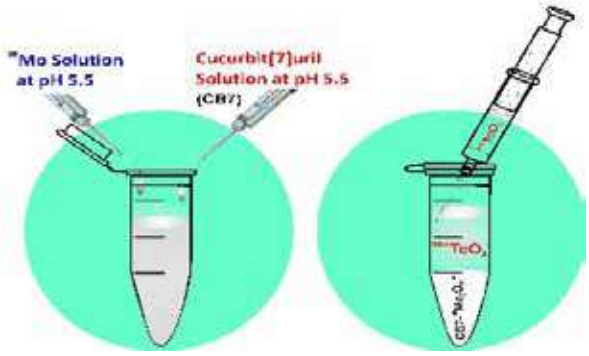


Fig. 2 A laboratory scale arrangement for the demonstration of the supramolecular strategy for the separation of ^{99m}Tc from active ^{99}Mo solution by using the CB7-heptamolybdate material as the generator bed.

Antibacterial agents with Enhanced Efficacy & Extended Shelf-life

The host-guest interactions of a third-generation fluoroquinolone, danofloxacin (DOFL), with the macrocyclic host cucurbit[7]uril (CB7) have been investigated at different pH values. The fluorescence yield and lifetime increased, and the photostability of DOFL improved in the presence of CB7.[8] The antibacterial activity of DOFL got enhanced upon complexation with CB7 (Fig. 3), as tested against four pathogenic bacteria; highest activity has been found

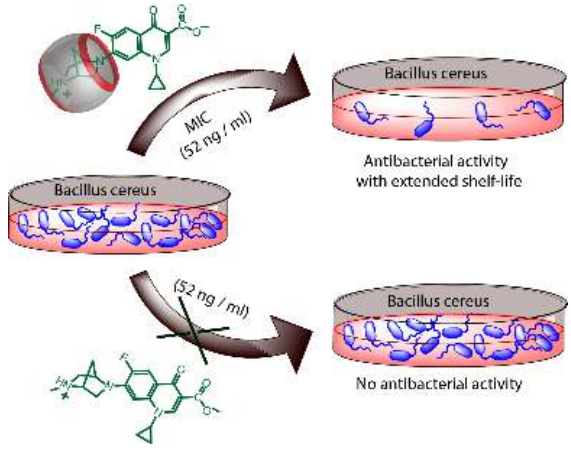


Fig. 3 Schematic representation of antibacterial activity of DOFL (52ng/ml) in the absence and presence of CB7.

towards *B. cereus* and *E. coli*, and lower activity towards *S. aureus* and *S. typhi*.[8] The antibacterial activity of two additional second-generation fluoroquinolones, i.e., norfloxacin and ofloxacin, has also been investigated in the absence as well as the presence of CB7 and compared with that of DOFL. In the case of all drugs, the minimum inhibitory concentration (MIC) was reduced 3–5 fold in the presence of CB7.[8] The extended shelf-life (antibacterial activity over time) of the fluoroquinolone drugs in the presence of CB7, irrespective of four types of bacteria, can be attributed to the enhanced photostability of their CB7 complexes, which can act as better antibiotics with a longer expiry date than uncomplexed DOFL.

Inhibition and Disintegration of Amyloid Fibrils

A facile supramolecular approach for the inhibition and disintegration of human insulin (HIns) amyloid fibrils by the treatment of *p*-sulfonatocalix[4/6]arenes (SCX4/SCX6) or sulfobutylether β-cyclodextrin (SBE_7βCD) has been demonstrated (Fig. 4).[3,4] While the macrocyclic encapsulation of certain amino acids prevents the HIns from transforming into the β-sheet conformers, the disintegration of mature fibrils is brought out by the surface charge interactions, which destabilize the extended fibrillar structure into soluble or fine particles.[3,4] Advantageously, the presence of SCXs/ SBE_7βCD did not introduce any additional toxicity into the cell viability, which advocates its potential utility as therapeutics for amyloidosis.

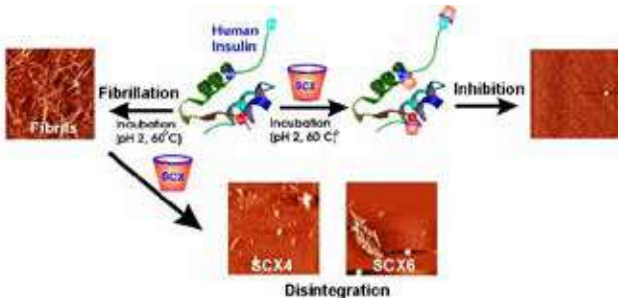


Fig. 4 Schematic representation of the inhibition and disintegration of the amyloid fibrils in the presence of *p*-sulfonatocalix[4/6]arenes.

Supramolecular Capsule formation & its rupture

A novel stimulus-responsive cooperative metal ion binding to the stoichiometrically selected cucurbit[7]uril-thioflavin T (ThT) complex has been demonstrated as a highly fluorescent supramolecular nanocapsule.[9] This has become feasible due to the stoichiometry and the structural arrangement of the host-guest complex with two CB7 portals providing strong negative charge density for the metal ions to group and seal the complex, thus rigidizing and protecting the incorporated dye. Furthermore, the rupture of the capsular complex was demonstrated with a strong competitive guest, which helped in disrupting the capsule to release the dye.[9] By proper design criteria of the guest chromophores, the methodology can be explored for the binding and release of drug molecules and for application in on-off systems and will have immense potential as building blocks for molecular architectures displaying unique properties. By substituting the alkali metal ions with transition metal ions with redox activity or catalytic properties, one can convert this supramolecular capsule into nanoreactors or metalloenzyme models.

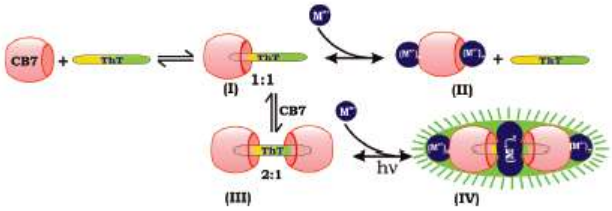


Fig. 5 Proposed binding interactions among ThT, CB7, and metal ion system leading to the highly fluorescent supramolecular capsule.

Ternary Complex formation

Construction and characterization of stimuli-responsive supra-biomolecular nanoassembly between cucurbit[7]uril (CB7) and bovine serum albumin (BSA), uptake and release of doxorubicin (DOX) in live cells and the enhanced sensitivity of brilliant green (BG) have been demonstrated.[10,11] The fluorescence intensity of DOX is largely quenched in the presence of nanoassembly which recovers with adamantylamine or by changing the pH of the solution, indicating the significant uptake and release of DOX (Fig. 6).[10] Whereas, the interaction of BG with CB7-BSA assembly leads to a huge fluorescence enhancement ~350-fold through ternary complex formation.[11] These studies show promising applications in drug delivery and on-off sensors.

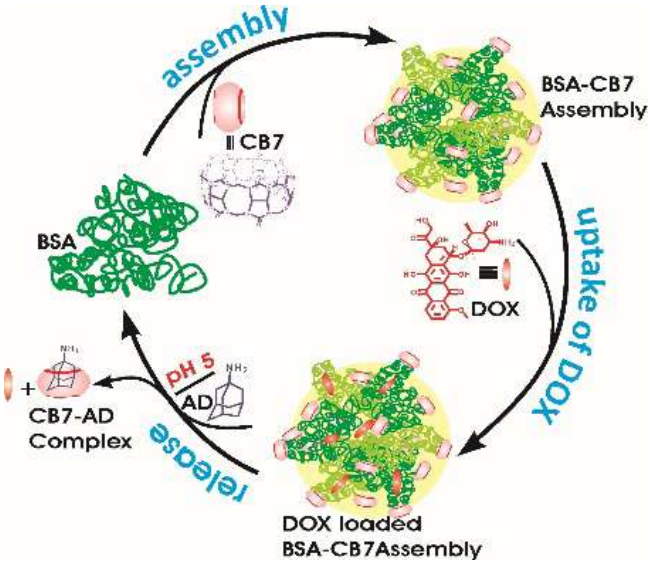


Fig. 6 Schematic representation of the formation of the CB7–BSA suprabiomolecular assembly, stimuli-responsive uptake and release of DOX.

References:

1. P. Ruz, S. Banerjee, R. Khurana, N. Barooah, V. Sudarsan, A. C. Bhasikuttan, J. Mohanty, *ACS Appl. Mater. Interfaces*, 13, **2021**, 16218.
2. R. Khurana, A. S. Kakatkar, S. Chatterjee, N. Barooah, A. Kunwar, A. C. Bhasikuttan, J. Mohanty, *Front. Chem.-Supramolecular Chemistry*, 7, **2019**, 452.
3. M. N. Shinde, N. Barooah, A. C. Bhasikuttan, J. Mohanty, *Chem. Commun*., 52, **2016**, 2992.
4. A. C. Bhasikuttan, J. Mohanty, *Chem. Commun.*, 53, **2017**, 2789.
5. J. Mohanty, W. M. Nau, *Angew. Chem. Int. Ed*., 44, **2005**, 3750.
6. J. Mohanty, K. Jagtap, A. K. Ray, W. M. Nau, H. Pal, *ChemPhysChem*, 11, **2010**, 3333.
7. T. Goel, N. Barooah, M. B. Mallia, A. C. Bhasikuttan, J. Mohanty, 52, *Chem. Commun*., 2016, 7306.
8. H. S. El-Sheshtawy, S. Chatterjee, K. I. Assaf, M. N. Shinde, W. M. Nau, J. Mohanty, *Scientific Reports*, 8, **2018**, 13925.
9. S. Dutta Choudhury, J. Mohanty, H. Pal, A. C. Bhasikuttan, *J. Am. Chem. Soc*., 132, **2010**, 1395.
10. N. Barooah, A. Kunwar, R. Khurana, A. C. Bhasikuttan, J. Mohanty, *Chem. Asian J*., 12, **2017**, 122.
11. A. C. Bhasikuttan, J. Mohanty, W. M. Nau, H. Pal, *Angew. Chem. Int. Ed.*, 46, **2007**, 4120.

Department of Chemistry, Ravenshaw University, Cuttack, Orissa Chemical Society & Professor Mahendra Kumar Rout Birth Centenary Celebration Committee

Felicitate

Dr. Jyotirmayee Mohanty

Senior Scientist
Radiation & Photochemistry Division
Bhabha Atomic Research Centre, Mumbai-400094, INDIA
Email: jyotim@barc.gov.in

As

Science Ambassador of Odisha

Ravenshaw University, Cuttack **CITATION** **4th January 2024**

Dr.Jyotirmayee Mohanty, born in 1971, is working as a Senior Scientist and Heading Nano & Reactor Chemistry Section of Radiation & Photochemistry Division, Chemistry Group, Bhabha Atomic Research Centre, Mumbai. Dr. Mohanty has been persistently making noteworthy contributions in the frontier areas of chemical sciences by developing stimuli-responsive supramolecular/biomolecular assemblies as *on-off sensors, catalysts for H_2 generation, aqueous dye lasers, ^{99m}Tc generator bed, long-acting antibacterial agents, water-based dye laser, anti-counterfeiting inks, organic electronics, targeted drug delivery, anticancer agent and therapeutics for neurodegenerative diseases*. She has developed novel *cucurbituril-molybdate hybrid material as generator bedfor the selective separation of ^{99m}Tc radiotracer.* Contributing to the therapeutics of *neurodegenerative* diseases, Dr. Mohanty has established the *inhibition* and *rupture ofamyloid fibrils* using *macrocyclic receptors*. In a recent study, she and her co-workers have established the *enhanced antibacterial efficacy, extended shelf-life, and reduced MIC* of calixarene-modified Ag nanoparticle-/cucurbituril-encapsulated drugs, promising new long-acting antibiotic formulations. Her group has also demonstrated a fluorogenic marker, which *induces* and *selectively detects G-quadruplex* structures, an inhibition strategy to arrest cancer growth.

Dr. Mohanty has maintained a very high standard of research work in more than 115 publications in high-impact International Journals including patents and book chapters and has attracted more than 5500 citations. As a recognition of her outstanding research work in supramolecular photochemistry, she has been conferred with the prestigious '*Alexander von Humboldt Fellowship for Experienced Researchers*', '*APA Prize for Young Scientists-2010*' from the Asian and Oceanian Photochemistry Association (APA), and '*Distinguished Lectureship Award for the Young Scientist-2009*' from 'The Chemical Society of Japan', '*Samanta Chandra Sekhar Award-2011*' from the 'Odisha Bigyan Academy' and '*CRSI Bronze Medal-2017*'. She is the recipient of the prestigious '*IUPAC 2023 Distinguished Women in Chemistry or Chemical Engineering Award*' by the International Union of Pure & Applied Chemistry (IUPAC) for her scientific contribution to the global chemistry community. She is the first Indian woman to receive this award since its inception in 2011.

On this august occasion of Prof. Mahendra Kumar Rout Birth Centenary Celebration, the Orissa Chemical Society and Members of the Centenary Celebration Committee convey her heartiest congratulations on being the recipient of the 'IUPAC 2023 Distinguished Women in Chemistry or Chemical Engineering Award' and felicitate her with wishes for a glorious future.

Prof. Rupasree Ragini Das
President
Orissa Chemical Society

Prof. Prabhat Kumar Misra
Chairman
Prof. Mahendra Kumar Rout Birth Centenary Celebration Committee

STATE POLUTION CONTROL BOARD (SPCB), ODISHA

PROF. M.K ROUT MEMORIAL LECTURE

ON

FOUNDATION DAY CELEBRATION

(1998 ONWORDS)

State Pollution Control Board, Odisha
(Foundation Day : 14th September 1983)

Prof. M.K. Rout Memorial Lecture
On Foundation Day Celebration

State Pollution Control Board, Odisha has been observing its Foundation Day on 14th September. On this day, Prof. M.K. Rout Memorial Lecture is held every year starting from the year 1998-99 in the memory of Prof. M.K.Rout, Founder Chairman of the Board. During the tenure of Prof. M.C. Dash as Chairman of the Board,Prof. M.K. Rout Memorial Lecture was introduced. A brief account of the same is furnished below:

Year	Celebration of Foundation Day	Prof M K Rout Memorial Lecture Delivered by	Theme
1998-99	The Board celebrated its 16th Foundation Day on 14.09.1998	**Prof J.N. Chatterjee** Patna University Fellow, Indian National Science Accademy (INSA), New Delhi (Contemporary of Prof. Rout in Pattna University) & **Prof. G. B. Behera** Prof. of Chemistry, Sambalpur University	
1999-2000	The Board celebrated its 17th Foundation Day on 16.09.1999	**Prof Baidyanath Mishra** Eminent Economist & Chairman, Nabakrushna Choudhury Centre of Developmental Studies, Bhubaneswar and **Prof. P.K. Jena,** Former Director, RRL, Bhubaneswar	
2000-01	The Board celebrated its 18th Foundation Day on 14.09.2000		
2001-02	The Board celebrated its 19th Foundation Day on 21.09.2001	**Dr. Kalyan Sen** Director, Central Fuel Research Institute, Dhanbad	Coal and Environment
2002-03	The Board celebrated its 20th Foundation Day on 21.09.2002, Bhubaneswar	**Prof. Trilochan Pradhan,** Ex-Vice Chancellor, Utkal University, Bhubaneswar	Ozone Hole
2003-04	The Board celebrated its 21st Foundation Day on 16.09.2003, Bhubaneswar	**Prof. G.C. Mitra** Prof-in-Charge, IIT Kharagpur Extension Centre, Bhubaneswar	Effect of Pollution on Ancient Monuments
2004-05	The Board celebrated its 22nd Foundation Day on 16.09.2004, Bhubaneswar	**Prof. Damaodoar Lenka** Retd. Professor, Agronomy, OUAT, Bhubaneswar	

Year	Celebration of Foundation Day	Prof M K Rout Memorial Lecture Delivered by	Theme
2005-06	The Board celebrated its 23rd Foundation Day on 16.09.2005, Bhubaneswar		
2006-07	The Board celebrated its 24th Foundation Day on 14.09.2006, Bhubaneswar		
2007-08	The Board celebrated its 25th Foundation Day on 14.09.2007, Bhubaneswar		
2008-09	The Board celebrated its 26th Foundation Day on 14.09.2008, Bhubaneswar		
2009-10	The Board celebrated its 27th Foundation Day on 15.09.2009 at Jayadev Bhawan, Bhubaneswar	**Prof. B K Mishra,** Director, Institute of Minerals & Materials Technology (IMMT), Bhubaneswar	
2010-11	The Board celebrated its 28th Foundation Day on 14.09.2010 at its Head Office, Bhubaneswar	**Prof. D. Jena** Dept. of Soil Science & Agriculture Chemistry, OUAT, Bhubaneswar	Findings of the Studies on Long Term Effects of Fly Ash on Crop yield and Soil quality occasion.
2011-12	The Board celebrated its 29th Foundation Day on 14.09.2011 at its Head Office Bhubaneswar	**Dr. B. P. Das** Engineer-in-Chief (Retd.) Department of Water Resources, Government of Odisha	Rivers: Dams, Environmental Issues, Impact of Climate Change
2012-13	The Board celebrated its 30th Foundation Day on 14.09.2012 at its Head Office Bhubaneswar	**Prof P K J Mohapatra** IIT, Kharagpur	
2013-14	The Board celebrated its 31th Foundation Day on 14.09.2013 at its Head Office Bhubaneswar	**Prof M C Dash** Vice Chancelor, Sambalpur University	
2014-15	The Board celebrated its 32st Foundation Day on 14.09.2014 at its Head Office Bhubaneswar	**Dr. Omkar Nath Mohanty,** Former Professor, IIT, Kharagpur & Ex-VC, BPUT	
2015-16	The Board celebrated its 33rd Foundation Day on 14.09.2015 at Bhartiya Vidya Bhawan, Bhubaneswar	**Prof R.V. Raja Kumar** Director, Indian Institute of Technology, Bhubaneswar	Green Radio
2016-17	The Board celebrated its 34th Foundation Day on 14.09.2016 at Jayadev Bhawan, Bhubaneswar	**Prof. Uma Charan Mohanty** Emeritus Professor, School of Earth, Ocean & Climate Sciences, IIT, Bhubaneswar	Climate Change and Sustainable Development

Year	Celebration of Foundation Day	Prof M K Rout Memorial Lecture Delivered by	Theme
2017-18	The Board celebrated its 35th Foundation Day on 14.09.2017 at Jayadev Bhawan, Bhubaneswar	**Dr. Sachidananda Satapathy** Former Director, Climate Change, MOEF, New Delhi	Climate Change Smart Choice: Responding to Challenges of Climate Change.
2018-19	The Board celebrated its 36th Foundation Day on 14.09.2018 at Jayadev Bhawan, Bhubaneswar followed by release of Books and News Letter.	**Prof. Satyaban Jena** Retd Prof of Chemistry, Utkal University, Vani Vihar, Bhubaneswar	Green Chemistry
2019-20	The Board celebrated its 37th Foundation Day on 14.09.2019 at Jayadev Bhawan, Bhubaneswar	**Prof. Binay Kumar Dutta** Former Chairman, WBSPCB & Visiting Professor, School of Environmental Sciences & Engineering, IIT, Kharagpur	Remediation of Contaminated Soil
2020-21	The Board celebrated its 38th Foundation Day on 14.09.2023 at its Head Office, Bhubaneswar	**Prof. Suddhasatwa Basu** Director CSIR - IMMT, Bhubaneswar (Through Video Conferencing)	
2021-22	The Board celebrated its 39th Foundation Day on 14.09.2023 at its Head Office, Bhubaneswar	**Prof. Pratap Mohanty** Professor & Head, Dept. of Marine Sciences: Chairman, Post Graduate Council & Director, Innovation and Incubation Centre, Berhampur University	
2022-23	The Board celebrated its 40th Foundation Day on 14.09.2023 at its Head Office ,Bhubaneswar	**Dr. Mrutyunjay Mohapatra** Director General of Meteorology, Indian Meteorology Department, Ministry of Earth Sciences, Government of India	Climate Change & Role of an Individual

Compiled by:

Subhadra Majhi
Assistant Environmental Scientist (AES)
State Pollution Control Board, Odisha, Bhubaneswar
Ph. No.- 7978936212

ଓଡ଼ିଆ ବିଭାଗ

ତସ୍ମୈ ଶ୍ରୀ ଗୁରବେ ନମଃ

ପ୍ରତିଭା ରାୟ

ଓଡ଼ିଶାର ସର୍ବପ୍ରାଚୀନ, ସର୍ବୋତ୍ତମ ମହାବିଦ୍ୟାଳୟ ରେଭେନ୍ସା କଲେଜ ଆଜି ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟର ମାନ୍ୟତା ଲାଭ କରିଛି। ରେଭେନ୍ସା କଲେଜ ମୋର ବୃତ୍ତି, ପ୍ରବୃତ୍ତି, ବ୍ୟକ୍ତିତ୍ୱର ସର୍ବାଙ୍ଗୀନ ବିକାଶର ଭିତ୍ତିଭୂମି। ଛାତ୍ରୀଜୀବନ ଓ ବୃତ୍ତିଜୀବନର କାଳଖଣ୍ଡକୁ ମିଶାଇଲେ ଜୀବନର ଚଉଦ ବର୍ଷ, ଅର୍ଥାତ୍ ଗୋଟିଏ ସ୍ୱର୍ଣ୍ଣଯୁଗରୁ ଅଧିକ କଟିଛି ରେଭେନ୍ସା କଲେଜରେ। ପଛକୁ ଫେରି ଚାହିଁଲେ ପୁନର୍ବାର ଫେରିଯିବା ପାଇଁ ଇଚ୍ଛା ହୁଏ ରେଭେନ୍ସା ଶିକ୍ଷାଳୟର ପରିସରକୁ। ବୃତ୍ତି ଜୀବନକୁ ନୁହେଁ, ଛାତ୍ରୀ ଜୀବନକୁ। ଛାତ୍ରୀଜୀବନକୁ ସ୍ମରଣ କଲେ ଅନେକ ଶିକ୍ଷାଗୁରୁ ସହସା ସ୍ମରଣକୁ ଆସନ୍ତି। ସେମାନଙ୍କ ଭିତରୁ ଦୁଇଜଣ ରେଭେନ୍ସା କଲେଜରେ ମୋ ଶିକ୍ଷକ ଭାବରେ ଓ ଅଧ୍ୟାପନା କାର୍ଯ୍ୟକାଳ ଭିତରେ ମୋର ଉପରିସ୍ଥ ସର୍ବୋଚ୍ଚ ପଦବୀ ଅର୍ଥାତ୍ ପ୍ରିନ୍ସିପାଲ ଭାବରେ ମତେ ଦିଗ ଦର୍ଶାଇଥିଲେ। ସେ ଦୁଇଜଣ ହେଉଛନ୍ତି ରସାୟନ ବିଭାଗର ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ଓ ପ୍ରଫେସର ଡକ୍ଟର ପ୍ରଭାତ କୁମାର ମିଶ୍ର। ରେଭେନ୍ସା କଲେଜ ମୋ ଅଧ୍ୟାପନାର ପ୍ରଥମ କର୍ମପୀଠ। ସେତେବେଳେ ପ୍ରିନ୍ସିପାଲ ଥିଲେ ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ। ଛାତ୍ରୀଜୀବନରେ ପ୍ରଫେସର ରାଉତଙ୍କ ବ୍ୟକ୍ତିତ୍ୱ ମୋ ଭିତରେ ଭକ୍ତି ଓ ଭୟ ସୃଷ୍ଟି କରିଥିଲା। ସେ 'ଶୃଙ୍ଖଳା, ସମୟାନୁବର୍ତ୍ତିତା ଓ କର୍ତ୍ତବ୍ୟନିଷ୍ଠା' ଉପରେ ଗୁରୁତ୍ୱ ଦେଉଥିଲେ ବୋଲି ତାଙ୍କ ସମୟରେ କଲେଜରେ ଶିକ୍ଷକମାନେ ଅନିୟମିତ ହେବାର ବା ଛାତ୍ରମାନେ ଶୃଙ୍ଖଳା ଭଙ୍ଗ କରିବାର ଦୃଷ୍ଟାନ୍ତ ନଥିଲା କହିଲେ ଚଳେ।

ବିଜ୍ଞାନରେ ଉପାଧି ପରୀକ୍ଷା ପରେ ପରେ ବିବାହ ହୋଇଯାଇଥିବାରୁ ମୋର ପଢ଼ାପଢ଼ି ବ୍ୟାହତ ହୋଇଥିଲା। ତିନି ପିଲାଙ୍କୁ ସ୍କୁଲକୁ ପଠାଇ ମୁଁ ଶିକ୍ଷାଶାସ୍ତ୍ରରେ ଆଉ ଦୁଇବର୍ଷ ଶିକ୍ଷାଲାଭ କରି ରେଭେନ୍ସା କଲେଜରେ ପ୍ରଥମ ଅଧ୍ୟାପନା ଜୀବନ ଆରମ୍ଭ କଲି। ରେଭେନ୍ସା କଲେଜରେ ସେତେବେଳେ ପ୍ରାୟ ତିନିଶହ ଅଧ୍ୟାପକ ଅଧ୍ୟାପିକା ଥିଲେ। ପ୍ରଫେସର ରାଉତ ପ୍ରିନ୍ସିପାଲ୍ ଭାବରେ ସମସ୍ତଙ୍କର ନାମ ସ୍ମରଣରେ ରଖିଥିଲେ ଓ ଅଧିକାଂଶ ଅଧ୍ୟାପକଙ୍କ ଘର ଠିକଣା ମନେ ରଖିଥିଲେ। ଏକଥା ସମସ୍ତଙ୍କୁ ଯେପରି ବିସ୍ମିତ କରୁଥିଲା, ସେତିକି କର୍ମତତ୍ପର ଓ ସମୟାନୁବର୍ତ୍ତୀ କରୁଥିଲା।

ମୁଁ ଚାକିରିରେ ଯୋଗଦେବାର କେତେମାସ ପରେ ନୂତନ ବର୍ଷ ଜାନୁୟାରୀରେ କଲେଜ ଖୋଲିବା ପରେ ଷ୍ଟାଫ୍ ମିଟିଂ ହେଲା। ପ୍ରତିବର୍ଷ ଏହି ମିଟିଂରେ ପ୍ରିନ୍ସିପାଲ ସମସ୍ତ ଅଧ୍ୟାପକ ଅଧ୍ୟାପିକାଙ୍କୁ ସମ୍ବୋଧିତ କରନ୍ତି। ସେ ମିଟିଂରେ ସମସ୍ତେ ଉପସ୍ଥିତ ରହୁଥିଲେ। ମୋ ଚାକିରିକାଳର ପ୍ରଥମବର୍ଷର ଷ୍ଟାଫ୍ ମିଟିଂ ଦିନ ମୋର ସକାଳ ଆଠଟା ପନ୍ଦରରେ ଟ୍ୟୁଟୋରିଆଲ୍ କ୍ଲାସ ଥିଲା। ତା'ପରେ ଆଉ ଦୁଇଟି କ୍ଲାସ ମଧ୍ୟ ଥିଲା। ତିନିଟାବେଳେ ଷ୍ଟାଫ୍ ମିଟିଂରେ ଉପସ୍ଥିତ ରହିବା ପାଇଁ ସମସ୍ତେ ବାଧ୍ୟ- ଏକଥା ଆମ ବିଭାଗୀୟ ମୁଖ୍ୟ ସମସ୍ତଙ୍କୁ ମନେପକାଇ ଦେଲେ। ମୁଁ ଦିନ ଗୋଟାଏରେ କ୍ଲାସ୍ ସାରି ତୁଳସୀପୁର ଘରକୁ ଖାଇବାକୁ ଗଲି। ବିଭାଗୀୟ ମୁଖ୍ୟଙ୍କୁ ସେ କଥା ଜଣାଇ ଅନୁରୋଧ କରିଥିଲି ଯେ ମୋର ଯଦି ସାମାନ୍ୟ ବିଳମ୍ବ ହୁଏ ତେବେ ସେ ପ୍ରିନ୍ସିପାଲଙ୍କୁ ଜଣାଇଦେବେ। ମିଟିଂ ଆରମ୍ଭ ହେବା ପରେ ପରେ ଏକ ରେଜିଷ୍ଟରରେ ସମସ୍ତେ ନିଜ ନାମ ପାଖରେ ଦସ୍ତଖତ କରିଥାନ୍ତି। ଏକରକମ ଉପସ୍ଥାନ ପକାନ୍ତି କହିଲେ ଚଳେ। ମୁଁ ତରବର ହୋଇ ଖାଇଲି। ହାତରେ ଘଣ୍ଟାଏ ସମୟ ଅଛି ଜାଣି ରେଜେଇ ଘୋଡ଼େଇ ହୋଇ ଶୋଇପଡ଼ିଲି। ମୁଁ ପିଲାଙ୍କୁ ସ୍କୁଲ ପଠାଇବା ପାଇଁ ଖୁବ୍ ଶୀଘ୍ର ଉଠେ। ତେଣୁ ସେଦିନ କ୍ଲାନ୍ତି ମେଣ୍ଟାଇବା ପାଇଁ ଖଟରେ ଶୋଇପଡ଼ିବା ମାତ୍ରେ ଶୀତଦିନ ଦ୍ୱିପ୍ରହର ରେଜେଇତଳର ମଧୁର ଉଷ୍ମତା ମୋର ଆଖିପତା ମୁଦି ଦେଲା। କରମୋଡ଼ି ଘଣ୍ଟାକୁ ଚାହିଁ ଦେଖିଲି ଘଣ୍ଟାରେ ଅପରାହ୍ନ ଦୁଇଟା ପଚାଶ। ଅର୍ଥାତ୍ ଏବେ କଲେଜକୁ ଗଲେ ମିଟିଂରେ ବିଳମ୍ବରେ ପହଞ୍ଚିବି। ବରଂ ଅନୁପସ୍ଥିତ ରହିବି- ସାର୍‌ଙ୍କ ମିଟିଂରେ ବିଳମ୍ବରେ ପହଞ୍ଚିବି ନାହିଁ ଭାବି ଆଉ କଲେଜକୁ ଗଲି ନାହିଁ। ଭାବିଲି ଏତେ ଅଧ୍ୟାପକଙ୍କ ଭିତରେ ପ୍ରିନ୍ସିପାଲ୍ ମୋର ଅନୁପସ୍ଥିତ ଜାଣିପାରିବେ ନାହିଁ। ମୁଁ ସେତେବେଳେ ଛଅମାସ

ଅଭିଜ୍ଞତା ଥିବା ଜଣେ ଅନାମଧେୟା ଅଧ୍ୟାପିକା। ମତେ ପ୍ରିନ୍ସିପାଲ କାହିଁକି ବା ଖୋଜିବେ? ଅବଶ୍ୟ ଉପସ୍ଥାନ ରେଜିଷ୍ଟରରେ ମୋର ଦସ୍ତଖତ ରହିବ ନାହିଁ, ମାତ୍ର ପ୍ରିନ୍ସିପାଲ କ'ଣ ସେ ରେଜିଷ୍ଟର ସତରେ ଦେଖୁଥିବେ? ନିଜ ସପକ୍ଷରେ ଅନେକ ଯୁକ୍ତି ବାଢ଼ିଲେ ମଧ୍ୟ ବଡ଼ ଅଶ୍ୱସ୍ତିବୋଧ କରୁଥାଏ। ଶୀତଋତୁର ମଧ୍ୟାହ୍ନ କ୍ଲାନ୍ତିଠୁ ଭୟଙ୍କର ବିପଦ ଆଉ କିଛି ନାହିଁ ବୋଲି ମୁଁ ବୁଝିସାରିଥାଏ। ନିଜକୁ ଦୋଷ ଦେଉଥାଏ। ସଂଧ୍ୟା ସାଢ଼େ ପାଞ୍ଚରେ ମନସ୍ତତ୍ତ୍ୱ ବିଭାଗର ଅଧ୍ୟାପକ ଗଣେଶ ଦାସ ଫୋନ୍ କରି ପଚାରିଲେ- "ମାଡାମ୍ ଆଜି କ'ଣ ଆପଣ ଷ୍ଟାଫ୍ ମିଟିଂକୁ ଆସିଲେ ନାହିଁ କି? ପ୍ରିନ୍ସିପାଲ ଆପଣଙ୍କୁ ଖୋଜୁଥିଲେ।" ମୁଁ ଗଣେଶ ବାବୁଙ୍କ କଥାକୁ ଆଦୌ ବିଶ୍ୱାସ କଲି ନାହିଁ। କାରଣ ସେ ଜଣେ ଖୁସ୍‌ମିଜାଜର ଲୋକ। ମଜାରେ ଥଟ୍ଟା ପରିହାସ କରିଥାନ୍ତି। ମୁଁ କହିଲି, "ହଁ, ପ୍ରିନ୍ସିପାଲ ତ ନିଶ୍ଚୟ ଖୋଜିଥିବେ! କାରଣ ମୋ ଯୋଗୁଁ ଅନେକ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ବିଷୟର ସିଦ୍ଧାନ୍ତ ନିଆଯାଇ ପାରିନଥିବ!" ଗଣେଶବାବୁ କହିଲେ, "ମୁଁ ଜାଣେ ଆପଣ ମୋ କଥାକୁ ସତ ମଣିବେ ନାହିଁ। ମୋ ସ୍ତ୍ରୀ ସହ କଥା ହୁଅନ୍ତୁ।" ଗଣେଶ ଦାସଙ୍କ ସ୍ତ୍ରୀ ସେତେବେଳେ ରେଭେନ୍ସାରେ ଉଦ୍ଭିଦବିଜ୍ଞାନର ଅଧ୍ୟାପିକା ଥିଲେ। ସେ ଅତ୍ୟନ୍ତ ଧୀର, ଶାନ୍ତ, ଦାୟିତ୍ୱସମ୍ପନ୍ନା ଅଧ୍ୟାପିକା। ସେ ଫୋନ୍‌ରେ କହିଲେ, "ହଁ ମ୍ୟାଡାମ୍ ଗଣେଶବାବୁ ଏକଥା ମଜାରେ କହୁନାହାନ୍ତି। ପ୍ରିନ୍ସିପାଲ୍ ଆପଣଙ୍କୁ ସତରେ ଖୋଜିଲେ। ସିଏଲ୍‌ଟି-୨ ଗ୍ୟାଲେରୀର ଏମୁଣ୍ଡ ସେମୁଣ୍ଡ ଆଖି ପକାଇ କହିଲେ "ହ୍ୱେୟାର ଇଜ୍ ପ୍ରତିଭା ରାୟ- ହ୍ୱେୟାର ଇଜ୍ ପ୍ରତିଭା ରାୟ?"

ତାଙ୍କ କଥାକୁ ସତ ମଣିଲି ଏବଂ ପଚାରିଲି, "ଆମ ବିଭାଗୀୟ ମୁଖ୍ୟ କିଛି କହିଲେ ନାହିଁ? ମୋର ମର୍ଣ୍ଣିଂ କ୍ଲାସ ଥିଲା ବୋଲି କହିଲେ ନାହିଁ?"

ସେ କହିଲେ, "ନା, ସେ କିମ୍ବା ଆପଣଙ୍କ ଡିପାର୍ଟମେଣ୍ଟର କେହି କିଛି କହିଲେ ନାହିଁ।"

ବଡ଼ ଖରାପ ଲାଗିଲା। ମୋର ସେଇଟା ପ୍ରଥମ ଷ୍ଟାଫ୍ ମିଟିଂ ଏବଂ ମୁଁ ଯୋଗଦେଲି ନାହିଁ- ଛୁଟିରେ ମଧ୍ୟ ନଥିଲି। ଆମ ବିଭାଗୀୟ ମୁଖ୍ୟ କହିଲେ ନାହିଁ ଯେ ମୁଁ ସକାଳ ଆଠଟାରୁ କଲେଜ ଆସିଥିଲି ବୋଲି। ଏଥର ନିଶ୍ଚୟ ମୋ ସି.ସି.ଆର୍‌ରେ 'ଅନିୟମିତ' ବୋଲି ଲେଖାଯିବ। ତା' ପରଦିନ କଲେଜରେ ପହଞ୍ଚିବା ମାତ୍ରେ ଡିପାର୍ଟମେଣ୍ଟରେ ସମସ୍ତେ କହିଲେ- "ପ୍ରିନ୍ସିପାଲ୍ ଖୋଜୁଥିଲେ।"

ମୁଁ ପ୍ରିନ୍ସିପାଲଙ୍କ ଅଫିସକୁ ଯାଇ ଦେଖାକରିବା ପାଇଁ ଅନୁମତି ମାଗିଲି। ଛାତି ଧଡ଼ଧଡ଼ କରୁଥାଏ। ପ୍ରିନ୍ସିପାଲଙ୍କଠୁଁ ଅନୁମତି ପାଇବା ପରେ ଭିତରକୁ ପ୍ରବେଶ କରିବା ମାତ୍ରେ କହିଲି- "କାଲି ମୋର ମର୍ଣ୍ଣିଂ କ୍ଲାସ ଥିଲା ସକାଳ ଆଠରେ..." ପ୍ରିନ୍ସିପାଲ ମତେ କିଛି କହିବାକୁ ନଦେଇ କହିଲେ, "ମୁଁ ତୁମ ଡିପାର୍ଟମେଣ୍ଟରୁ ବୁଝିସାରିଛି, ତୁମେ ଦିନ ଗୋଟାଏରେ କ୍ଲାସ ସାରି ତୁଳସୀପୁର ଫେରିଛ ବୋଲି। ଠିକ୍ ଅଛି। ସେ କଥା ମତେ ଜଣାଇଦେଇ ଯାଇପାରିଥାନ୍ତ।" ମୁଁ ବିନମ୍ରତାର ସହ କହିଲି "ସାର୍ ମୁଁ ଆସିବା କଥା ମାତ୍ର..."

ପ୍ରିନ୍ସିପାଲ୍ କହିଲେ, "ହଉ ସେକଥା ପ୍ରତି ତୁମେ ଯତ୍ନବାନ ଥିବ ମୁଁ ଜାଣେ। ମୁଁ ତୁମକୁ ଖୋଜୁଥିଲି ନୂଆବର୍ଷର ଶୁଭେଚ୍ଛା ଜଣାଇବି ବୋଲି। ତୁମେ ମୋ ପାଖକୁ ପଠାଇଥିବା ନୂଆବର୍ଷର ଶୁଭେଚ୍ଛା କାର୍ଡ଼ଟି ଭାରି ଭଲ ହୋଇଛି।" ସାର୍ ସ୍ମିତ ହସିଲେ କିନ୍ତୁ ମୋ ମନ ଭିତରୁ ସେଦିନର ବୋଝଟି ଆଦୌ ହାଲୁକା ହେଲା ନାହିଁ। ସେ ସମୟରେ କୌଣସି ଶିକ୍ଷକ ଶ୍ରେଣୀକକ୍ଷରେ ପହଞ୍ଚିବା ପାଇଁ ପାଞ୍ଚ ମିନିଟ୍ ବିଳମ୍ବ କରୁନଥିଲେ। ରେଭେନ୍ସା କଲେଜରେ ଆମର ଗୋଟିଏ କ୍ଲାସ ସାଇନ୍ସ ବ୍ଲକ୍‌ରେ ଥାଏ ତ ଆଉ ଗୋଟିଏ କ୍ଲାସ ଥାଏ ଆର୍ଟସ ବ୍ଲକ୍‌ରେ। ପରକୁ ପର କ୍ଲାସ ଥିଲେ ଧଇଁସଇଁ ହୋଇ ଧାଇଁବାକୁ ହୁଏ। ଥରେ ମୁଁ ସାଇନ୍ସ ବ୍ଲକ୍‌ରୁ କ୍ଲାସ ସାରି ଆର୍ଟସ ବ୍ଲକ୍‌ରେ ପହଞ୍ଚିବା ବେଳକୁ ପ୍ରିନ୍ସିପାଲ୍ ଆସି ମୋ କ୍ଲାସର ପିଲାମାନଙ୍କଠାରୁ ବୁଝିସାରିଲେଣି କାହାର କ୍ଲାସ ଥିଲା ବୋଲି। ମୁଁ କ୍ଲାସ ଶେଷ କରି ଡିପାର୍ଟମେଣ୍ଟରେ ପହଞ୍ଚିବା ବେଳକୁ ପ୍ରିନ୍ସିପାଲଙ୍କଠୁ ଗୋଟିଏ ଚିଟ୍ ପହଞ୍ଚିସାରିଥିଲା, ଯେଉଁଥିରେ ସାର୍‌ଙ୍କ ତରବରିଆ ହସ୍ତାକ୍ଷରରେ ଇଂରାଜୀରେ ଲେଖାଥିଲା "ଆଇ ଆମ ସରି, ୟୁ ଆର୍ ଫାଇଭ୍ ମିନିଟ୍‌ସ ଲେଟ୍ ଫର୍ ୟୋର୍ କ୍ଲାସ୍।"

ମୁଁ ଚିଟ୍ ଧରି ପ୍ରିନ୍ସିପାଲ୍‌ଙ୍କ ଅଫିସକୁ ତୁରନ୍ତ ଗଲି। ସାର୍‌ଙ୍କୁ ଦେଖାକରିବା ମାତ୍ରେ କହିଲେ, "ଗୋଟିଏ ବ୍ଲକ୍‌ରୁ ଆଉ ଗୋଟିଏ ବ୍ଲକ୍‌କୁ ଯିବାପାଇଁ ରୁଟିନରେ ପାଞ୍ଚମିନିଟ୍ ସମୟର ଫାଙ୍କ ରଖାଯାଏନି। ଏଣିକି ସେଥିପ୍ରତି ସଚେତନ ରହିବ।" ସାର୍‌ଙ୍କ ଆଖି ଚକ୍ରଭଳି ଘୂରୁଥାଏ। କଲେଜ କ୍ୟାମ୍ପସ୍ ଭିତରେ କୌଣସି ବ୍ୟତିକ୍ରମ ବାଦ୍ ଯାଏ ନାହିଁ। ସାର୍‌ଙ୍କର ଧୋବ ଫରଫର ପୋଷାକ ଦୂରରୁ ବି ସମସ୍ତଙ୍କୁ ଚମକାଇ ଦିଏ। ଥରେ ହେଡ୍‌କ୍ୱାର୍ଟର ଛାଡ଼ିବାର ଅନୁମତି ନନେଇ କାଜୁଆଲ୍ ଲିଭ୍ ଦରଖାସ୍ତ କରି ପରିବାର ସହ କଲିକତା ପଳାଇଲି। ଦଶବର୍ଷର ଝିଅ ଆଦ୍ୟାଶା 'ଅପରିଚିତା' ଚଳଚ୍ଚିତ୍ରରେ ଗାଇଥିବା ଗୀତ "ଆଖି ନାଇଁ କାନ ନାଇଁ, ବାଜିଗଲେ ଦୋଷ ନାହିଁ"ର ରେକର୍ଡ଼ିଂ କଲିକତା ଷ୍ଟୁଡ଼ିଓରେ ହେବାର ଥାଏ। କଲିକତା ଉତ୍ପଳ ଭବନରେ ସମସ୍ତେ ଥାଉ। ଡାଇନିଂହଲ୍‌ର ଗୋଟିଏ ଟେବଲ୍‌ରେ ତିନିପିଲାଙ୍କୁ ବସାଇ ଭାତ ଡାଲି ଗୋଳାଇ ସମସ୍ତଙ୍କ ପାଟିକୁ ଗୁଣ୍ଡାଏ ଲେଖାଁ ଖୁଆଇ ଦେଉଥାଏ। ଅନ୍ୟ ଏକ ଟେବଲ୍‌ରେ ପ୍ରିନ୍ସିପାଲ ପ୍ରଫେସର ରାଉତ, ମାଡାମ୍ ସାବିତ୍ରୀ ରାଉତ ଓ ତାଙ୍କ

ପୁଅ ବୋହୂ ଖାଉଥିବାର ଆଖିରେ ପଡ଼ିଗଲା। ମୁଁ ହଡ଼ବଡ଼େଇ ଗଲି ଓ ସାର୍‌ଙ୍କ ଟେବଲ୍ ପାଖକୁ ଉଠିଯାଇ ତାଙ୍କୁ ନମସ୍କାର କଲି। ସାର୍ ପ୍ରଶ୍ନିଳ ଦୃଷ୍ଟିରେ ଚାହିଁଲେ। ମୁଁ କହିଲି, "ଝିଅର ଗୀତ ରେକର୍ଡ଼ିଂ ଅଛି। ସମସ୍ତେ ସେଥିପାଇଁ ଆସିଛୁ।"

"ଓହୋ! ଏତେ ସାନଝିଅ ସିନେମାରେ ଗୀତ ଗାଇବ ? ଭଲ କଥା। ମାତ୍ର ଏତେ ବଡ଼ ବଡ଼ ପିଲାଙ୍କୁ ଏଠି ବସି ଖୋଇଦେଉଛ କାହିଁକି ? ସେମାନେ କ'ଣ ଆଜି ପର୍ଯ୍ୟନ୍ତ ହାତରେ ଖାଇ ଜାଣନ୍ତିନି ?"

"ଖାଉଛନ୍ତି, ମାତ୍ର କେବଳ ଭାତ ଡାଲି। ପରିବାପତ୍ର କିଛି ଖାଉନାହାନ୍ତି ତେଣୁ ମୁଁ ଭାତ ଡାଲି, ପରିବାପତ୍ର ତରକାରୀ ଏକାଠି ଗୋଳେଇ ଖୋଇଦିଏ। ମୁଁ ଖୋଇନଦେଲେ ସେମାନଙ୍କ ପେଟ ମଧ୍ୟ ପୂରେ ନାହିଁ।"

ସାର୍ କହିଲେ, "ଛୁଟି ନେଇ ଆସିଛ ନା ନାହିଁ ? ହେଡ଼କ୍ୱାର୍ଟର ଲିଭିଂ ଅନୁମତି ନେଇଥିବାର ମୁଁ ଜାଣେ ନାହିଁ।"

"ନାଇଁ ଆଜ୍ଞା ଦୁଇ ତିନି ଦିନର କଥା। ତେଣୁ ଜର ହୋଇଛି ବୋଲି କାଜୁଆଲ୍ ଲିଭ୍ ନେଇଛି।"

"ଆଉ ଅକ୍ଷୟ ?" (ମୋ ସ୍ୱାମୀ ମଧ୍ୟ ପ୍ରଫେସର ରାଉତଙ୍କର ଦୁଇବର୍ଷ ପାଇଁ ଛାତ୍ର ଥିଲେ)

"ସେ ମଧ୍ୟ ଛୁଟି ସହ ହେଡ଼କ୍ୱାର୍ଟର ଲିଭିଂ ପରମିଶନ୍ ନେଇ ଆସିଛନ୍ତି।"

"ତୁମେ କାହିଁକି ହେଡ଼କ୍ୱାର୍ଟର ଲିଭିଂ ଅନୁମତି ମାଗି ନାହଁ ? କ'ଣ ଭାବୁଛ ତୁମ ସ୍ୱାମୀଙ୍କ ଚାକିରିଟା ତୁମ ଚାକିରିଠାରୁ ଅଧିକ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ? ଆଚ୍ଛା ତୁମେ ସର୍ଭିସ୍ ରୁଲ୍ ପଢ଼ିଛ କି ନାହିଁ ? ତୁମେ ବି ଜଣେ ଗେଜେଟେଡ୍ ଅଫିସର ବୋଲି ଜାଣ କି ନାହିଁ ? ଆଉ ଏପରି କରିବନି। ହେଡକ୍ୱାର୍ଟର ଲିଭିଂ ପରମିଶନ୍ ନ ନେଇ ରାଜ୍ୟ ବାହାରକୁ ଯିବ ନାହିଁ।"

ସାର୍ ମୋ ଫେରିବାର ପୂର୍ବଦିନ ଫେରିଆସିଥିଲେ। କଲେଜରେ ପହଞ୍ଚିବାମାତ୍ରେ ଆମ ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଫେସର ପୂର୍ଣ୍ଣଚନ୍ଦ୍ର ରାଉତଙ୍କୁ ଡକାଇଲେ। କହିଲେ, "ପ୍ରତିଭା କଲିକତା ଯାଇଛି ବୋଲି ଜାଣନ୍ତି କି ନାହିଁ ? ସେ ହେଡ଼କ୍ୱାର୍ଟର ଲିଭିଂ ପରମିଶନ ନ ନେଇ କିପରି କଲିକତା ଚାଲିଗଲା ?"

ପୂର୍ଣ୍ଣ ସାର୍ କହିଲେ, "ତିନିଦିନ କାଜୁଆଲ୍ ଲିଭ୍ ନେଇଛି। ତାକୁ ଜ୍ୱର ହୋଇଛି ବୋଲି କାଜୁଆଲ ଲିଭ୍ ଦରଖାସ୍ତ ପଠାଇ ଦେଇଥିଲା। ମୁଁ ତାକୁ ପଚାରିବି।"

"ପଚାରିବେ କେବଳ ନୁହେଁ, ତାକୁ ସାବଧାନ କରିଦେବେ ଯେପରି ଭବିଷ୍ୟତରେ ଏପରି ଭୁଲ୍ ନକରେ। ସମସ୍ତେ ସର୍ଭିସ୍ ରୁଲ୍ ପଢ଼ିବା ଉଚିତ୍ ବୋଲି ଡିପାର୍ଟମେଣ୍ଟରେ ନୋଟିସ୍ ଦିଅନ୍ତୁ। ମାତ୍ର ଗୋଟିଏ କଥା ଲକ୍ଷ୍ୟ କଲି- ସି ଇଜ୍ ଏ ଗୁଡ୍ ମଦର। ଓଡ଼ିଶା ଭବନ ଡାଇନିଂହଲ୍‌ରେ ତିନି ପିଲାଙ୍କୁ ଗୁଣ୍ଡା ବଳି ଖୋଇଦେଉଥିଲା।" କିନ୍ତୁ ବିଭାଗୀୟ ମୁଖ୍ୟଙ୍କଠାରୁ ଦି'ପଦ ଶୁଣିବାକୁ ପଡ଼ିଲା।

ଥରେ ନାଳନ୍ଦାର ପ୍ରକାଶକ ଶୁକଦେବ ସାହୁ ଫୋନ୍‌କରି କହିଲେ, "ପ୍ରତିଭାଦେବି ! ଆପଣ କ'ଣ ପ୍ରିନ୍ସିପାଲଙ୍କୁ ଆପଣଙ୍କ ବହି ଉପହାର ଦିଅନ୍ତି ନାହିଁ କି ?"

ମୁଁ କହିଲି, "ସାର୍ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର। ପୁଣି ମୋର ଏବେ ପ୍ରିନ୍ସିପାଲ୍। ତାଙ୍କୁ ମୋ ବହି ଉପହାର ଦେବାଭଳି ଦୁଃସାହସ କେବେ କରି ନାହିଁ।"

"କିନ୍ତୁ କାଲି ପ୍ରଫେସର ରାଉତ ଲୋକ ପଠାଇ ଆପଣଙ୍କର ଗୋଟିଏ ସେଟ୍ ବହି କିଣି ନେଇଛନ୍ତି। ଅର୍ଥାତ୍ ଆପଣଙ୍କ ଲେଖାଲେଖି ସଂପର୍କରେ ସେ ଅବଗତ।"

ମୁଁ କେବଳ ବିସ୍ମିତା ହେଲି ନାହିଁ, ଶଙ୍କିତା ମଧ୍ୟ ହେଲି। ସାର୍ କାହିଁକି ମୋ ବହି କିଣି ନେଲେ ବୋଲି ଚିନ୍ତାରେ ପଡ଼ିଲି। ପ୍ରାୟ ପନ୍ଦରଦିନ ପରେ ପ୍ରିନ୍ସିପାଲ୍‌ଙ୍କ ନିକଟରୁ ଡକରା ଆସିଲା। ସାମ୍ନା ଚେୟାରରେ ବସିବା ପାଇଁ ଅନୁମତି ମିଳିବା ପରେ ଚୁପ୍‌ଚାପ୍ ବସିରହିଲି। ପ୍ରଫେସର ରାଉତ ବିନା ଗୌରଚନ୍ଦ୍ରିକାରେ କହିଲେ, "ତୁମେ ଲେଖାଲେଖି କରୁଛ ଜାଣିଥିଲି, କାରଣ ମୋର କେମିଷ୍ଟ୍ରି ଅଧ୍ୟାପିକା ବୋହୂ ତୁମ ବହି ପଢ଼େ। ତୁମର କେତେଖଣ୍ଡ ବହି ତା' ହାତରେ ଦେଖିଥିଲି। ଏତେ ଗୁରୁତ୍ୱ ଦେଇନଥିଲି। ଏବେ ତୁମ ନାମରେ ଏକ ଅଭିଯୋଗ ଆସିଲା। ଲାଇବ୍ରେରୀ ଭେରିଫିକେଶନ ସମୟରେ ଦାୟିତ୍ୱରେ ଥିବା ମାଡାମ୍ ଦେଖିଲେ ଯେ ପାଠ୍ୟପୁସ୍ତକ ଅପେକ୍ଷା ତୁମ ବହି ପିଲାମାନେ ଅଧିକ ନେଉଛନ୍ତି ଏବଂ ସେହି କାରଣରୁ ଛାତ୍ରଛାତ୍ରୀମାନେ ପାଠରେ ମନଯୋଗୀ ହେଉନାହାନ୍ତି ଓ ଲକ୍ଷ୍ୟଭ୍ରଷ୍ଟ ହେଉଛନ୍ତି। ପ୍ରତିଭା ରାୟର ବହିଗୁଡ଼ିକ ଲାଇବ୍ରେରିରେ ରହିବା ଅନୁଚିତ୍ ବୋଲି ସେ କହିଲେ। ଅଭିଯୋଗର ସତ୍ୟାସତ୍ୟ ଜାଣିବା ପାଇଁ ତୁମର ଗୋଟିଏ ସେଟ୍ ବହି କିଣି ମାଡାମ୍ ରାଉତ (ପ୍ରିନ୍ସିପାଲଙ୍କ ପତ୍ନୀ ପ୍ରଫେସର ସାବିତ୍ରୀ ରାଉତ)ଙ୍କୁ ଦେଇଥିଲି ପଢ଼ାପଢ଼ି କରି ତୁମ ବହିଗୁଡ଼ିକର ମୂଲ୍ୟାୟନ କରିବା ପାଇଁ। ସେ ନିଜେ କିଛି ବହି ପଢ଼ିଲେ ଓ ଶୈଳବାଳା ମହିଳା ମହାବିଦ୍ୟାଳୟ ଅଧ୍ୟାପିକାମାନଙ୍କ ମତ ମଧ୍ୟ ଲୋଡ଼ିଥିଲେ। ସମସ୍ତେ ତୁମ ପୁସ୍ତକର ପ୍ରଶଂସା କରିଥିଲେ। ସେଥିରେ ପଥଭ୍ରଷ୍ଟ ହେବା ପରିବର୍ତ୍ତେ ସୁସ୍ଥ ସମାଜ ଗଠନର ସନ୍ଦେଶ ଅଛି ବୋଲି ମାଡାମ୍

ରାଉତ କହିଲେ। ତୁମେ ବିଜ୍ଞାନର ଛାତ୍ରୀ ଓ ଶିକ୍ଷାଶାସ୍ତ୍ରରେ ଅଧ୍ୟାପିକା। ତେଣୁ ମୁଁ ତୁମ ଲେଖାକୁ ଗମ୍ଭୀରତାର ସହ ବିଚାର କରୁନଥିଲି। ମାତ୍ର ଶ୍ରୀମତୀ ରାଉତଙ୍କ ସମୀକ୍ଷା ମୋର ତୁମ ପ୍ରତି ଶ୍ରଦ୍ଧା ଜାଗ୍ରତ କରୁଛି। ଲେଖାଲେଖି ଜାରି ରଖ।"

ସାର୍‌ଙ୍କୁ କୃତଜ୍ଞତା ଜଣାଇଲି। ସାର୍ ପୁନର୍ବାର ପ୍ରଶ୍ନ କଲେ, "ତୁମର ତିନି ପିଲାଙ୍କ ଦାୟିତ୍ୱ ତୁମେ ବହନ କରିଛ। ତା' ସହ ଅଧ୍ୟାପନା, ରିସର୍ଚ୍ଚ କରୁଛ। ଲେଖୁଛ କେତେବେଳେ, କ୍ଲାସ ପାଇଁ ନିଜକୁ ପ୍ରସ୍ତୁତ କରୁଛ କେତେବେଳେ ?"

ମୁଁ କହିଲି, "ମୋ ବାପା ଜଣେ ଶିକ୍ଷକ ଥିଲେ। ସେ କହୁଥିଲେ- ପ୍ରତିଦିନ କ୍ଲାସ ନେବାପାଇଁ ପ୍ରସ୍ତୁତି ଉପରେ ଗୁରୁତ୍ୱ ଦେବୁ। ଯେଉଁଦିନ କ୍ଲାସ ନେବା ପାଇଁ ପ୍ରସ୍ତୁତ ହୋଇନଥିବୁ ସେଦିନ ବରଂ ଛୁଟି ନେଇଯିବୁ କିନ୍ତୁ କ୍ଲାସରେ ପିଲାଙ୍କୁ ଠକିବୁ ନାହିଁ। ବୃତ୍ତି ଓ ପ୍ରବୃତ୍ତିର ଦ୍ୱନ୍ଦ୍ୱ ଅନିର୍ବାର୍ଯ୍ୟ। ମାତ୍ର ପ୍ରବୃତ୍ତି ଯଦି ତୁମର ସ୍ୱପ୍ନ ହୁଏ ବୃତ୍ତି ହେଉଛି ତୁମର ଧର୍ମ। ପ୍ରଥମେ ଧର୍ମ ରକ୍ଷା ପରେ ସ୍ୱପ୍ନଦେଖା। ଧର୍ମ ଓ ସ୍ୱପ୍ନ କେହି କାହାର ବାଧକ ହେବା ଉଚିତ୍ ନୁହେଁ।" ବାପାଙ୍କ କଥା ମୁଁ ସ୍ମରଣରେ ରଖିଛି। ପ୍ରତିଦିନ ରାତିରେ ସବୁ କାମ ସାରି ପ୍ରଥମେ ପରଦିନ କ୍ଲାସ ନେବାପାଇଁ ପ୍ରସ୍ତୁତ କରେ। ତା'ପରେ ଲେଖିବା ପାଇଁ ପୂର୍ବପ୍ରସ୍ତୁତି ଥିଲେ ଲେଖେ। ଲେଖିବା ପାଇଁ ମଧ୍ୟ ନିରବଚ୍ଛିନ୍ନ ପୂର୍ବପ୍ରସ୍ତୁତି ଆବଶ୍ୟକ। ପ୍ରାୟ ଦୁଇଟା ରାତି ପୂର୍ବରୁ ମୁଁ ଶୁଏ ନାହିଁ। ପୁଣି ସକାଳ ଛ'ରେ ଉଠି ପିଲାମାନଙ୍କୁ ପ୍ରସ୍ତୁତ କରି ସ୍କୁଲରେ ଛାଡ଼େ। ଲେଖାଲେଖି ପାଇଁ କ୍ଲାସ ପ୍ରସ୍ତୁତି ଆଦୌ ବାଧକ ହୁଏ ନାହିଁ।

ପ୍ରଫେସର ରାଉତ କହିଲେ, "ତୁମର ଲେଖା ପାଇଁ ତୁମକୁ ଡକାଇନଥିଲି, ବୁଝିବା ପାଇଁ ଡାକିଥିଲି କେତେବେଳେ ଏତେ ବହି ଲେଖିଲ ? ବୃତ୍ତି ନିର୍ବାହରେ ଅବହେଳା ହେଉନାହିଁ ତ ? ସେଇଟା ଆଦୌ ଗ୍ରହଣୀୟ ନୁହେଁ। ତେବେ ଏତିକି ଜାଣିଲି ତୁମେ କଠିନ ପରିଶ୍ରମ କରିପାର ଓ ତୁମ ବ୍ୟକ୍ତିତ୍ୱରେ ଜଣେ ଆଦର୍ଶ ଶିକ୍ଷକଙ୍କ ସଂସ୍କାରର ଗଭୀର ପ୍ରଭାବ ରହିଛି। ମୋର ବହୁ ଛାତ୍ରଛାତ୍ରୀ ଏ କଲେଜରେ ଏବେ ଅଧ୍ୟାପନା କରନ୍ତି, ମାତ୍ର ତୁମେ ମୋର ଏକମାତ୍ର ଛାତ୍ରୀ ଯିଏ ସାହିତ୍ୟ କ୍ଷେତ୍ରରେ ମଧ୍ୟ ପ୍ରତିଷ୍ଠା ଲାଭକରିଛ।"

ମୁଁ ରେଭେନ୍ସା କଲେଜରେ ଅଧ୍ୟାପନା କରୁଥିବା ସମୟରେ ମୋର ଅନ୍ତରଙ୍ଗ ସହପାଠିନୀ ଅତ୍ୟନ୍ତ ମେଧାବିନୀ ରାନୁ ମିଶ୍ର ପ୍ରଫେସର ରାଉତଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ରସାୟନ ବିଦ୍ୟାରେ ପିଏଚ୍‌ଡି ଗବେଷଣା କରୁଥିଲେ। ମୋର କ୍ଲାସ୍ ନଥିବା ସମୟରେ ମୁଁ ରସାୟନ ବିଭାଗକୁ ଚାଲିଯାଉଥିଲି ରାନୁର ଆକର୍ଷଣରେ। ଦୁହେଁ ଗଳ୍ପ କରୁଥିଲୁ। ବେଳେବେଳେ ପ୍ରଫେସର ରାଉତ ଡିପାର୍ଟମେଣ୍ଟକୁ ଆସିଲେ ଆମକୁ ଗଳ୍ପ କରୁଥିବାର ଦେଖନ୍ତି। ଥରେ ଆମକୁ ଗଳ୍ପ କରୁଥିବାର ଦେଖି କହିଲେ, "ତୁମ ଦୁଇଜଣଙ୍କର ବୋଧହୁଏ ଆଉ କିଛି କାମଦାମ ନାହିଁ। ରାନୁ! ତୁମେ ବୋଧେ କିଛି ଗବେଷଣା କରୁନାହଁ। ତୁମ ଦୁହିଁଙ୍କୁ ଆଉ ଦିନେ ଏଠି ଗଳ୍ପ କରୁଥିବାର ଦେଖିଲେ ମୁଁ ଶାସ୍ତିବିଧାନ କରିବି।" ଆମେ ଦୁହେଁ ଏତେ ବର୍ଷ ପରେ ମଧ୍ୟ ସାର୍‌ଙ୍କୁ ଭୟ କରୁଥିଲୁ ଏବଂ ତା' ପରଠାରୁ ରାନୁ ଅବସର ସମୟରେ ମୋ ପାଖକୁ ଆମ ଡିପାର୍ଟମେଣ୍ଟକୁ ଆସୁଥିଲା। କିନ୍ତୁ ବେଶୀ ସମୟ ରହୁନଥିଲା। କାରଣ ପ୍ରଫେସର ରାଉତଙ୍କ ନଜରକୁ ଏକଥା ଆସିବା ସେ ଚାହୁଁନଥିଲା।

ପ୍ରଫେସର ରାଉତ ଡିପିଆଇ ପଦରୁ ଅବସର ନେବା ପରେ କଟକ ଶୈଳବାଳା ମହିଳା କଲେଜ ଅଧ୍ୟକ୍ଷା, ପତ୍ନୀ ସାବିତ୍ରୀ ରାଉତଙ୍କ ସରକାରୀ ଘରେ ରହିଲେ। ଆମେ ସେତେବେଳେ ତୁଳସୀପୁର ବିଜୁ ପଟ୍ଟନାୟକ ଛକରେ ନିଜ ଘରେ ରହୁଥାଉ। ଶ୍ରୀ ରାୟ ପ୍ରାତଃଭ୍ରମଣରେ ଚଣ୍ଡୀଛକ ପର୍ଯ୍ୟନ୍ତ ଯାଇଥାନ୍ତି। ଥରେ ପ୍ରଫେସର ରାଉତଙ୍କ ସହ ଦେଖା ହେଲା। ସାର୍ ମଧ୍ୟ ସେହି ରାସ୍ତାରେ ପ୍ରାତଃଭ୍ରମଣ କରୁଥିଲେ। ସାର୍‌ଙ୍କର ଅଦ୍ଭୁତ ସ୍ମରଣଶକ୍ତି ସଂପର୍କରେ ସମସ୍ତେ ଅବଗତ। ଶ୍ରୀ ରାୟଙ୍କୁ ନାମ ଧରି ଡାକିଲେ ଓ ମୋ ସଂପର୍କରେ ପଚାରିଲେ। ଆମେ ତୁଳସୀପୁରଠାରେ ରହୁଛୁ ଶୁଣି କହିଲେ, "ପ୍ରତିଭାର ଗଳ୍ପ ବହି ଖଣ୍ଡେ ଦି'ଖଣ୍ଡ ମତେ ଆଣି ଦିଅ। ଶ୍ରୀମତୀ ରାଉତ ପ୍ରତିଭାର ଗଳ୍ପକୁ ତାରିଫ କରନ୍ତି। ମୋ ହାତରେ ଏବେ ଢେର୍ ସମୟ।" ମୋର ଏକ ଗଳ୍ପ ସଂକଳନ ସାର୍‌ଙ୍କୁ ଦେଲେ ଶ୍ରୀରାୟ। ପ୍ରଫେସର ରାଉତ ଏକ ସପ୍ତାହ ଭିତରେ ବହିଟି ଶେଷ କରିଦେଇ ଆଉ ଖଣ୍ଡେ ବହି ମାଗିଲେ। କହିଲେ, "ପ୍ରତିଭାର ଗଳ୍ପ ଖୁବ୍ ଭଲ ଲାଗିଲା। ପ୍ରତିଭା ଲେଖା ଜାରି ରଖିଲେ ତାକୁ ନିଶ୍ଚୟ ଦିନେ ନୋବେଲ୍ ପ୍ରାଇଜ୍ ମିଳିବ।"

ଶ୍ରୀ ରାୟଙ୍କଠାରୁ ସାର୍‌ଙ୍କ ମନ୍ତବ୍ୟ ଶୁଣି ମୁଁ ଖୁସି ହେଲି। ସାର୍‌ଙ୍କ ତୁଣ୍ଡରେ ମତେ ନୋବେଲ୍ ପ୍ରାଇଜ୍ ମିଳିବା ମୋ ପାଇଁ ନୋବେଲ୍ ପ୍ରାଇଜ୍ ପାଇବା ସହ ତୁଳନୀୟ ଥିଲା। ପ୍ରଫେସର ରାଉତଙ୍କ ଦେହାନ୍ତ ଖବର ବେଶ୍ ଦୁଃଖଦ ଥିଲା କିନ୍ତୁ ପ୍ରଫେସର ରାଉତଙ୍କ ଭଳି ଅନ୍ତର୍ଜାତୀୟ ସ୍ତରରେ ପ୍ରତିଷ୍ଠିତ ଗବେଷକ ଓ ସୁପରିଚିତ ବୈଜ୍ଞାନିକ ବିଶେଷକରି ଜଣେ ଛାତ୍ରବତ୍ସଳ ଅଧ୍ୟାପକଙ୍କର ମୃତ୍ୟୁ ନାହିଁ। ସେ ମୃତ୍ୟୁରେ ମଧ୍ୟ ଅମର। ■■■

'ଆଖ୍ୟାୟିକା'
୨୭ ଗଜପତି ନଗର, ଭୁବନେଶ୍ୱର-୭୫୧୦୦୫
ତା.୦୧.୧୧.୨୦୨୩

ବିଖ୍ୟାତ ବୈଜ୍ଞାନିକ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ସ୍ମରଣେ

ପ୍ରଫେସର ଡକ୍ଟର ଗୋକୁଳାନନ୍ଦ ଦାସ

ମୁଁ ରେଭେନ୍ସା କଲେଜରେ ଛାତ୍ର ଥିବା ସମୟରେ ପ୍ରଫେସର ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ପତ୍ନୀ ଡକ୍ଟର ସାବିତ୍ରୀ ରାଉତ ଆମର ସଂସ୍କୃତ ଟିଚର ଥିଲେ। ରେଭେନ୍ସାରୁ ଗଣିତରେ ସ୍ନାତକୋତ୍ତର ଉପାଧି ଲାଭ କରି ଗଙ୍ଗାଧର ମେହେର କଲେଜରେ ଅଧ୍ୟାପକ ଭାବେ ଯୋଗଦେଲି ୧୯୬୦ ମସିହାରେ। ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ସେହି ସମୟରେ ୧୯୬୮ ମସିହାରେ ପ୍ରିନ୍ସିପାଲ ହୋଇ ଆସିଲେ ଗଙ୍ଗାଧର ମେହେର କଲେଜକୁ। ଅବଶ୍ୟ ଏହା ପୂର୍ବରୁ ସେ ରେଭେନ୍ସା କଲେଜ୍‌ରେ ରସାୟନ ଶାସ୍ତ୍ର ବିଭାଗରେ ଅଧ୍ୟାପନା କରୁଥିବା ସମୟରେ ମୁଁ ତାଙ୍କୁ ଜାଣିଥିଲି। ପରେ ସେ ମୋର ସହପାଠୀ ଡକ୍ଟର ଗୋପବନ୍ଧୁ ବେହେରାଙ୍କର ଗବେଷଣା ଗୁରୁ ହୋଇଥିଲେ।

୧ ଜାନୁଆରୀ ୧୯୬୭ରେ ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟର ସୃଷ୍ଟିପରେ ରିଡର ପୋଷ୍ଟ ପାଇଁ ମନୋନୀତ ହୋଇ କୌଣସି କାରଣରୁ ସେ ପୋଷ୍ଟକୁ ପ୍ରତ୍ୟାଖାନ କରି ମୁଁ ଦିଲ୍ଲୀ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ରିଡର ପଦ ନିମନ୍ତେ ଏକ ପତ୍ର ପାଇବା ପରେ ସାର୍‌ଙ୍କୁ ସାକ୍ଷାତ କଲି। ସେ କହିଲେ- “ତମେ ନିଶ୍ଚିନ୍ତ ହୋଇ ଯାଇ ଜଏନ୍ କର। ତମ ପାଇଁ ମୁଁ ସରକାରଙ୍କୁ ସୁପାରିସ୍ କରି ଲେଖିବି”। ଦିଲ୍ଲୀ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ରହିଯିବା ମୋର ଇଚ୍ଛା ନଥିଲା। କୌଣସିମତେ ଓଡ଼ିଶାକୁ ଫେରିବାର ଇଚ୍ଛା ତାଙ୍କ ନିକଟରେ ପ୍ରକଟ କରିଥିଲି। ସାର୍‌ଙ୍କର ଆଶ୍ୱାସନା ଭରା କଥାରେ ମୁଗ୍ଧ ହୋଇଥିଲି। ଅବଶ୍ୟ ଦିଲ୍ଲୀରେ ଥିବା ସମୟରେ ମୁଁ ପୁନରାୟ ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟକୁ ରିଡର ହୋଇ ଆସିଲି ବିନା ସାକ୍ଷାତକାରରେ। ମୋର ଅନୁପସ୍ଥିତିରେ ମୋର ରିସର୍ଚ୍ଚ ପେପର୍ ଅନୁସାରେ ମୋତେ ଚୟନ କରାଯାଇଥିଲା ଯଥେଷ୍ଟ ଇନ୍‌କ୍ରିମେଣ୍ଟ ସହିତ।

ପ୍ରଫେସର ତ୍ରିବିକ୍ରମ ପତିଙ୍କ ଗବେଷଣା ଛାତ୍ର ଥିବା ସମୟରେ ମୋର ଅନେକ ଗବେଷଣା ନିବନ୍ଧ ଅନ୍ତରାଷ୍ଟ୍ରୀୟ ଜର୍ଣ୍ଣାଲ୍ ମାନଙ୍କରେ ଛପା ହୋଇଥିଲା ଯାହାଫଳରେ କାନାଡ଼ାର ମାନିତୋବା ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ପୋଷ୍ଟ-ଡକ୍ଟରାଲ ଫେଲୋ ଭାବରେ ମନୋନୀତ ହେଲି ଏବଂ ସେହି ଏକା ସମୟରେ ଲଣ୍ଡନ୍ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ କମନ୍‌ୱେଲ୍‌ଥ ଫେଲୋ ଭାବରେ ମଧ୍ୟ ମନୋନୀତ ହେଲି। ସାର୍‌ଙ୍କୁ ଦେଖାକରି ତାଙ୍କର ମତାମତ ଲୋଡ଼ିଲି। ସାର୍ କହିଲେ – “କାନାଡ଼ା ଗଲେ ଅପର୍ଯ୍ୟାପ୍ତ ଅର୍ଥ ଅର୍ଜନ କରିବ- ଲଣ୍ଡନ ଗଲେ ଅଗାଧ ଜ୍ଞାନ ଅର୍ଜନ କରିବ”। ଚଏସ୍ ତମର। ଉତ୍ତର ପାଇଗଲି ମୋ ପ୍ରଶ୍ନର ଏବଂ ଲଣ୍ଡନ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ଯୋଗଦେଲି।

ଲଣ୍ଡନରୁ ଫେରି ଦିଲ୍ଲୀ ବିଶ୍ୱବିଦ୍ୟାଳୟ, ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ, କାଲିଫର୍ଣିଆର ସାନ୍ତା ବାର୍‌ବରା ବିଶ୍ୱବିଦ୍ୟାଳୟ ଓ ପରିଶେଷରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ଯୋଗ ଦେଲି ୧୯୭୯ ମସିହାରେ।

ମୁଁ ଜଏନ୍ କରିବାର କିଛି ଦିନ ପରେ ପ୍ରଫେସର ରାଉତ କୁଳପତି ହୋଇ ଆସିଲେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟକୁ। ସେ ପରିଜା ଲାଇବ୍ରେରୀର ପରିଚାଳନା ଦାୟିତ୍ୱ ମୋତେ ଅର୍ପଣ କଲେ। ଗଣିତ ପ୍ରଫେସର ଥିବା ସମୟରେ ଗଣିତ ବିଭାଗର ଦାୟିତ୍ୱ ସହ ପରିଜା ଲାଇବ୍ରେରୀର ଦାୟିତ୍ୱ ମଧ୍ୟ ମତେ ତୁଲାଇବାକୁ ପଡ଼ିଲା। ସେହି ସମୟରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ ବହୁମୁଖୀ ଉନ୍ନତି ସାଧନ କରି ପାରିଥିଲା। ଅସଜଡ଼ା ଲାଇବ୍ରେରୀ ତାଙ୍କ ସମୟରେ ସଜଡ଼ା ହୋଇ ପାରିଥିଲା। ■■■

ପ୍ରାକ୍ତନ କୁଳପତି, ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ
୧୭୭, ଧର୍ମବିହାର, ଖଣ୍ଡଗିରି, ଭୁବନେଶ୍ୱର
ଫୋନ୍-୯୪୩୭୦୩୫୧୨୧(WhatsApp)

ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ : ମୋ ବ୍ୟକ୍ତିଗତ ଅନୁଭବର କଥା

ପ୍ରଫେସର ଡକ୍ଟର ଗୋପବନ୍ଧୁ ବେହେରା

ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମ ଶତବାର୍ଷିକୀ ଉପଲକ୍ଷେ ତାଙ୍କର ଅମର ଆତ୍ମା ପ୍ରତି ମୋର ଗଭୀର ଶ୍ରଦ୍ଧାଞ୍ଜଳି ହେଉଛି ଏହି ଆଲେଖ୍ୟ। ତାଙ୍କର ଗବେଷକ ଜୀବନ, ଶିକ୍ଷକ ଜୀବନ, ପ୍ରଶାସନିକ ଜୀବନ, ସମର୍ଥ ସଂଗଠକ ଜୀବନ ଇତ୍ୟାଦି ବିଷୟରେ ମୋର ଏକ ଲେଖାକୁ ତାଙ୍କର ଏକମାତ୍ର ପୁତ୍ର ବିଶିଷ୍ଟ ପରିବେଶ ବିଜ୍ଞାନୀ ପ୍ରଫେସର ସ୍ୱୟଂପ୍ରକାଶ ରାଉତ ତାଙ୍କ ଦ୍ୱାରା ପ୍ରକାଶିତ, Life of a Karmayogiରେ ଅତୀତରେ ସ୍ଥାନ ଦେଇଥିବାରୁ ତାଙ୍କ ପ୍ରତି ମୁଁ ମୋର କୃତଜ୍ଞତା ଜ୍ଞାପନ କରୁଛି।

ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ରସାୟନ ବିଜ୍ଞାନ ସମ୍ମାନ ସହିତ ଚତୁର୍ଥ ବର୍ଷରେ ପଢ଼ିବା ସମୟରେ ଡକ୍ଟର ରାଉତଙ୍କ ସହ ସାକ୍ଷାତ ହୁଏ ମୋର। ପୂର୍ବରୁ ତାଙ୍କର ପାଠ ପଢ଼େଇବା ଶୈଳୀ, ଶୃଙ୍ଖଳିତ ବ୍ୟକ୍ତିତ୍ୱ, ଅସାଧାରଣ ସ୍ମୃତିଶକ୍ତି ସଂପନ୍ନ ବ୍ୟକ୍ତିତ୍ୱ ଓ ଛାତ୍ରବତ୍ସଳତା ଆଦି ବିଷୟରେ ଅନେକ କଥା ଶୁଣିଥିଲି। ସାଧାରଣ ଉଚ୍ଚତା ବିଶିଷ୍ଟ ସୁନ୍ଦର ପୋଷାକ ପରିଚ୍ଛଦ ପରିହିତ ଜଣେ ପତଳା ଅଧ୍ୟାପକ ପ୍ରଥମ ଥର ଆମ ଶ୍ରେଣୀଗୃହକୁ ପଶି ମୋ ନାମ ଧରି ଡାକିଲେ। ମୁଁ ଡରିଡରି ଛିଡ଼ା ହେଲି। ସେ ହସି କରି କହିଲେ, ରସାୟନ ବିଜ୍ଞାନ ସମ୍ମାନର ତୃତୀୟ ବର୍ଷ ପରୀକ୍ଷାରେ ତୁମେ ସର୍ବାଧିକ ମାର୍କ ରଖିଛ। ତାକୁ ବଜାୟ ରଖ। ଆମେରିକାରୁ ଫେରି ପ୍ରଥମେ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କ ସମ୍ବନ୍ଧରେ ଜାଣିବାକୁ ଚାହିଁଥିବେ ନିଶ୍ଚୟ । ଏଭଳି ଭାବରେ ଜଣେ ବିଶିଷ୍ଟ ନାମୀ ଅଧ୍ୟାପକଙ୍କ ଦ୍ୱାରା ଚିହ୍ନିତ ହେବାରୁ ମୋତେ ଖୁସି ଲାଗିଲା। ପରେ ତାଙ୍କର ଅନନ୍ୟ ପାଠ ପଢ଼େଇବା ଶୈଳୀ, ଚରମ ଉଦାରତା ଓ ଅସାଧାରଣ ଚୁମ୍ବକୀୟ ବ୍ୟକ୍ତିତ୍ୱ ମୋତେ ତାଙ୍କ ଆଡ଼କୁ ବହୁଳ ଭାବରେ ଆକର୍ଷିତ କରିଥିଲା। ଯଦିଓ ସେ ମଝିରେ ମଝିରେ ଖନଉଥିଲେ (Stammering), ଏହି ଅଭାବ କେବେ ମଧ୍ୟ ତାଙ୍କୁ ହତୋତ୍ସାହିତ କରି ନଥିଲା।

ସେ ସମୟରେ ପାଟଣା ବିଶ୍ୱବିଦ୍ୟାଳୟ, ବିହାର ସହିତ ଓଡ଼ିଶାର ଶିକ୍ଷାନୁଷ୍ଠାନଗୁଡ଼ିକ ସହବନ୍ଧିତ ହୋଇଥିବା ଯୋଗୁଁ ସେ ସେହି ବିଶ୍ୱବିଦ୍ୟାଳୟର ପାଟଣା ମହାବିଦ୍ୟାଳୟରେ ଏମ୍.ଏସ୍‌ସି. ପଢ଼ି କୃତକାର୍ଯ୍ୟ ହୋଇ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ଅଧ୍ୟାପକ ହେଲେ। କଥା କହିବା ବେଳେ ତାଙ୍କର ଖନେଇବା ସମସ୍ୟା ଥିବାରୁ ତାଙ୍କ ଚାକିରୀକୁ ସ୍ଥାୟୀ କରିବା ପାଇଁ ତତ୍‌କାଳୀନ ଅଧ୍ୟକ୍ଷ (ବୋଧହୁଏ ପ୍ରଫେସର ପରିଜା) ଶ୍ରେଣୀଗୃହର ବାହାରେ ଠିଆ ହୋଇ ତାଙ୍କର ପାଠ ପଢ଼େଇବା ଶୈଳୀକୁ ଅତି ନିକଟରୁ ନିରୀକ୍ଷଣ କରି ଆନନ୍ଦ ପ୍ରକାଶ କରିଥିଲେ। ତାଙ୍କୁ ଚାକିରୀରେ ସ୍ଥାୟୀତ୍ୱ ମିଳିଲା। ତାଙ୍କର ସହପାଠୀ ପ୍ରଫେସର ପ୍ରସନ୍ନ କୁମାର ଦାସଙ୍କ ସହିତ ଟେନିସ୍ ଖେଳରେ ସେ କୃତିତ୍ୱ ଅର୍ଜନ କରିଥିଲେ। କେବଳ ଖେଳରେ ନ ମାତି କିଛି ଗବେଷଣା ମଧ୍ୟ କରିବା ପାଇଁ ବିଭାଗୀୟ ମୁଖ୍ୟ ଓ ବିଶିଷ୍ଟ ଗବେଷକ ପ୍ରଫେସର ବଳଭଦ୍ର ପ୍ରସାଦ ତାଙ୍କୁ ପ୍ରବର୍ତ୍ତାଇ ଫସ୍‌ଫେଟ୍ ପୃଥକୀକରଣ ପାଇଁ ଜିରକୋନିୟମ୍ ନାଇଟ୍ରେଟ୍‌ର ବ୍ୟବହାରର ସମ୍ଭାବନାକୁ ପରୀକ୍ଷା କରିବା ପାଇଁ କହିଲେ। ଡକ୍ଟର ରାଉତ ସେହି ବିଷୟରେ କାମ କରି ପ୍ରଥମ ଗବେଷଣା ନିବନ୍ଧ ଛପାଇ ପାରିଥିଲେ।

ରେଭେନ୍ସା କଲେଜର ଜୈବରସାୟନ ବିଜ୍ଞାନର ପ୍ରଫେସର ସର୍ବାଣୀ ସହାୟ ଗୁହସରକାରଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ଗବେଷଣା କରି ସେ ପିଏଚ୍.ଡ଼ି ଡିଗ୍ରୀ ହାସଲ କଲେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାୟରୁ। ସେ ଆଉ ପଛକୁ ନ ଫେରି ସ୍ୱାଧୀନ ଭାବରେ ଗବେଷଣା କରିବା ପାଇଁ ଅଣ୍ଟା ଭିଡ଼ିଲେ। ତାଙ୍କର ପ୍ରଥମ ପିଏଚ୍.ଡ଼ି. ଛାତ୍ର ଥିଲେ ଶ୍ରୀହୃଷୀକେଶ ପୁଜାରୀ (କୁରୁକ୍ଷେତ୍ର ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ପ୍ରଫେସର ଭାବରେ ଅବସରଗ୍ରହଣ)। ଅନେକ ବାଧାବିଘ୍ନ ଆସିଲା। ଏହି ବାଧାବିଘ୍ନ ଗୁଡ଼ିକୁ ଭ୍ରୂକ୍ଷେପ ନକରି ଡକ୍ଟର ରାଉତ ଆଗେଇ ଚାଲିଲେ। ନିଜର ସ୍ୱଳ୍ପ ଦରମାରୁ ଅନେକ କାଚ ସାମଗ୍ରୀ, ଲୌହ ସାମଗ୍ରୀ, ରାସାୟନିକ ଯୌଗିକ ପଦାର୍ଥ ଆଦି କିଣିଲେ। ୧୯୬୦ ମସିହାରେ ମୁଁ ତାଙ୍କ

ଅଧୀନରେ ଗବେଷଣା କଲାବେଳେ ଏଭଳି ଅନେକ ସାମଗ୍ରୀ ବ୍ୟବହାର କରିବାର ସୁଯୋଗ ପାଇଥିଲି। ଗବେଷକ ପୁଜାରୀଙ୍କୁ ମାସକୁ ମିଳୁଥିଲା ମାତ୍ର ଏକଶତ ଟଙ୍କା। ଅନ୍ୟତ୍ର ଗବେଷଣା କରିବା ପାଇଁ ମାସିକ ଦୁଇଶତ ପଚଶ ଟଙ୍କାର ବୃତ୍ତିକୁ ସେ ପ୍ରତ୍ୟାଖ୍ୟାନ କରିଥିଲେ। ଡକ୍ଟର ରାଉତଙ୍କ ଗବେଷଣା ସ୍କୁଲରେ ଯୋଗଦେଲେ ଓଡ଼ିଶାର ସ୍ୱନାମଧନ୍ୟ ବିଜ୍ଞାନୀ ତଥା ଜନପ୍ରିୟ ବିଜ୍ଞାନ ଲେଖକ ପ୍ରଫେସର ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର। ସେମାନେ କାମ କଲେ ମରକ୍ୟୁରିଆଲ୍ ଥାୟାଜୋଲ ଗୁଡ଼ିକର ଔଷଧୀୟ ଗୁଣ ଉପରେ। ରେଭେନ୍‌ସା ମହାବିଦ୍ୟାଳୟର ଗବେଷଣାଗାରରୁ ଗବେଷଣା ନିବନ୍ଧ ୧୯୫୨ ମସିହାରେ ପ୍ରକାଶ ପାଇଲା ଆମେରିକାନ୍ କେମିକାଲ୍ ସୋସାଇଟିର ଜର୍ନାଲ୍ (JACS)ରେ। ସମଗ୍ର ଭାରତ ଜାଣିଲା ତାଙ୍କୁ ଓ ତାଙ୍କର ବିଜ୍ଞାନାଗାରକୁ। ଏହି ଦୁଇଜଣ ପଥ ପ୍ରଦର୍ଶକ ହେଲେ ଭବିଷ୍ୟତର ରାସାୟନିକ ଗବେଷଣା ସ୍କୁଲ ସ୍ଥାପନାରେ। ଥାୟାଜୋଲ୍ ଗବେଷଣା ସହିତ ଡକ୍ଟର ରାଉତ ସାୟାନିନ୍ ଡାଇଜ୍, ଜୈବରସାୟନ ପ୍ରକ୍ରିୟାର କ୍ରିୟାଶୀଳତା (Organic Reaction Mechanism), ପ୍ରାକୃତିକ ଉତ୍ପାଦ (Natural Products), କ୍ୱାଣ୍ଟମ୍ ରସାୟନ ବିଜ୍ଞାନ, ପଲିମର୍ ବିଜ୍ଞାନ ବିଷୟରେ ଅନେକ ପ୍ରବନ୍ଧ ପ୍ରକାଶ କରି ଭାରତର ଜଣେ ଖ୍ୟାତନାମା ରସାୟନିବତ୍ ହୋଇଗଲେ। ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡ଼ର ଅଧକ୍ଷ ଥିବା ସମୟରେ ପରିବେଶ ବିଜ୍ଞାନରେ ମଧ ଗବେଷଣା କରି ପ୍ରବନ୍ଧ ପ୍ରକାଶ କରିଛନ୍ତି। ସ୍ୱାଧୀନ ଭାବରେ ଗବେଷଣା କରିବା ଜିଦ୍ ତାଙ୍କୁ ଉଚ୍ଚସ୍ଥାନକୁ ନେଇଗଲା।

ଅନେକ ଛାତ୍ରଛାତ୍ରୀ ତାଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ପିଏଚ୍.ଡ଼ି. ପାଇ ଦେଶ ବିଦେଶର ବିଭିନ୍ନ ସ୍ଥାନରେ ପ୍ରତିଷ୍ଠିତ ହେଲେ। ଓଡ଼ିଶାର ଶିକ୍ଷାୟତନଗୁଡ଼ିକ ବିଷୟରେ ଅନେକ ତଥ୍ୟ ସଂଗ୍ରହ କରି ପୁସ୍ତକ ପ୍ରକାଶ କରିଛନ୍ତି ଡକ୍ଟର ରାଉତ। ଗଭୀର ଆତ୍ମବିଶ୍ୱାସ ଓ ସକାରାତ୍ମକ ବ୍ୟକ୍ତି ଥିଲେ ସାର୍। ଏହି ଦୁଇଟି ସଦ୍‌ଗୁଣ ଅନେକ ଭଲ କାମ କରିବା ପାଇଁ ତାଙ୍କୁ ସକାରାତ୍ମକ ଜିଦ୍‌ଖୋର କରିଥିଲା। ଜିଦ୍ ନ ଥିଲେ ମଣିଷ ଉପରକୁ ଉଠିପାରେ ନାହିଁ। ଅନେକ ନିଷ୍ଫଳତା ପରେ ମଧ ଜଣେ ଉଦ୍ୟମ ଜାରି ରଖି ସଫଳତା ପାଏ ନିଜ ଜିଦ୍ ଯୋଗୁଁ। ସ୍ୱାଧୀନ ଭାବରେ ଗବେଷଣା କରିବାର ଜିଦ୍, କ୍ୱାଣ୍ଟମ୍ ରସାୟନ ବିଜ୍ଞାନ ପଢ଼େଇବାର ଜିଦ୍, ଗଙ୍ଗାଧର ମେହେର କଲେଜର ରୌପ୍ୟ ଜୁବୁଲି ସୁନ୍ଦର ଭାବରେ ମନାଇବାର ଜିଦ୍, ଅଧକ୍ଷ ଭାବରେ ଖଲ୍ଲିକୋଟ ମହାବିଦ୍ୟାଳୟର ପରିଚାଳନା ସରକାରଙ୍କୁ ହସ୍ତାନ୍ତରିତ କରିବାର ଜିଦ୍, ଶିକ୍ଷା ନିର୍ଦ୍ଦେଶକ (D.P.I.) ଥିବା ସମୟରେ ଅଧ୍ୟାପକ ପଦବୀ ପାଇଁ ଘୋଷିତ ହୋଇଥିବା ଲିଖିତ ପରୀକ୍ଷାର ଫଳାଫଳକୁ ବାତିଲ ନ କରି ସରକାରଙ୍କ ଅନିଚ୍ଛା ସତ୍ତ୍ୱେ ତଦନୁଯାୟୀ ନିଯୁକ୍ତି ଦେବାର ଜିଦ୍, କୁଳପତି ଭାବରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଆର୍ଥିକ ଅବସ୍ଥା ସୁଧାରିବାର ଜିଦ୍ ଇତ୍ୟାଦି ଇତ୍ୟାଦି ଅନେକ ସମସ୍ୟାର ସମାଧାନ ପାଇଁ କଠିନ ପରିଶ୍ରମ କରିବାକୁ ପଡୁଥିଲା ସାର୍‌ଙ୍କୁ। ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ଭାବରେ କ୍ଲାସ୍ ନେବା ଓ ଜୀବନର ଶେଷ ପର୍ଯ୍ୟନ୍ତ ଗବେଷଣାରେ ଲିପ୍ତ ରହି ତାଙ୍କର କୌଣସି ଗବେଷକ ଛାତ୍ରଙ୍କୁ ନିରାଶ ନ କରିବା ତାଙ୍କ ବ୍ୟକ୍ତିତ୍ୱର ଗୋଟିଏ ବିଶେଷ ଦିଗ ଥିଲା।

ମୁଁ ପୁରୀର ସାମନ୍ତ ଚନ୍ଦ୍ରଶେଖର ମହାବିଦ୍ୟାଳୟରୁ ବଦଳି ହୋଇ ରେଭେନ୍‌ସା କଲେଜ ଆସିଲି ୧୯୬୪ ମସିହାରେ। ପୁରୀରେ ଅଧ୍ୟାପକ ଥିବା ସମୟରେ ସାର୍‌ଙ୍କ ପ୍ରେରଣାରେ ମୁଁ ଓ ସ୍ୱର୍ଗତଃ ପ୍ରଦୀପ୍ତ କୁମାର ଜ୍ୟେଷ୍ଠି ଗବେଷଣା ଆରମ୍ଭ କରିଥିଲୁ କାଜୁ ଟେପା ଉପରେ। ଗବେଷଣା ଠିକ୍ ଚଲିଥିଲା। ଜ୍ୟେଷ୍ଠି ବାବୁ ଓ ମୁଁ କିଛି ମାସ ଭିତରେ ବଦଳି ହୋଇଗଲୁ ରେଭେନ୍‌ସାକୁ। ଗବେଷଣା ପାଇଁ ମୋ ବଦଳିର ଶ୍ରେୟ ଯିବ ତତ୍‌କାଳୀନ ମୁଖ୍ୟମନ୍ତ୍ରୀ ସ୍ୱର୍ଗତଃ ବୀରେନ୍ ମିତ୍ରଙ୍କୁ। ଉଦାର ହୃଦୟର ଏହି ମୁଖ୍ୟମନ୍ତ୍ରୀଙ୍କ ମୃତ୍ୟୁଶଯ୍ୟା ପାଖକୁ ଡାକ୍ତରଖାନା ଯାଇ ଜୀବନ୍ତ ଅବସ୍ଥାରେ କୃତଜ୍ଞତା ଜ୍ଞାପନ କରି ମୁଣ୍ଡିଆ ମାରିଥିଲି। ଉପାଧ୍ୟୁତ୍ତର ଶ୍ରେଣୀ ପଢ଼ିବା ସମୟରେ ସାର୍‌ଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ଗବେଷଣା କରିଥିଲି Garcinia Xanthochymus ଓ Caesalpinia Bonducella ଫଳର ତେଲ ଉପରେ। ଶ୍ରୀ ବାଳକୃଷ୍ଣ ସାବତ (ଆଇ.ଆଇ.ଟି ମୁମ୍ବାଇରୁ ଅବସରପ୍ରାପ୍ତ ପ୍ରଫେସର)ଙ୍କ ଦୈନନ୍ଦିନ ତତ୍ତ୍ୱାବଧାନ ମୋତେ ବିଶେଷ ସାହାଯ୍ୟ କରିଥିଲା। ଏହି ଗବେଷଣାଲବ୍ଧ ଫଳ ଗବେଷଣା ପତ୍ରିକାରେ ପ୍ରକାଶିତ ହୋଇଛି।

ରେଭେନ୍‌ସା ବଦଳି ହେବା ପରେ ମୁଁ ଓ ପଦ୍ମଲୋଚନ ନାୟକ (ବର୍ତ୍ତମାନ ସ୍ୱର୍ଗତଃ) ପ୍ରକ୍ରିୟାର କ୍ରିୟାଶୀଳତା ବିଷୟରେ ଗବେଷଣା ଆରମ୍ଭ କଲୁ। ଏହି ବିଷୟରେ ପାଠ୍ୟକ୍ରମ ଆରମ୍ଭ ହୋଇଥିଲା ରେଭେନ୍‌ସାରେ ୧୯୫୮-୫୯ ଶିକ୍ଷାବର୍ଷରେ। ଆମେରିକାରୁ ଫେରି ସାର୍ ଏହି ପାଠ୍ୟକ୍ରମ ପ୍ରବର୍ତ୍ତନ କଲେ ଓ ନିଜେ ପଢ଼ାଇଲେ। ଭାରତବର୍ଷରେ ଏହା ଥିଲା ପ୍ରଥମ ପଦକ୍ଷେପ। ତେଣୁ ଆମକୁ ଏହି ବିଷୟରେ ଗବେଷଣା କରିବାକୁ ଦିଆଗଲା। ମନେ ପଡୁଛି ଏକ ସୁନ୍ଦର ଘଟଣା। ସାର୍ ଗବେଷକମାନଙ୍କର ସମସ୍ୟା ପ୍ରାୟତଃ ରାତିରେ ବୁଝି ପରାମର୍ଶ ଦେଉଥିଲେ। ସେ ମୋ ନୋଟ୍‌ଖାତାରେ ଲେଖିଦେଲେ ଯେ ସପ୍ତାହକ ମଧରେ m-Nitro, m-Bromo phenacyl bromide ତିଆରି କରିବା ପାଇଁ। ଶାନ୍ତି ନିକେତନ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ଅବସର ନେଇଥିବା ପ୍ରଫେସର ରଜନୀକାନ୍ତ ମହାନ୍ତି

ମୋର ଦୈନନ୍ଦିନ ତତ୍ତ୍ୱାବଧାନରେ ତାଙ୍କର ଉପାଧ୍ୟୁତ୍ତର ଗବେଷଣା ସନ୍ଦର୍ଭ ପ୍ରସ୍ତୁତ କରୁଥାନ୍ତି। ଆମେ ଦୁଇଜଣ ମିଶି ଏହି ଯୌଗିକ ବସ୍ତୁ ଗୁଡ଼ିକୁ ତିଆରି କରିବାରେ ଲାଗିପଡ଼ିଲୁ। ପ୍ରଥମ ପାଦରେ ଏସିଟୋଫିନୋନର ମେଟା ସ୍ଥାନରେ ନାଇଟ୍ରୋ ବର୍ଗ ଯୋଡ଼ିବା। ଏହି କାମର କାର୍ଯ୍ୟପଦ୍ଧତି ମିଳିଲା ୧୮୮୮ ମସିହାର ଜର୍ମାନୀ ଭାଷାରେ ପ୍ରକାଶିତ ପୃଥିବୀ ପ୍ରସିଦ୍ଧ "ବେରେଖଟା' ପତ୍ରିକାରେ। ଜର୍ମାନୀ ଭାଷାରୁ ଇଂରାଜୀ କରିବା ପାଇଁ ସାହାଯ୍ୟ କଲେ କଟକରେ ରହୁଥିବା ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଜର୍ମାନୀ ଭାଷା ଶିକ୍ଷକ। ବହୁ ପରିଶ୍ରମ ପରେ ହଳଦିଆ ରଙ୍ଗର ମେଟାନାଇଟ୍ରୋ ଯୌଗିକ ବସ୍ତୁ ପାଇଲୁ। କାର୍ଯ୍ୟ ପଦ୍ଧତି ଅନୁଯାୟୀ ମେଟାନାଇଟ୍ରୋକୁ ଲୁହାଣ୍ଡଗ୍ଲାସିଆଲ ଏସେଟିକ୍ ଏସିଡ୍‌ରେ ବିଜାରଣ କରି ମେଟାଏମିନୋ କରିବା। ବିଭିନ୍ନ ପ୍ରକାର ଲୁହା ଆଣି ଚେଷ୍ଟା କରି ବିଫଳ ହେଲୁ। ହତାଶ ଲାଗିଲା। ଆମ କାମ ଚଲିଥିବା ସମୟରେ ଦିନେ ରାତି ପ୍ରାୟ ୮ଟା ବେଳେ ଅବସରପ୍ରାପ୍ତ ଅଧ୍ୟାପକ ଶ୍ରୀ ରାମଚନ୍ଦ୍ର ତ୍ରିପାଠୀ ବୁଲି ଆସିଲେ। ବ୍ୟାବହାରିକ (Practical) ଜ୍ଞାନ ତାଙ୍କର ପ୍ରଖର ଥିଲା। ତାଙ୍କୁ ଆମ ସମସ୍ୟା କହିଲୁ। ସେ କହିଲେ ଯେ ପୁରୁଣା ଲୁହାମାନଙ୍କରେ କଳଙ୍କି ଥିବ ଓ ତାହା ବିଷ ଭଳି କାମ କରୁଥିବ। ଏଣୁ ଆମକୁ ମଙ୍ଗଳାବାଗ ଯାଇ ଲେଦ୍ (Lathe) ଦୋକାନରୁ ତାଙ୍କ ନାମ କହି ସଦ୍ୟ କଟା ହୋଇଥିବା ଲୁହା ପାତିଆଗୁଡ଼ିକୁ ଅତି ସାବଧାନତାର ସହିତ ଆଣି ପ୍ରକ୍ରିୟା ଆରମ୍ଭ କରିବା ପାଇଁ ପରାମର୍ଶ ଦେଲେ। ତ୍ରିପାଠୀ ସାର୍ ବସିଥାନ୍ତି। ତାଙ୍କ ଉପଦେଶ ଅନୁଯାୟୀ କାମ କଲା ପରେ ଅଧଘଣ୍ଟା ଭିତରେ ହଳଦିଆ ରଙ୍ଗର ଦ୍ରବଣ ଧୂସର ବର୍ଣ୍ଣ ଧାରଣ କଲା। ମେଟା ଏମିନୋ ଯୌଗିକ ସଂଶ୍ଳେଷିତ ହେଲା। ଏହି ଉପଦେଶ ପାଇଁ ତ୍ରିପାଠୀ ସାର୍‌ଙ୍କୁ ମୁଣ୍ଡିଆ ମାରି କୃତଜ୍ଞତା ଜ୍ଞାପନ କଲୁ। ଡକ୍ଟର ରାଉତଙ୍କୁ ତା'ପରଦିନ କହିବାରୁ ସେ ଆନନ୍ଦିତ ହୋଇ କହିଲେ, 'କଳାପଟା ଜ୍ଞାନ ଓ ବ୍ୟାବହାରିକ ଜ୍ଞାନ ମଧ୍ୟରେ ପାର୍ଥକ୍ୟ ଦେଖିଲ ତ ? ଏହି ସଫଳତାରେ ଯେଉଁ ଆନନ୍ଦ ପାଇଲ ତାହାହିଁ ପ୍ରକୃତ ଆନନ୍ଦ। ପରିଶ୍ରମ କଲେ ଫଳ ମିଳେ।' ଏଭଳି ଅନେକ ଅନୁଭୂତି ମିଳିଥିଲା ନୂତନତ୍ତ୍ୱର ଖୋଜରେ। ଭାରତ ସରକାରଙ୍କ ଦ୍ୱାରା ମନୋନୀତ ହୋଇ ସାର୍ ଗୋଟିଏ ପ୍ରତିନିଧି ଦଳରେ ଋଷିଆ ଯାଇଥିଲେ। ମସ୍କୋ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ଗୋଟିଏ ଆଲୋଚନା ଚକ୍ର (Seminar)ରେ ହେମେଟ୍ ସମୀକରଣ ବ୍ୟବହାର କରି ପ୍ରକ୍ରିୟାର କ୍ରିୟାଶୀଳତା (Mechanism) ନିର୍ଣ୍ଣୟ ବିଷୟରେ ବକ୍ତୃତା ଦେଇ ଆମର ଗବେଷଣା (ଏମିନ୍‌ସ୍ + ଫିନାସିଲ୍ ବ୍ରୋମାଇଡ୍‌ସ୍) ଲବ୍ଧ ନିଷ୍କର୍ଷଗୁଡ଼ିକୁ ଉପସ୍ଥାପନ କରି ପ୍ରଶଂସିତ ହୋଇଥିଲେ।

ସ୍ୱଦେଶ ପ୍ରୀତି ସାର୍‌ଙ୍କ ହୃଦୟରେ ଭରପୁର ହୋଇ ରହିଥିଲା। ଷଢ଼େଇକଳା-ଖରସୁଆଁ ମିଶ୍ରଣ ପାଇଁ ସୀମା ଆନ୍ଦୋଳନ ଓ ଚୀନା ଆକ୍ରମଣ ଆନ୍ଦୋଳନ ପାଇଁ ଦୁଇଦିନ ଲାଗିଲାଗି ହରତାଳ ହେଲା। ରସାୟନ ବିଜ୍ଞାନର ଉପାଧ୍ୟୁତ୍ତର ଶ୍ରେଣୀରେ ଆଠଜଣ ଛାତ୍ରଙ୍କ ଭିତରେ ଥିଲେ ବିରେନ୍ଦ୍ର କୁମାର ସାମନ୍ତରାୟ। ସେ ବିଶିଷ୍ଟ ଶ୍ରମିକନେତା ରାଜକିଶୋର ସାମନ୍ତରାୟଙ୍କ ଭାଇ। ବୀରେନ୍ (ତାଙ୍କୁ ଆମ ଡାକିବା ନାମ) ସୀମା ଆନ୍ଦୋଳନରେ ସହଯୋଗ ନ କରି ଏକୁଟିଆ ଶ୍ରେଣୀ ଗୃହକୁ ଗଲେ। ଚୀନା ଆକ୍ରମଣ ଆନ୍ଦୋଳନରେ ସେ ନେତୃତ୍ୱ ନେଇଥିଲେ। ତେଣୁ ତାଙ୍କୁ ଚିଡ଼େଇବା ପାଇଁ ଆମେ ସାତଜଣ ଶ୍ରେଣୀ ଗୃହକୁ ଯାଇ ଉପସ୍ଥାନ ଦେଲୁ। ସାର୍ ସେହି ସମୟରେ କୌଣସି କାମରେ ବାହାରକୁ ଯାଇଥିଲେ। ସେ ଫେରି ସବୁ ଖବର ପାଇଲା ପରେ ଆଠଜଣଙ୍କ ପାଖକୁ ଖଣ୍ଡେ ଖଣ୍ଡେ ଛୋଟ ଲେଖା ଅଲଗା ଅଲଗା ପଠାଇଲେ। ମୋତେ ଲେଖିଥିଲେ, 'Being a good student is not enough, but taking right decision at right time brings success. Country comes first. Individual disagreement should not stand as an obstacle for a greater cause'. ଉତ୍କର୍ଷ ଶିକ୍ଷକ କେବଳ ଶ୍ରେଣୀ ଗୃହରେ କେବଳ ପାଠ ପଢ଼ାଏ ନାହିଁ, ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ମଧ୍ୟ ଗଠନ କରେ ଭବିଷ୍ୟତର ଭଲ ନାଗରିକ ହୋଇ କଠିନ ପରିଶ୍ରମ କରିବା ପାଇଁ।

ଛାତ୍ରବତ୍ସଳତା ତାଙ୍କର ପ୍ରତି ଲୋମକୂପରେ ଶୋଭା ପାଉଥିଲା। ବି.ଏସ୍‌ସି. ଦ୍ୱିତୀୟ ବର୍ଷ (୧୯୫୭-୫୮) ସମୟରେ ମୋର ବିବାହ ସ୍ଥିର ହେଲା ୧୯୫୮ ମସିହା ମଇ ମାସ ୨୮ ତାରିଖ ଅକ୍ଷୟ ତୃତୀୟା ଦିନ। ନିମନ୍ତ୍ରଣ କାର୍ଡ଼ ବାଣ୍ଟିବା ପାଇଁ ମୋର କୁଣ୍ଠାବୋଧ ଦେଖି ଦୁଇଜଣ ବନ୍ଧୁ ପାର୍ବତୀ ଓ ପ୍ରସାଦ (ଉଚ୍ଚସ୍ତରର କ୍ରିକେଟ ଖେଳାଳୀ ଶ୍ରୀକୃଷ୍ଣ ପ୍ରସାଦ - SK ନାମରେ ପରିଚିତ - ଉଭୟ ଅଧୂନା ସ୍ୱର୍ଗତଃ) କାର୍ଡ଼ ବାଣ୍ଟିଲେ। ଏତେ କମ୍ ବୟସରେ ବିବାହ ହେଉଥିବାରୁ ସସ୍ନେହ ଗାଳି ସାର୍‌ଙ୍କଠୁଁ ମିଳିଲା। ସମସ୍ୟା ହେଲା ବିବାହ ଦିନ ହିଁ ମୋର ବିଶ୍ୱବିଦ୍ୟାଳୟର ପ୍ରାକ୍ଟିକାଲ୍ ପରୀକ୍ଷା ଥିଲା। ଗୁରୁତର ଅବସ୍ଥା। ପରୀକ୍ଷା ଦେଲେ ବିବାହ ବନ୍ଦ, ଆଉ ତିଥି ନଥାଏ। ବିବାହ ପାଇଁ ଗଲେ ଗୋଟିଏ ବର୍ଷ ନଷ୍ଟ ଓ କ୍ୟାରିଅର୍‌ରେ ଦାଗ। ମୁଁ କିଛି ଭାବି ପାରୁନଥାଏ। ସେତେବେଳେ କଟକର ଏ.ଡ଼ି.ଏମ୍. ଥାଆନ୍ତି ରାମଚନ୍ଦ୍ର ପାତ୍ର (ବର୍ତ୍ତମାନ ସ୍ୱର୍ଗତଃ)। ସେ ଥିଲେ ସାଧୁତାର ଜ୍ୱଳନ୍ତ ଉଦାହରଣ। ମୋ ସହଧର୍ମିଣୀଙ୍କ ପିଉସା ଥିଲେ ସେ। ଏସବୁ ସମସ୍ୟା ଜାଣିବା ପରେ ସେ ସାର୍‌ଙ୍କୁ ଦେଖା କରି ସମାଧାନ ପାଇଁ ପରାମର୍ଶ ଲୋଡ଼ିଲେ। ସାର୍ ପରୀକ୍ଷାକୁ ଗୋଟିଏ

ଦିନ ପୂର୍ବକୁ ଘୁଞ୍ଚାଇଦେଲେ। ସନ୍ଧ୍ୟା ୫ଟାରେ ପରୀକ୍ଷା ଶେଷ ହେଲା। ୭ଟା ଟ୍ରେନ୍‌ରେ ମୁଁ ଓ ମୋର ଦୁଇଜଣ ବନ୍ଧୁ (ପୂର୍ଣ୍ଣ ଓ ସତ୍ୟବ୍ରତ - ବର୍ତ୍ତମାନ ସ୍ୱର୍ଗତଃ) ଗଲୁ ଓ ଦିନ ୧୧ଟାରେ ପହଞ୍ଚିଲୁ ଘରେ। ଆଶ୍ୱସ୍ତ ହେଲେ ସମସ୍ତେ। ଅନେକ ଭଲ ଛାତ୍ରଛାତ୍ରୀ ସାର୍‌ଙ୍କଠୁ ଏପରି ଭାବରେ ସାହାଯ୍ୟ ପାଇଛନ୍ତି।

ସାର୍ ଜଣେ ଆଧ୍ୟାତ୍ମିକ ବ୍ୟକ୍ତି ଥିଲେ। ଗାଧୋଇ ସାରି ପ୍ରଭୁ ଆଖଣ୍ଡଳମଣିଙ୍କୁ ପ୍ରାର୍ଥନା ସାରିବା ପର୍ଯ୍ୟନ୍ତ ମୌନ ରହୁଥିଲେ। ପ୍ରଭୁ ଆଖଣ୍ଡଳମଣିଙ୍କ ନାମ ଉଲ୍ଲେଖ ନକରି କୌଣସି ନୂତନ କାମ (ଗବେଷଣା ହେଉ ବା ପ୍ରଶାସନିକ କାମ ହେଉ) ହାତକୁ ନେଉ ନ ଥିଲେ।

ଭାରୀ ସ୍ୱାଭିମାନୀ ବ୍ୟକ୍ତି ଥିଲେ ସାର୍। ବିଦେଶରୁ ଡକ୍ଟରେଟ୍ ଡିଗ୍ରୀ ପାଇଥିବା ବ୍ୟକ୍ତିଙ୍କର ବାର୍ଷିକ ୬ଟି ବେତନ ବୃଦ୍ଧି ଥିଲା। ଦେଶୀ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ଡକ୍ଟରେଟ୍ ଡିଗ୍ରୀକୁ ନିମ୍ନମାନର କହି ବାର୍ଷିକ ବେତନ ବୃଦ୍ଧି କିଛି ହେଉ ନଥିଲା। ଏଭଳି ଦୃଷ୍ଟିକୋଣ ବିରୁଦ୍ଧରେ ଅଣ୍ଟା ଭିଡ଼ିଲେ ସାର୍। ତାଙ୍କ ସହିତ ମିଶିଲେ ଉଦ୍ଭିଦ ବିଜ୍ଞାନ ବିଭାଗର ଡକ୍ଟର ଗଦାଧର ମିଶ୍ର ଓ ଅନ୍ୟମାନେ। ଅନେକ ଯୁକ୍ତି ସମ୍ବଳିତ ସ୍ମାରକପତ୍ର ସରକାରଙ୍କୁ ଦେବା ପରେ ଉଭୟ ବିଦେଶୀ ଓ ଦେଶୀ ଡିଗ୍ରୀକୁ ସମାନ ସ୍ତରର ବୋଲି ଘୋଷଣା କଲେ ତତ୍‌କାଳୀନ ଶିକ୍ଷାମନ୍ତ୍ରୀ ସ୍ୱର୍ଗତଃ ରାଧାନାଥ ରଥ। ତତ୍‌କାଳୀନ ଶିକ୍ଷା ନିର୍ଦ୍ଦେଶକ ବଳଭଦ୍ର ପ୍ରସାଦଙ୍କୁ ଦାୟିତ୍ୱ ଦିଆଗଲା ବାର୍ଷିକ ବେତନ ବୃଦ୍ଧିର ହାର ନିର୍ଣ୍ଣୟ କରିବା ପାଇଁ। ବେତନରେ ଦୁଇଟି ଇନ୍‌କ୍ରିମେଣ୍ଟ ଦେବା ପାଇଁ ତାଙ୍କ ସୁପାରିଶ ଗୃହୀତ ହେଲା। ଦିନ ରାତି ପରିଶ୍ରମ କରି ଅନେକ ଛାତ୍ରଙ୍କ ଭବିଷ୍ୟତ ନିର୍ମାଣ କରିଥିବା ସାର୍ ପ୍ରଫେସର ହେବାରୁ ବଂଚିତ ଥିଲେ କାରଣ ରେଭେନ୍‌ସା ମହାବିଦ୍ୟାଳୟର ରସାୟନ ବିଭାଗରେ ଦ୍ୱିତୀୟ ପ୍ରଫେସର ପୋଷ୍ଟ ପୂରଣ କରିବା ପାଇଁ ସରକାର ଅନୁମତି ଦେଉ ନଥିଲେ। ଡକ୍ଟର ଦୟାନିଧି ପଟ୍ଟନାୟକ ତାଙ୍କଠୁଁ ବରିଷ୍ଠ ଥିବାରୁ ପ୍ରଫେସର ପଦବୀରେ ସେ ଆସୀନ ଥିଲେ। ନିଜର ଉନ୍ନତ ଇଂରାଜୀ ଜ୍ଞାନ ଓ ଗବେଷକର ବିଶ୍ଳେଷଣାତ୍ମକ ବୁଦ୍ଧି ପ୍ରୟୋଗକରିବା ଦ୍ୱାରା ତାଙ୍କର ସ୍ମାରକପତ୍ର ଗୁଡ଼ିକ ବଳିଷ୍ଠ ହେଉଥିଲା। ଅନେକ ଥର ମୁଁ ତାଙ୍କର କହିବା ଅନୁଯାୟୀ ଲେଖିଛି। ଶେଷରେ ତତ୍‌କାଳୀନ ମୁଖ୍ୟମନ୍ତ୍ରୀ ସ୍ୱର୍ଗତ ହରେକୃଷ୍ଣ ମହତାବଙ୍କ ହସ୍ତକ୍ଷେପ ଫଳରେ ଦ୍ୱିତୀୟ ପ୍ରଫେସର ପଦବୀ ପୂରଣ ପାଇଁ ସ୍ୱୀକୃତି ଲାଭ କଲା ଓ ଲୋକସେବା ଆୟୋଗ ମାଧ୍ୟମରେ ସାର୍ ମନୋନୀତ ହୋଇ ପ୍ରଫେସର ହେଲେ। ବିଦେଶୀ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ଡି.ଏସ୍‌ସି. ଡିଗ୍ରୀ ପାଇଥିବା ଅନେକ ଅଧ୍ୟାପକ ରେଭେନ୍ସା କଲେଜର ବିଭିନ୍ନ ବିଭାଗରେ ଥିଲେ। ସାର୍ ତାଙ୍କ ଗବେଷଣା ସନ୍ଦର୍ଭଗୁଡ଼ିକୁ ନେଇ ନିଜର ଡି.ଏସ୍‌ସି. ଥିସିସ୍ ପ୍ରସ୍ତୁତ କଲେ। ସନ୍ଦର୍ଭର ଅନ୍ୟତମ ପରୀକ୍ଷକ ଥିଲେ ନୋବେଲ ପୁରସ୍କାର ବିଜେତା ସାର୍ ଆଲେକ୍‌ଜାଣ୍ଡର୍ ଟଡ୍। ଥିସିସ୍‌କୁ ଉଚ୍ଚ ପ୍ରଶଂସା କରି ମୌଖିକ ପରୀକ୍ଷାର ଅନାବଶ୍ୟକତା ସୁପାରିଶ କରିଥିଲେ ସାର୍ ଟଡ୍।

ସାମାଜିକ କ୍ଷେତ୍ରରେ ଅନେକ ବ୍ୟକ୍ତିଙ୍କ ଅନେକ ସମସ୍ୟାର ସମାଧାନ କରିଛନ୍ତି ସାର୍। ପ୍ରାୟତଃ ବିଭାଗରେ ସାର୍‌ଙ୍କୁ ସାକ୍ଷାତ କରିଥାନ୍ତି ଉଚ୍ଚ ପଦବୀରେ ଥିବା ବ୍ୟକ୍ତି ବିଶେଷମାନେ। ଭାରତୀୟ ରସାୟନ ସଂସଦର ସମ୍ପାଦକ ପ୍ରଫେସର ସୁନୀଲ କୁମାର ତାଳପତ୍ର ଓ ବରିଷ୍ଠ ଉପ-ସଭାପତି ପ୍ରଫେସର ଡି.ବାନାର୍ଜିଙ୍କ ମତଭେଦ ରେଭେନ୍‌ସାରେ ହେଉଥିବା ବାର୍ଷିକ ଅଧିବେଶନରେ ପ୍ରତିଫଳିତ ହେଲା। ତେଣୁ ଆମେ ସବୁ ଯୁବ ବୈଜ୍ଞାନିକମାନେ ବିଭିନ୍ନ ବରିଷ୍ଠ ବ୍ୟକ୍ତିଙ୍କ ସହିତ ବାର୍ତ୍ତାଳାପ କରି ଏହି ସମସ୍ୟାର ସମାଧାନ ପାଇଁ ଏକ କମିଟି ଗଠନ କରାଇଥିଲୁ ଓ ତାର ଅଧ୍ୟକ୍ଷ ଥିଲେ ସାର୍। ଅନେକ ପରିମାଣରେ ଏହି କମିଟି ସଫଳତା ପାଇଥିଲା। ସାର୍‌ଙ୍କ ଷାଠିଏ ବର୍ଷ ପୂର୍ତ୍ତି ଉପଲକ୍ଷେ ଭାରତୀୟ ରସାୟନ ସଂସଦର ଗବେଷଣା ପତ୍ରିକା (J I C S)ରେ ଏକ ବିଶେଷ ସଂଖ୍ୟା ପ୍ରକାଶ କରିବା ପାଇଁ ମୁଁ ଓ ପ୍ରଫେସର୍ ହୃଷୀକେଶ ପୁଜାରୀ ଉଦ୍ୟମ କଲୁ। ସଂସଦର ନିୟମ ଥିଲା ଯେ କେବଳ ସତୁରୀ ବର୍ଷ ପୂରଣ କରିଥିବା ତଥା ଅଦ୍ୱିତୀୟ ଓ ଅସାଧାରଣ ପାଣ୍ଡିତ୍ୟ ସଂପନ୍ନ ରସାୟନବିତମାନଙ୍କ ସ୍ମୃତିରେ ହିଁ ବିଶେଷ ସଂଖ୍ୟା ପ୍ରକାଶ ପାଇପାରିବ। ପ୍ରଥମ ଥର ଓ ଶେଷଥର ପାଇଁ ଏହି ପରିବର୍ତ୍ତନ କରାଇବାରେ ଆମେ ସଫଳ ହେଲୁ। ପ୍ରଫେସର ରାଉତଙ୍କ ସମ୍ମାନାର୍ଥେ ଗବେଷଣା ପତ୍ରିକା J I C Sର ବିଶେଷ ସଂଖ୍ୟା ଭାରତୀୟ ରସାୟନ ସଂସଦର ମୁଖ୍ୟ କାର୍ଯ୍ୟାଳୟ କଲିକତାରୁ ପ୍ରକାଶ ପାଇଲା। ପ୍ରଫେସର ପୁଜାରୀ ଓ ମୁଁ ଏହାର ସମ୍ପାଦକ (Editor) ଥିଲୁ।

ପାଟଣା ବିଶ୍ୱବିଦ୍ୟାଳୟର ଅସାଧାରଣ ଧୀଶକ୍ତି ସଂପନ୍ନ ଜୈବ ରସାୟନ ବିଜ୍ଞାନର ଖ୍ୟାତନାମା ଗବେଷକ ଓ ବରିଷ୍ଠ ଅଧ୍ୟାପକ ପ୍ରଫେସର ଜେ.ଏନ୍.ଚଟାର୍ଜି ଡକ୍ଟର ରାଉତଙ୍କ ଗୋଟିଏ ବର୍ଷ ତଳେ ପଢୁଥିଲେ। ପାଟଣା ବିଶ୍ୱବିଦ୍ୟାଳୟ ଯାଇ ଅନେକ ଥର ତାଙ୍କ ଘରେ ରହି ମୁଁ ଅପୂର୍ବ ଆତିଥେୟତା ପାଇଛି। ପ୍ରଫେସର ଚଟାର୍ଜିଙ୍କ ଷାଠିଏ ବର୍ଷ ପୂର୍ତ୍ତି ଉପଲକ୍ଷେ ଭାଗଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟର ସମ୍ବର୍ଦ୍ଧନା ସଭାକୁ ମୁଁ ମୁଖ୍ୟବକ୍ତା ଭାବରେ ଯାଇଥିଲି। ମୁଖ୍ୟଅତିଥି ଥିଲେ ତତ୍‌କାଳୀନ ବିହାର ରାଜ୍ୟପାଳ ପ୍ରଫେସର ଏ.ଆର୍.କିଦ୍ୱାଇ। ପ୍ରଫେସର ମାଧବଚନ୍ଦ୍ର ଦାଶ ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡ଼ର ଅଧ୍ୟକ୍ଷ ଥିବା ସମୟରେ

'ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ସ୍ମାରକୀ ବକ୍ତୃତା'ର ଶୁଭାରମ୍ଭ କରି ପ୍ରଥମ ସଭାକୁ ପ୍ରଫେସର ଝଟାର୍ଜିଙ୍କୁ ମୁଖ୍ୟଅତିଥି ଭାବରେ ନିମନ୍ତ୍ରଣ କରିଥିଲେ ଓ ମୁଁ ମୁଖ୍ୟବକ୍ତା ଭାବରେ ଉପସ୍ଥିତ ଥିଲି। ଅନେକ ବିଷୟ ପ୍ରଫେସର ଝଟାର୍ଜିଙ୍କଠୁ ଶୁଣିବାକୁ ମିଳିଥିଲା ସାର୍‌ଙ୍କ ବିଷୟରେ। ସାର୍‌ଙ୍କ ଛାତ୍ରଜୀବନ, ଖେଳରେ ରୁଚି, ସ୍ୱାଧୀନତା ସଂଗ୍ରାମରେ ରୁଚି ଓ ଶ୍ରେଣୀ ଗୃହରେ ପାରଦର୍ଶିତା ଇତ୍ୟାଦି ବିଷୟରେ ପ୍ରଫେସର ଝଟାର୍ଜି ସମ୍ୟକ୍ ସୂଚନା ଦେଇଥିଲେ।

କେତେ ଅବା ଲେଖିବି ? ମନ ଗହନରେ ଅନେକ କଥା ଉଙ୍କି ମାରୁଛି। ତନ୍ମଧ୍ୟରୁ କିଛି ଉପସ୍ଥାପନା କରିବାକୁ ଚେଷ୍ଟା କରିଛି। ପଞ୍ଚକୋଷ ବିଶିଷ୍ଟ ମଣିଷକୁ ସମ୍ପୂର୍ଣ୍ଣ ରୂପେ ଜାଣିବା ସହଜ ନୁହେଁ। ଏହି ମଣିଷ ସମଗ୍ର ବିଶ୍ୱକୁ ଜାଣିବାରେ ବିଶ୍ୱାସ ରଖେ। ଭାରତର ମୁନିଋଷିମାନେ ନିଜ ପ୍ରଜ୍ଞା ବଳରେ ବିଶ୍ୱକୁ ଜାଣିପାରୁଥିଲେ। ପରାଧୀନତାର ବାତାବରଣରେ ସେହି ଜ୍ଞାନକୁ ଆମେ ଭୁଲିଗଲୁ ଓ ପାଶ୍ଚାତ୍ୟ ଜ୍ଞାନକୁ ଶ୍ରେଷ୍ଠତାର ମାନ୍ୟତା ଦେଲୁ। ଆଜି ମଧ୍ୟ ଆମ ପାଠ୍ୟପୁସ୍ତକମାନଙ୍କରେ ଭାରତୀୟ ବୈଜ୍ଞାନିକଙ୍କ କୃତିତ୍ୱ ପଢ଼ାଯାଉନାହିଁ। ଓଡ଼ିଶାର ବୈଜ୍ଞାନିକମାନଙ୍କ କୃତିତ୍ୱ ପାଠ୍ୟକ୍ରମରେ ରଖିଲେ ଆମ ପର ପିଢ଼ି ନିଜକୁ ଗୌରବାନ୍ୱିତ ମନେ କରନ୍ତେ !

ପ୍ରଫେସର ରାଉତଙ୍କର ଜନ୍ମ ଶତବାର୍ଷିକୀ ପାଳନ ଅବସରରେ ଯୁବପିଢ଼ି ତାଙ୍କ ଜୀବନଚର୍ଯ୍ୟାରୁ ପ୍ରେରଣା ପାଇ ଓଡ଼ିଶାରେ ବିଜ୍ଞାନର ମାନକୁ ବୃଦ୍ଧି କରନ୍ତୁ। ଅଳ୍ପ ବୟସରେ ସାର୍‌ଙ୍କ ବିୟୋଗ ମର୍ମାହତ କରିଛି ଓଡ଼ିଶାବାସୀଙ୍କୁ। ଭାରତବର୍ଷର ଅନେକ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ତାଙ୍କ ଅମର ଆତ୍ମା ପ୍ରତି ଶ୍ରଦ୍ଧାଞ୍ଜଳି ଜ୍ଞାପନ କରାଯାଇଛି।

ସାର୍‌ଙ୍କ ଅମର ଆତ୍ମାକୁ ଭଗବାନ ତାଙ୍କ ଶ୍ରୀଚରଣରେ ସ୍ଥାନ ଦିଅନ୍ତୁ। ଏତିକି ପ୍ରାର୍ଥନା।

। ହରି ଓଁ ତତ୍ ସତ୍।

ଓଁ ସହନାବବତୁ। ସହନୌ ଭୁନକ୍ତୁ। ସହ ବିର୍ଯ୍ୟଂ କରବାବହୈ।
ତେଜସ୍ୱିନା ବଧିତମସ୍ତୁ ମା ବିଦ୍ୱିଶାବହୈ ।

।। ଓଁ ଶାନ୍ତିଃ, ଶାନ୍ତିଃ, ଶାନ୍ତିଃ ।। ■■■

ପୂର୍ବତନ ପ୍ରଫେସର ଓ ବିଭାଗୀୟ ମୁଖ୍ୟ,
ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ, ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟ
ହିଲ୍‌ଟାଉନ୍, ଭବାନୀପାଟଣା, କଳାହାଣ୍ଡି
ଫୋନ (WhatsApp) : ୯୪୩୭୨୨୪୫୭୦

> I seem to have been only like a boy playing on the seashore, and diverting myself in now and then finding a smoother pebble or a prettier shell than ordinary, whilst the great ocean of truth lay all undiscovered before me.
>
> **– Isaac Newton**

ଡଃ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ : ଅନନ୍ୟ ଅସାଧାରଣ

ଅରୁଣ କୁମାର ପଣ୍ଡା

ଏଭଳି ଜଣେ ବ୍ୟକ୍ତିତ୍ୱ ସମ୍ପର୍କରେ ନିଜର ସ୍ମୃତିରୁ କିଛି ଲେଖିବା ପାଇଁ ତାଙ୍କର ଉତ୍ତରସୁରୀ ଅର୍ଥାତ୍ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟର ପୂର୍ବତନ ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ଡଃ ପ୍ରଭାତ କୁମାର ମିଶ୍ର ମୋତେ ଫୋନ୍ କରି ଏକ ପ୍ରକାର ବାଧ୍ୟ କଲେ ଓ ମୁଁ ବିନମ୍ରତାର ସହିତ 'ହଁ' କହିଲି। ସେ ବ୍ୟକ୍ତି ଜଣକ ହେଉଛନ୍ତି ଓଡ଼ିଶାର ପ୍ରବୀଣ ଶିକ୍ଷାବିତ୍, ରସାୟନ ବିଜ୍ଞାନର ପାରଙ୍ଗତ ଶିକ୍ଷକ, ରେଭେନ୍ସା କଲେଜର ପୂର୍ବତନ ପ୍ରିନ୍ସିପାଲ, ଉଚ୍ଚ ଶିକ୍ଷା ବିଭାଗର ପୂର୍ବତନ ନିର୍ଦ୍ଦେଶକ ତଥା ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର ପୂର୍ବ କୁଳପତି ପ୍ରଫେସର ଡଃ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ।

ସ୍ୱର୍ଗତଃ ଜାନକୀବଲ୍ଲଭ ପଟ୍ଟନାୟକ ୧୯୮୦ ରେ ଓଡ଼ିଶାର ମୁଖ୍ୟମନ୍ତ୍ରୀ ହେଲେ ଏବଂ ବସନ୍ତ କୁମାର ବିଶ୍ୱାଳ ତାଙ୍କ କ୍ୟାବିନେଟରେ ପୂର୍ତ୍ତ, ନଗର ଉନ୍ନୟନ ଓ ଗୃହନିର୍ମାଣ ବିଭାଗର ସ୍ୱାଧୀନ ରାଷ୍ଟ୍ରମନ୍ତ୍ରୀ ଥିଲେ। ଜାନକୀ ବାବୁ ଓ ବସନ୍ତ ବାବୁଙ୍କର କିଛି ରାଜନୈତିକ, ସାଂସ୍କୃତିକ ଓ ସାମାଜିକ କ୍ରୀଡା ଭୂମି ଥିଲା କଟକ ଏବଂ କଟକର ସର୍ବବିଧ ଉନ୍ନତି ସେମାନଙ୍କର ସଂକଳ୍ପ ଥିଲା। ତେଣୁ ପଟ୍ଟନାୟକଙ୍କ ମନ୍ତ୍ରୀମଣ୍ଡଳର ପ୍ରଥମ ପାଳିରେ ସ୍ୱର୍ଗତଃ ବସନ୍ତ ବାବୁ ଏବଂ ଜଳସେଚନ ମନ୍ତ୍ରୀ ନିରଞ୍ଜନ ପଟ୍ଟନାୟକ ମୁଖ୍ୟମନ୍ତ୍ରୀଙ୍କ ସମ୍ମତିରେ କଟକରେ ନୂଆ କରି ଆଉ ଏକ ପଥର ବନ୍ଧ ନିର୍ମାଣ ସମ୍ଭବ ହୋଇ ପାରିଲା। କେବଳ ସେତିକି ନୁହେଁ ଅପନ୍ତରା ଓ ଅଣଦେଖା ହୋଇ ପଡ଼ିଥିବା ଶୁଷ୍କ କାଠଯୋଡ଼ି ନଦୀପଠାକୁ ପୋତି ଏକ ସୁନ୍ଦର ସାଟେଲାଇଟ ସିଟି ନିର୍ମାଣ କରି ବସନ୍ତ ବାବୁ ବଢ଼ିଚାଲିଥିବା କଟକର ଜନସଂଖ୍ୟାକୁ ବସତି ପାଇଁ ମରକତ ନଗର (ସିଡ଼ିଏ) ରେ ସୁଯୋଗ ଦେଲେ। ଆଜି ଏହା ଏକ ବିଶାଳ ଅତ୍ୟାଧୁନିକ ସହର ହୋଇ ପାରିଛି। ମୋର ମନେଅଛି ପ୍ରଫେସର ଡଃ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ କଟକର ବିକାଶ ପାଇଁ ନିମଗ୍ନ ଏହି ଦୁଇନେତା ଯେଉଁମାନେ ରେଭେନ୍ସାର ପୁରାତନ ଛାତ୍ର, ତାଙ୍କୁ ରେଭେନ୍ସା କଲେଜରେ ବହୁ ଆଡ଼ମ୍ବର ସହକାରେ ସମ୍ବର୍ଦ୍ଧିତ କରିଥିଲେ। ଏଥିପାଇଁ ବିରୋଧୀଦଳର ନେତା ଏବଂ କେତେକ ବୁଦ୍ଧିଜୀବୀ ତାଙ୍କୁ ଘୋର ନିନ୍ଦା କରି ରେଭେନ୍ସା ପରି ଓଡ଼ିଶାର ଏହି ଗୌରବଶାଳୀ ଶିକ୍ଷାନୁଷ୍ଠାନକୁ ରାଜନୈତିକ କ୍ରୀଡାସ୍ଥଳି କରାନଯାଉ ବୋଲି ଗଣମାଧ୍ୟମରେ ବିବୃତି ଦେଇ ଡଃ ରାଉତଙ୍କୁ ତୀବ୍ର ସମାଲୋଚନା କରିଥିଲେ। ପରନ୍ତୁ ସ୍ଥିତିପ୍ରଜ୍ଞ ଡଃ ରାଉତ ସେ ସମାଲୋଚନାକୁ ଖାତିର ନକରି ମୁଖ୍ୟମନ୍ତ୍ରୀଙ୍କ ସହାୟତାରେ ଏହି ପ୍ରାଚୀନତମ ମହାବିଦ୍ୟାଳୟର ବିକାଶ ଓ ସମସ୍ୟା ସମାଧାନ ପାଇଁ ସଫଳ ହୋଇଥିଲେ। ମୋର ମନେଅଛି ମୁଁ ସେସମୟରେ ମହେନ୍ଦ୍ରବାବୁଙ୍କ ବିରୋଧୀ ସମ୍ବାଦଗୁଡ଼ିକ ବଡ଼ ବଡ଼ ଶିରୋନାମା ଦେଇ ଖବର କାଗଜରେ ପ୍ରକାଶ କରିଥିଲି। ମହେନ୍ଦ୍ର ବାବୁଙ୍କ ବିରୋଧରେ 'ସମାଜ'ରେ ଏତେ ସମ୍ବାଦ ପ୍ରକାଶ ପାଇଥିଲେ ମଧ୍ୟ ସେ ବ୍ୟକ୍ତିଗତ ଭାବରେ ମୋ ବିରୋଧରେ କେବେ ବିଷୋଦ୍‌ଗାର କରି ନାହାନ୍ତି। ଏହାହିଁ ତାଙ୍କର ବଡ଼ ପଣିଆ।

ଭଦ୍ରକ ସହରର ଜଣେ ପ୍ରତିଷ୍ଠିତ ଓକିଲ ଲକ୍ଷ୍ମୀଧର ରାଉତ ଏବଂ ସୂର୍ଯ୍ୟମଣି ଦେବୀଙ୍କ ଔରସରୁ ଜାତ ଡଃ ରାଉତ ପାଞ୍ଚ ବର୍ଷ ବୟସ ପର୍ଯ୍ୟନ୍ତ କିଛି କଥା କହି ପାରୁନଥିଲେ। ତଥାପି ସେ ବୟସ୍କ ହେଲା ପରେ ଥଙ୍କେଇ ଥଙ୍କେଇ କହୁଥିଲେ ମଧ୍ୟ ତାଙ୍କର ଅସାଧାରଣ ଧୀ ଏବଂ ସ୍ମୃତିଶକ୍ତି ସହିତ ସୃଜନଶୀଳତା ତାଙ୍କୁ ଜଣେ ଅସାଧାରଣ ବ୍ୟକ୍ତିତ୍ୱରେ ପରିଣତ କରିଥିଲା। ୧୯୩୮ର ମାଟ୍ରିକ ପରୀକ୍ଷାରେ ପ୍ରଥମ ଶ୍ରେଣୀରେ ଉତ୍ତୀର୍ଣ୍ଣ ହେବା ପରେ ପାଟନା ବିଶ୍ୱବିଦ୍ୟାଳୟରେ

ଆଇ.ଏସସିରୁ ଏମ୍.ଏସ୍‌ସି ପର୍ଯ୍ୟନ୍ତ ପଢ଼ି ସଫଳତାର ସହ ଉତ୍ତୀର୍ଣ୍ଣ ହେଲେ। ମାଟ୍ରିକ ବେଳେ ତାଙ୍କୁ ଛାତ୍ରବୃତ୍ତି ମିଳୁଥିଲା। ଏମ୍.ଏସ୍‌ସି ପାଶ୍ କଲା ପରେ ସେ ରେଭେନ୍ସା କଲେଜରେ ଜଣେ ଅଧ୍ୟାପକ ଭାବେ ଯୋଗ ଦେଇ ଅଳ୍ପଦିନ ମଧ୍ୟରେ ନିଜର ବିଚକ୍ଷଣ ଆଧ୍ୟାପନା ଦକ୍ଷତା ପାଇଁ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କର ଅତି ପ୍ରିୟ ସାର୍‌ରେ ପରିଣତ ହେଲେ। ସେତେବେଳେ ରେଭେନ୍ସା କଲେଜ ରସାୟନ ଶାସ୍ତ୍ର ବିଭାଗର ମୁଖ୍ୟ ଥିଲେ ଭାରତର ଜଣେ ଜଣାଶୁଣା ଫିଜିକାଲ୍ କେମିଷ୍ଟ ଡଃ ବଳଭଦ୍ର ପ୍ରସାଦ, 'ମେଥଡ୍‌ସ୍ ଅଫ୍ ଫସ୍‌ଫେଟ୍ ସେପାରେସନ୍" ଉପରେ ଗବେଷଣା କରିବା ପାଇଁ ଡଃ ପ୍ରସାଦ ତାଙ୍କୁ ପ୍ରୋତ୍ସାହିତ କରିଥିଲେ। ଡଃ ରାଉତ ଗବେଷଣା କରି ଏହା ଉପରେ ଏକ ପେପର ପ୍ରକାଶିତ କରିଥିଲେ। ନିଜର ଡକ୍ଟରେଟ କରିବା ପାଇଁ ସେ ଦୁଇଥର ବିଦେଶ ଯାଇଥିଲେ ମଧ୍ୟ ତାଙ୍କୁ 'ଅଣ୍ଡରୱେଟ' ଦର୍ଶାଇ ଶେଷ ମୁହୂର୍ତ୍ତରେ ଅଯୋଗ୍ୟ ଘୋଷଣା କରାଯାଇଥିଲା। ତାଙ୍କ ପାଇଁ ମେଡିକାଲ ବସାଯାଇ ଏହି ନିଷ୍ପତ୍ତି ନିଆଯାଇଥିଲା। ପରେ ସେ ପ୍ରଫେସର ସର୍ବାଣୀ ସହାୟ ଗୁହ ସରକାରଙ୍କ ମାର୍ଗଦର୍ଶନରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ୧୯୫୨ ମସିହାରେ ପିଏଚ୍‌ଡ଼ି ଡିଗ୍ରୀ ହାସଲ କରିଥିଲେ। ବହୁ ବିରୋଧ, ଶତ୍ରୁତାପୂର୍ଣ୍ଣ ପରିବେଶ ମଧ୍ୟରେ ଦୃଢ଼ମନା ଡଃ ରାଉତ ନିଜର ଏକ ଗବେଷଣା ବିଦ୍ୟାଳୟ ସ୍ଥାପନା କରି ଛାତ୍ରମାନଙ୍କୁ ପଢ଼ାଇବାକୁ ଲାଗିଲେ। ଆମେରିକାନ୍ କେମିକାଲ ସୋସାଇଟି ପକ୍ଷରୁ ପ୍ରକାଶ ପାଉଥିବା ଅତି ସମ୍ମାନଜନକ ପତ୍ରିକାରେ ୧୯୫୩ ରେ ତାଙ୍କର ପ୍ରଥମ ରିସର୍ଚ୍ଚ ଲେଖା ପ୍ରକାଶ ପାଇଥିଲା।

ରେଭେନ୍ସା କଲେଜରେ ସେ ଅଧ୍ୟାପକ ଭାବେ ଯୋଗଦେବା ବେଳେ ଦେଶର ଗୌରବ, ପ୍ରଖ୍ୟାତ ବୈଜ୍ଞାନିକ ଡଃ ପ୍ରାଣକୃଷ୍ଣ ପରିଜା ସେଠାରେ ଅଧ୍ୟକ୍ଷ ଥିଲେ। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ମୁଖ୍ୟ ପ୍ରଫେସର ଡଃ ବଳଭଦ୍ର ପ୍ରସାଦ ତାଙ୍କୁ ଗୋଟିଏ କଥା ବୁଝାଇଥିଲେ ଯେ, ଜଣେ ଭଲ ଶିକ୍ଷକ ହେବାକୁ ହେଲେ ଗବେଷଣାରେ ଭଲ ଭାବରେ ମଗ୍ନ ରହିବାକୁ ପଡ଼ିବ। ଏହାବ୍ୟତୀତ ପରିଜା ସାହେବଙ୍କ ସାନିଧ୍ୟ ତାଙ୍କୁ ଜଣେ ଉତ୍ତମ ଶିକ୍ଷକ ହେବାପାଇଁ ଅନୁପ୍ରାଣିତ କରିଥିଲା । ୧୯୮୮ ରେ ଡଃ ରାଉତ ରିଡରକୁ ପଦୋନ୍ନତି ପାଇଲେ। ଏହା ପୂର୍ବରୁ ସେ ଜଣେ ଭିଜିଟିଙ୍ଗ୍ ଫେଲୋ ଭାବେ ଆମେରିକା ଯାଇଥିଲେ। ସେଠାରେ ସେ ଯେଉଁ ପ୍ରଫେସରଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ଗବେଷଣା କରୁଥିଲେ ପରବର୍ତ୍ତୀ ସମୟରେ ସେ ରସାୟନ ବିଜ୍ଞାନରେ ନୋବେଲ ପୁରସ୍କାର ପାଇଥିଲେ। ସେ ହେଲେ ହାଭାର୍ଡ ବିଶ୍ୱବିଦ୍ୟାଳୟର ପ୍ରଫେସର୍ ରବର୍ଟ ଉଡୱାର୍ଡ। ନ୍ୟୁକ୍ଲିଅର ମାଗ୍ନେଟିକ୍ ରିଜୋଜାନ୍ସ ସ୍ପେକ୍ଟ୍ରା ଏବଂ ରେଡିଓ ଆକ୍ଟିଭ ଟେକ୍‌ନିକ୍ ଗବେଷଣା କ୍ଷେତ୍ରରେ ସେ ଭାରତର କେତେଜଣ ରସାୟନବିତ୍‌ଙ୍କ ମଧ୍ୟରେ ଅନ୍ୟତମ ଥିଲେ। ପରେ ଓଡ଼ିଶା ଫେରି ସେ ରେଭେନ୍ସାରେ ରିଡର ଏବଂ ମୁଖ୍ୟ ଭାବରେ ଅର୍ଗାନିକ୍ କେମିଷ୍ଟ୍ରି ସିଲାବସ୍‌ରେ ବ୍ୟାପକ ସଂସ୍କାର ଆଣିବାରେ ସକ୍ଷମ ହୋଇଥିଲେ। ସେବେଠାରୁ ଡଃ ରାଉତ କେବେ ପଛକୁ ଫେରି ଚାହିଁ ନାହାଁନ୍ତି। ଡ୍ରଗ୍‌ସ ଉପରେ ଅନନ୍ୟ ଗବେଷଣା ପାଇଁ ସେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ୧୯୫୯ ମସିହାରେ ଡିଏସ୍‌ସି ଉପାଧି ହାସଲ କରିଥିଲେ। ଏହି ଥେସିସ୍‌ର ପରୀକ୍ଷକଙ୍କ ମଧ୍ୟରୁ ଜଣେ ଥିଲେ ନୋବେଲ ପୁରସ୍କାର ବିଜେତା ସାର୍ ଆଲେକ୍‌ଜାଣ୍ଡାର ଟୋଡ୍ ଯିଏ କି କେମ୍ବ୍ରିଜ୍ ବିଶ୍ୱବିଦ୍ୟାଳୟର ପ୍ରଫେସର ଥିଲେ। ରେଭେନ୍ସାର ତାଙ୍କର ଅଗଣିତ ଛାତ୍ର ଦେଶ ବିଦେଶରେ ବହୁ ବଡ଼ ପଦପଦବୀରେ ଅବସ୍ଥାପିତ ହୋଇଛନ୍ତି। ରେଭେନ୍ସାରେ ଅଧ୍ୟକ୍ଷ ହେବା ସମୟରେ ସେ ଏହି ଐତିହାସିକ ଶିକ୍ଷାନୁଷ୍ଠାନଟିକୁ ସବୁ ଦୃଷ୍ଟିରୁ ନମ୍ବର ଏକ କରିବା ପାଇଁ ଉଦ୍ୟମ କରିଥିଲେ। ରେଭେନ୍ସାରୁ ସେ ଶିକ୍ଷା ବିଭାଗର ନିର୍ଦ୍ଦେଶକ, ପରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ଭାବରେ ୧୯୮୩ ପର୍ଯ୍ୟନ୍ତ ରହିଥିଲେ।

ଜଣେ ପ୍ରବୀଣ ଶିକ୍ଷକ, ଗବେଷକ ଓ ପ୍ରଶାସକ ଡଃ ରାଉତ ରେଭେନ୍ସା କଲେଜ ପରିସୀମା ଭିତରେ କେବଳ ନୁହେଁ ସବୁକ୍ଷେତ୍ରରେ ନିଜର ପାରଦର୍ଶିତା ପ୍ରଦର୍ଶନ କରିଥିଲେ। ଏକଦା ସେ କଲେଜର ଅଧ୍ୟକ୍ଷ ଥିବାବେଳେ ସ୍ଥାନୀୟ କେତେକ ଗୁଣ୍ଡା ଶ୍ରେଣୀର ଅଣଛାତ୍ର ଭିତରେ ରହୁଥିବା କେତେକ ଛାତ୍ରଙ୍କ ସହଯୋଗରେ କଲେଜ କ୍ୟାମ୍ପସ୍ ଭିତରେ ନାନା ପ୍ରକାର ବିଶୃଙ୍ଖଳା ଚଳାଉଥିଲେ। ଏମାନଙ୍କ ମୁକାବିଲା କରିବା ପାଇଁ ପ୍ରାୟ ସମସ୍ତେ ଭୟ କରୁଥିଲେ। ପରନ୍ତୁ କଲେଜ ଅଧ୍ୟକ୍ଷ ଡଃ ରାଉତ ନିଜର ଦୃଢ଼ତା ଓ ପୁଲିସର ସହଯୋଗରେ ଏମାନଙ୍କୁ ଜବତ କରିବାରେ ସକ୍ଷମ ହୋଇପାରିଥିଲେ। ପ୍ରକାଶ ଥାଉକି ତତ୍‌କାଳୀନ ମୁଖ୍ୟମନ୍ତ୍ରୀ ଜାନକୀ ବଲ୍ଲଭ ପଟ୍ଟନାୟକଙ୍କର ସେ ଅତି ପ୍ରିୟ ହୋଇଥିବାରୁ ରେଭେନ୍ସାକୁ ସଜାଡ଼ିବାରେ ସକ୍ଷମ ହୋଇପାରିଥିଲେ। ଅଧ୍ୟକ୍ଷ ଥିବାବେଳେ ଗାର୍ଲସ ହଷ୍ଟେଲ୍‌ରେ ତତ୍କାଳୀନ ଜଣେ କ୍ୟାବିନେଟ ମନ୍ତ୍ରୀଙ୍କ ଅନୁପ୍ରବେଶକୁ ନେଇ

ରାଜ୍ୟସାରା ତୁମ୍ବିତୋଫାନ ସୃଷ୍ଟି ହୋଇଥିଲା। ପରନ୍ତୁ ପ୍ରଫେସର ଡଃ ରାଉତ ତାକୁ ସମ୍ଭାଳିବାରେ ସକ୍ଷମ ହୋଇଥିଲେ। ଡଃ ରାଉତ ଅଧ୍ୟକ୍ଷ ଥିବା ବେଳେ ମୁଁ କେତେଥର କଲେଜ ଛାତ୍ର ସଂସଦ ଉତ୍ସବରେ ଅତିଥି ଭାବେ ଯୋଗଦେବାର ସୌଭାଗ୍ୟ ଲାଭ କରିଥିଲି। ପ୍ରତ୍ୟେକ ଥର ଡଃ ରାଉତ ମୋ ପିଠିରେ ହାତ ଥାପୁଡାଇ 'ଭଲ କହୁଛ' ବୋଲି ଆଶୀର୍ବାଦ ଦେଇଥିଲେ।

ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ କୁଳପତି ପଦରୁ ଅବସର ଗ୍ରହଣ କଲାପରେ ଓଡ଼ିଶାରେ ଦ୍ରୁତ ଶିଳ୍ପାୟନ ଏବଂ ଅନ୍ୟ ବହୁ କାରଣରୁ ବୃଦ୍ଧି ପାଉଥିବା ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ସମସ୍ୟାର ମୁକାବିଲା ପାଇଁ ରାଜ୍ୟ ସରକାର ୧୯୮୩ରେ ଡଃ ରାଉତଙ୍କୁ ନୂଆ ଭାବେ ପ୍ରତିଷ୍ଠିତ ରାଜ୍ୟ ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡର ପ୍ରଥମ ଅଧ୍ୟକ୍ଷ ଭାବେ ନିଯୁକ୍ତି ଦେଇଥିଲେ। ପ୍ରଦୂଷଣ ମୁକ୍ତ ଓଡ଼ିଶା ଗଠନ ପାଇଁ ଡଃ ରାଉତଙ୍କ ଅବଦାନକୁ ଭୂଲି ହେବ ନାହିଁ। ସେ ପାଖାପାଖି ତିନିବର୍ଷ ବୋର୍ଡର ଅଧ୍ୟକ୍ଷ ରହିଥିଲେ। ଏହାବ୍ୟତୀତ ସେ ଭାରତୀୟ ଷ୍ଟେଟବ୍ୟାଙ୍କ ରିକ୍ରୁଟମେଣ୍ଟ ବୋର୍ଡରେ ଓଡ଼ିଶା ସର୍କଲର ଅଧ୍ୟକ୍ଷ ପଦରେ ରହିଥିଲେ। ଜଣେ ଭଲ ଶିକ୍ଷକ, ଭଲ ପ୍ରଶାସକ ହୋଇପାରେ ବୋଲି ଡଃ ରାଉତ ତାହା ପ୍ରମାଣିତ କରିଯାଇଛନ୍ତି। ଏହାବ୍ୟତୀତ ୟୁନିଭରସିଟି ଗ୍ରାଣ୍ଟସ୍ କମିଶନ ତାଙ୍କୁ ରିସର୍ଚ୍ଚ କାର୍ଯ୍ୟ ପାଇଁ ମଧ୍ୟ ନିୟୋଜିତ କରିଥିଲା। ତାଙ୍କର ଷଷ୍ଠି ପୂର୍ତ୍ତି ଅବସରରେ ଇଣ୍ଡିଆନ୍ କେମିକାଲ ସୋସାଇଟି ତାଙ୍କ ସମ୍ମାନାର୍ଥେ ଯେଉଁ ବିଶେଷ ଜର୍ଣ୍ଣାଲ୍ ପ୍ରକାଶ କରିଥିଲା ତାହା ଅତ୍ୟନ୍ତ ବିରଳ ଓ ଅନନ୍ୟ।

ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ନିଜେ ଏକ ଅନୁଷ୍ଠାନରେ ପରିଣତ ହୋଇଥିଲେ। ତାଙ୍କ ଧର୍ମପତ୍ନୀ ପ୍ରଫେସର ଡଃ ସାବିତ୍ରୀ ରାଉତ ସଂସ୍କୃତ ଭାଷାର ଅଧ୍ୟାପିକା ଭାବେ ଖୁବ୍ ଲୋକପ୍ରିୟ ଥିଲେ। ସଂସ୍କୃତ ଭାଷାର ପ୍ରଚାର ପ୍ରସାର ପାଇଁ ଗଢ଼ା ହୋଇଥିବା ବିଶ୍ୱ ସଂସ୍କୃତ ପ୍ରତିଷ୍ଠାନର ସେ ଉପଦେଷ୍ଟା ଥିଲେ। ମୁଁ ଥିଲି ଏହାର ସାଧାରଣ ସମ୍ପାଦକ। ଉଭୟ ପତି ଓ ପତ୍ନୀ ମୋତେ ସ୍ନେହ ଡୋରିରେ ବାନ୍ଧି ରଖିଥିଲେ। ■■■

ସିଡ଼ିଏ, ସେକ୍ଟର -୬, କଟକ
ଫୋନ୍-୯୪୩୭୨୭୦୬୦୫

Two things are infinite:
the universe and human stupidity;
and I'm not sure about the universe.

– Albert Einstein

ବନ୍ଦନୀୟ
ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ

ପ୍ରଫେସର ଡକ୍ଟର ସୂର୍ଯ୍ୟମଣି ବେହେରା

୧୯୬୧ ମସିହାର କଥା। ସେହି ବର୍ଷ ମୁଁ ବି.ଏସ୍‌ସି ପରୀକ୍ଷାରେ ଉତ୍ତୀର୍ଣ୍ଣ ହୋଇ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟ (ବର୍ତ୍ତମାନ ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟ) କଟକ ଠାରେ ରସାୟନ ବିଜ୍ଞାନରେ ଏମ୍.ଏସ୍‌ସି ପଢ଼ିବା ପାଇଁ ଆବେଦନ କଲି। ପ୍ରଥମ ପର୍ଯ୍ୟାୟ ନିର୍ବାଚନରେ ମୁଁ ସେହି ବିଭାଗରେ ଗୋଟିଏ ସ୍ଥାନ ପାଇଁ ଯୋଗ୍ୟ ବିବେଚିତ ହୋଇ ନାମ ଲେଖାଇଲି। ନାମ ଲେଖାଇବାର କେଇ ଦିନ ପରେ କ୍ଲାସ ଆରମ୍ଭ ହୋଇଗଲା। ପ୍ରଥମ ପିରିୟଡ଼ରେ ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କର ଦର୍ଶନ ମୁଁ ପାଇଲି। ତା ପୂର୍ବରୁ ତାଙ୍କୁ କେବେ ଦେଖି ନଥିଲି। ଯଦିଓ ତାଙ୍କର ଛାତ୍ରବତ୍ସଳ ଗୁଣ ସଂପର୍କରେ କିଛି କିଛି ଶୁଣିଥିଲି ତଥାପି ମନରେ ଆଗ୍ରହ ଥିଲା- କେମିତି ତାଙ୍କୁ ଦେଖିବି। ସୁଯୋଗ ହାତ ମୁଠାକୁ ଆସିଗଲା।

ମୋ ସମୟରେ ପିଲା ସଂଖ୍ୟା ଥିଲା ଚବିଶ। ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ସେହି ବିଭାଗ ଖୋଲି ନଥିଲା। ଓଡ଼ିଶାର ଅନ୍ୟ କୌଣସି ମହାବିଦ୍ୟାଳୟରେ ମଧ୍ୟ ତାହା ଖୋଲି ନଥିଲା। ପ୍ରଫେସର ରାଉତ ଶ୍ରେଣୀର ଉପସ୍ଥାନ ନେଇ ସାରିବା ପରେ ପ୍ରଥମେ ପ୍ରତ୍ୟେକ ପିଲାମାନଙ୍କର ନାମ, ବାସ ସ୍ଥାନ, କେଉଁ ସ୍ଥାନରେ ରହୁଛ, ବାପା କ'ଣ କରନ୍ତି ଏଇମିତି ଅନେକ ପ୍ରଶ୍ନ ପଚାରିଥିଲେ। ଆମ୍ଭେ ସମସ୍ତେ କହି ସାରିବା ପରେ ରସାୟନ ବିଜ୍ଞାନର ସ୍ଥିତି, ତାର ଭବିଷ୍ୟତ ଏବଂ ଗବେଷଣା ଦ୍ୱାରା କେମିତି ଆଗକୁ ଯିବାକୁ ହୁଏ, ସେ ସବୁ ଦିଗରେ ସୂଚନା ପ୍ରଦାନ କରିଥିଲେ। ତା'ପରେ ପାଠପଢ଼ା ଆରମ୍ଭ ହୋଇଥିଲା। ସେହି ସମୟରେ ମୁଁ ଅନୁଭବ କରିଥିଲି ବାସ୍ତବିକ କେତେ ସ୍ନେହୀ ମଣିଷ ଥିଲେ ପ୍ରଫେସର ରାଉତ।

ସମୟର ରଥଚକ ଗଡ଼ି ଚାଲିଲା। ସେତେବେଳେ ଯେଉଁ ଅଧ୍ୟାପକଗଣଙ୍କ ସଂପର୍କରେ ମୁଁ ଆସିଥିଲି ସେମାନଙ୍କ ନାମ ସ୍ମରଣ କରିବା ପାଇଁ ମୁଁ ଉଚିତ ମନେ କରୁଅଛି। ପ୍ରଫେସର ଦୟାନିଧି ପଟ୍ଟନାୟକ, ପ୍ରଫେସର କ୍ଷୀରୋଦ ଚନ୍ଦ୍ର ପଟ୍ଟନାୟକ, ପ୍ରଫେସର ପ୍ରଭାତ କୁମାର ମିଶ୍ର, ପ୍ରଫେସର ପ୍ରଦୀପ୍ତ କିଶୋର ଜ୍ୟେଷ୍ଠୀ, ପ୍ରଫେସର ଗୋପବନ୍ଧୁ ବେହେରା, ପ୍ରଫେସର ଡି.ଭି ରମଣ ରାଓ, ପ୍ରଫେସର ବିମ୍ବାଧର ନାୟକ, ପ୍ରଫେସର ବଳରାମ ସାହୁ, ପ୍ରଫେସର ନିମାଇଁ ଚରଣ ନାୟକ, ପ୍ରଫେସର ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର ଓ ପ୍ରଫେସର ପ୍ରାଣବନ୍ଧୁ ତ୍ରିପାଠୀଙ୍କ ନାମ ସ୍ୱତଃ ମୋ ନଜରକୁ ଆସିଯାଉଛି। କହି ରଖୁଛି ପ୍ରତ୍ୟେକ ପ୍ରଫେସରଙ୍କ ଶିକ୍ଷାଦାନ ପ୍ରଣାଳୀ ତଥା ସ୍ନେହପୂର୍ଣ୍ଣ ଆଚାର ବ୍ୟବହାର ଆମ ସମସ୍ତ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ବିଦ୍ୟା ଅଧ୍ୟୟନରେ ମନୋନିବେଶ କରି ଆତ୍ମକୁ ଉନ୍ନତି କରିବାର ମନୋଭାବ ଜାଗ୍ରତ କରାଉଥିଲା।

ଶ୍ରେଣୀ ଗୃହରେ ଅଧ୍ୟୟନ ସମୟରେ ଆଉ ଏକ ନୂତନ ଅନାଲୋଚିତ ଦିଗର କିଞ୍ଚିତ ଆଭାଷ ମୁଁ ପାଇଥିଲି। ତାହା ହେଉଛି ପ୍ରତ୍ୟେକ ବିଷୟବସ୍ତୁ ଉପରେ ତଥ୍ୟ ସହ ଏହାରି ଉପରେ ଆଉ କ'ଣ କ'ଣ ଦିଗରେ ଆଗେଇବାକୁ ହେବ ଏବଂ ସେ ସବୁର ସଦ୍‌ବିନିଯୋଗ କିପରି ସମାଜର ହିତରେ ଲାଗିବ, ସେ ଦିଗରେ ମଧ୍ୟ ଆଲୋକପାତ କରୁଥିଲେ। ଏ ଦିଗରେ ପ୍ରଫେସର ରାଉତଙ୍କ ଅବଦାନ ଅଧିକ ବୋଲି ଭାବୁଛି। ଏମ୍.ଏସ୍‌ସି ଶ୍ରେଣୀର ପ୍ରଥମ ବର୍ଷ ଏଇମିତି ଭାବରେ କଟିଗଲା।

ଏମ୍.ଏସ୍‌ସି ଦ୍ୱିତୀୟ ବର୍ଷ ଆରମ୍ଭ ହେଲା। ଏତିକିବେଳେ ପ୍ରଥମ ବର୍ଷର ପରୀକ୍ଷାରେ ନମ୍ବର ପ୍ରାପ୍ତି ଅନୁସାରେ ଆମକୁ ଏକ ସ୍ୱତନ୍ତ୍ର

ବିଭାଗକୁ ଚୟନ କରିବାକୁ କୁହାଗଲା। ମୁଁ ଜୈବରସାୟନ ଶାସ୍ତ୍ର ପାଇଁ ଦରଖାସ୍ତ ଦେଇଥିଲି। ଯେହେତୁ ପ୍ରଫେସର ରାଉତ୍ ସେହି ବିଭାଗର ମୁଖ୍ୟ, ତାଙ୍କରି ଶିକ୍ଷାଦାନ ପ୍ରଣାଳୀ ମୋତେ ଆକୃଷ୍ଟ କରିଥିବା ହେତୁ ମୁଁ ଆଗ୍ରହ ପ୍ରକାଶ କରିଥିଲି। ନିର୍ଦ୍ଧାରିତ ନୀତି ଅନୁସାରେ ପ୍ରଥମ ଦଶଜଣ ପିଲା ଗବେଷଣାତ୍ମକ ନିବନ୍ଧ (Thesis) ପାଇଁ ମନୋନୀତ ହେବା ପରେ ଅନ୍ୟମାନଙ୍କୁ ସ୍ୱତନ୍ତ୍ର ଶାସ୍ତ୍ର (Special Paper) ପାଇଁ ଚୟନ କରାଯାଇଥିଲା। ପ୍ରଥମ ଦଶଜଣଙ୍କ ଭିତରେ ମୋର ସ୍ଥାନ ଥିଲା। ନିୟମ ଥିଲା- ଯେଉଁମାନେ ଗବେଷଣାତ୍ମକ ନିବନ୍ଧ ପାଇଁ ଯୋଗ୍ୟ ହେଲେ ସେମାନେ ଜଣେ ଜଣେ ପ୍ରଫେସରଙ୍କ ଅଧିନରେ କାର୍ଯ୍ୟ କରିବେ। ସୌଭାଗ୍ୟବଶତଃ ମୋତେ ପ୍ରଫେସର ପ୍ରଭାତ କୁମାର ମିଶ୍ରଙ୍କ ଅଧିନରେ କାର୍ଯ୍ୟ କରିବାର ସୁଯୋଗ ମିଳିଲା। ମାତ୍ର ପରୋକ୍ଷରେ ପ୍ରଫେସର ରାଉତ ସେ ସବୁ କାର୍ଯ୍ୟ ସଂପାଦନ କରିବା ପାଇଁ ପ୍ରତ୍ୟେକ ଗବେଷଣା ନିବନ୍ଧର ବିଷୟବସ୍ତୁ ସ୍ଥିର କରିଥିଲେ। ମୋ ଭାଗରେ ଯେଉଁ ନିବନ୍ଧ ଉପରେ କାର୍ଯ୍ୟ କରିବା ସ୍ଥିର ହେଲା ତାହା ହେଉଛି: "Effect of Structural Changes in Dyes derived from Oxazoles and some Ketomethylene Compounds" ଏହାପରେ କାର୍ଯ୍ୟ ଆରମ୍ଭ ହେଲା। ପ୍ରଫେସର ପ୍ରଭାତ ମିଶ୍ରଙ୍କ ପ୍ରକୋଷ୍ଠରେ ଗବେଷଣା ନିବନ୍ଧ ଉପରେ କାର୍ଯ୍ୟ କରିବା ପାଇଁ ସମସ୍ତ ବନ୍ଦୋବସ୍ତ କରାଗଲା। ମୋର ସହପାଠୀ ପ୍ରଫେସର ଡ. ଅଶୋକ କୁମାର ଦାସ ଏବଂ ସହପାଠିନୀ ପ୍ରଫେସର (ଡ.) ପ୍ରତିମା ମହାନ୍ତିଙ୍କୁ ମଧ୍ୟ ସେହି ପ୍ରକୋଷ୍ଠରେ କାର୍ଯ୍ୟ କରିବାକୁ କୁହାଗଲା।

ସେହି ସମୟରେ ଦେଖିଛି ପ୍ରଫେସର ରାଉତଙ୍କର ଗବେଷଣା ପ୍ରତି କେତେ ଆଗ୍ରହ। ପ୍ରତ୍ୟେକ ଦିନ ପ୍ରଫେସର ରାଉତ ଆମ ପ୍ରକୋଷ୍ଠକୁ ଆସି ଆମେ କ'ଣ କାମ କରୁଛୁ ଏବଂ ଆସନ୍ତା କାଲି କ'ଣ କ'ଣ କରାଯିବ, ତା' ଉପରେ ଅନୁଧ୍ୟାନ କରି ଦିଗଦର୍ଶନ ଦିଅନ୍ତି। ପ୍ରଫେସର ପ୍ରଭାତ କୁମାର ମିଶ୍ର ମଧ୍ୟ ସେ ସବୁ ଉପରେ ଦୃଷ୍ଟି ରଖି ଆମକୁ ଅନେକ ଉଚିତ ପରାମର୍ଶ ଦିଅନ୍ତି।

ଏଇମିତି ଭାବରେ ଏମ୍.ଏସ୍ସି କ୍ଲାସର ଶେଷ ବର୍ଷ ଶେଷ ହେବାକୁ ଲାଗିଲା। ପରୀକ୍ଷା ବେଳ ଆସିଗଲା। ମାତ୍ର ପରୀକ୍ଷା ପାଇଁ ଯେଉଁ କେଇଟା ଦିନ ଥାଏ ସେହି ସମୟରେ ମୋ ପିତାଙ୍କର ମୃତ୍ୟୁ ଖବର ପ୍ରଥମ ଡକ୍ଟର ରାଉତଙ୍କ ପାଖକୁ ଆସିଥିଲା। ସେତେବେଳେ ମୋବାଇଲ୍ ଫୋନ୍ ନଥିଲା। ଟେଲିଫୋନ୍ ମାଧ୍ୟମରେ ପ୍ରଫେସର ରାଉତଙ୍କୁ ମୋର ବଡ଼ ଭାଇ ଜଣାଇଥିଲେ। ସେଦିନ ସନ୍ଧ୍ୟା ହୋଇଥାଏ, ଆମେ ଗବେଷଣା କାର୍ଯ୍ୟରେ ବ୍ୟସ୍ତ ଥିଲୁ। ହଠାତ୍ ପ୍ରଫେସର ରାଉତ ଆମ ପ୍ରକୋଷ୍ଠରେ ପ୍ରବେଶ କଲେ ଏବଂ ସେହି ଖବର ମୋତେ ଜଣାଇ ସଙ୍ଗେ ସଙ୍ଗେ ଘରକୁ ଯିବା ପାଇଁ ଉପଦେଶ ଦେଲେ। ତାଙ୍କରି ନିର୍ଦ୍ଦେଶରେ ମୁଁ ମୋ ଗାଁକୁ ଯାଇ ପିତାଙ୍କର ଶବସତ୍କାର କାର୍ଯ୍ୟ ଏବଂ ଅନ୍ୟାନ୍ୟ ଆନୁସଙ୍ଗିକ କାର୍ଯ୍ୟ ସାରି ଫେରିଲି।

ପରୀକ୍ଷା ଆରମ୍ଭ ହେଲା ଥିଓରି (ତଥ୍ୟ ଭିତ୍ତିକ ପରୀକ୍ଷା) ପରେ ପ୍ରୟୋଗାତ୍ମକ (Practical) ପରୀକ୍ଷା ଆରମ୍ଭ ହେଲା। ପ୍ରାକ୍ଟିକାଲ ପରୀକ୍ଷା ସମୟରେ ମୋର ଯେଉଁ ବିଷୟ ଉପରେ କାର୍ଯ୍ୟ କରିବାକୁ ଥିଲା ମୁଁ ତାହା କରୁଥିବା ସମୟରେ ପରୀକ୍ଷା ପାଇଁ ବ୍ୟବହୃତ ଯନ୍ତ୍ର (Apparatus)ଟି ମୋ ଅସାବଧାନତାବଶତଃ ଭାଙ୍ଗିଗଲା। ଏ କଥା ପ୍ରଫେସର ରାଉତଙ୍କ କାନରେ ପଡ଼ିଲା। ପ୍ରଫେସର ରାଉତ ମହାଶୟ ତତ୍କ୍ଷଣାତ୍ ଆସି ମୋତେ ଆଶ୍ୱାସନା ଦେଇ ଅନ୍ୟ ଏକ ଯନ୍ତ୍ର ଯୋଗାଇ କାର୍ଯ୍ୟ ଶେଷ କରିବାକୁ କହି ଚାଲିଯାଇଥିଲେ। ଆଶ୍ଚର୍ଯ୍ୟର କଥା ମୋତେ ପ୍ରଫେସର ରାଉତ କିଛି ଆର୍ଥିକ ଦଣ୍ଡ (Fine) ଦେଇନଥିଲେ ବରଂ ଅଧିକ ନମ୍ବର ପ୍ରଦାନ କରି ତାଙ୍କର ଛାତ୍ରବତ୍ସଳ ସ୍ନେହକୁ ମୋ ଉପରେ ଅଜାଡ଼ି ଦେଇଥିଲେ। ସେଥିପାଇଁ ସେ ମୋ ପାଖରେ ଚିର ବନ୍ଦନୀୟ ହୋଇ ରହିଯାଇଛନ୍ତି।

ଅନ୍ୟ ଏକ ଘଟଣା, ଓଡ଼ିଶା ଲୋକସେବା ଆୟୋଗ ଦ୍ୱାରା ବିଭିନ୍ନ ସରକାରୀ ଚାକିରୀ ପାଇଁ ଚୟନ ପ୍ରକ୍ରିୟା ଚାଲିଥିଲା। ଶିକ୍ଷା ବିଭାଗରେ ମଧ୍ୟ ଚାକିରୀ ବାହାରିଥିଲା। ମୁଁ ସେଥିପାଇଁ ଦରଖାସ୍ତ ଦେଲି ଏବଂ ସାକ୍ଷାତ୍କାର ଦିନ ସୌଭାଗ୍ୟବଶତଃ ବିଷୟବସ୍ତୁ ବିଶେଷଜ୍ଞ ଭାବରେ ପ୍ରଫେସର ରାଉତ ଯୋଗ ଦେଇଥିଲେ। ଆୟୋଗର ଅଧ୍ୟକ୍ଷ ଏବଂ ଅନ୍ୟାନ୍ୟ ବିଚାରମଣ୍ଡଳୀମାନଙ୍କ ପ୍ରଶ୍ନର ଉତ୍ତର ପ୍ରଦାନ ପରେ ପ୍ରଫେସର ରାଉତ ମଧ୍ୟ ଅନେକ ପ୍ରଶ୍ନ ପଚାରିଥିଲେ। ମୁଁ ବେଶ୍ ଦୃଢ଼ତାର ସହ ଉତ୍ତର ଦେଇ ନିର୍ବାଚିତ ହୋଇ କଳାହାଣ୍ଡି ସରକାରୀ ମହାବିଦ୍ୟାଳୟ ଅଧ୍ୟାପକ ଭାବରେ ଯୋଗଦାନ କରିଥିଲି। ସେହି ଦିନଟି ଥିଲା ୨୦.୦୭.୧୯୬୩। ତା ପରେ ପରେ ଅଧ୍ୟାପକ, ପ୍ରାଧ୍ୟାପକ, ଅଧ୍ୟକ୍ଷ ଏବଂ ପ୍ରଫେସରର ପଦକୁ ଯାଇ ଶେଷରେ ଅଧ୍ୟକ୍ଷ ଭାବରେ ଧରଣୀଧର ଅଗ୍ରଣୀ ମହାବିଦ୍ୟାଳୟ କେନ୍ଦୁଝରରୁ

୩୦.୦୬.୧୯୯୯ରେ ଅବସର ନେଲି। ଏହାରି ଭିତରେ ମୁଁ ଅନେକ ଜନପ୍ରିୟ ବିଜ୍ଞାନ ଭିତ୍ତିକ ଲେଖା ଲେଖି ବିଭିନ୍ନ ପତ୍ରପତ୍ରିକାରେ ପ୍ରକାଶ କରିଥିଲି। ପ୍ରଫେସର ରାଉତଙ୍କର ଏକ ଚିଠି ଏବେବି ମୋତେ ଆହୁରି ଅଧିକ ଉତ୍ସାହ ପ୍ରଦାନ କରିଚାଲିଛି। ସେହି ଚିଠିରେ ପ୍ରଫେସର ରାଉତ ମହାଶୟ ମୋର ଜନପ୍ରିୟ ବିଜ୍ଞାନ ଲେଖାକୁ ପଢ଼ି ମୋତେ ଆଶୀର୍ବାଦ ପ୍ରଦାନ କରିଥିଲେ। ତା'ଛଡ଼ା ପ୍ରଫେସର ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର ମଧ୍ୟ ବିଭିନ୍ନ ସମୟରେ ମତେ ଅନେକ ପ୍ରେରଣା ଯୋଗାଇଥିଲେ।

ସେମାନଙ୍କର ଆଶୀର୍ବାଦ ଏବଂ ଉତ୍ସାହ ବଳରେ ମୁଁ ଶତାଧିକ ଜନପ୍ରିୟ ପ୍ରବନ୍ଧ ପ୍ରକାଶ କରିବାରେ ସକ୍ଷମ ହୋଇଛି ଏବଂ ପଚାଶରୁ ଉର୍ଦ୍ଧ୍ୱ ଅନୁଷ୍ଠାନରୁ ପୁରସ୍କାର ଏବଂ ସମ୍ବର୍ଦ୍ଧନା ପାଇଛି। ଭାରତ ସରକାରଙ୍କ ବିଜ୍ଞାନ ଓ ପ୍ରଯୁକ୍ତିବିଦ୍ୟା ବିଭାଗ ତରଫରୁ ଦିଲ୍ଲୀଠାରେ ୨୦୨୦ ମସିହା ଫେବୃୟାରୀ ମାସ ୨୮ ତାରିଖ ଦିନ ତତ୍କାଳୀନ ମହାମାନ୍ୟ ରାଷ୍ଟ୍ରପତି ରାମନାଥ କୋବିନ୍ଦଙ୍କ ଦ୍ୱାରା ବିଜ୍ଞାନ ଭବନଠାରେ ୨୦୧୯ ମସିହା ପାଇଁ ଜନପ୍ରିୟ ବିଜ୍ଞାନ ରଚନା କ୍ଷେତ୍ରରେ ଜାତୀୟ ପୁରସ୍କାରରେ ସମ୍ବର୍ଦ୍ଧିତ ତଥା ପୁରସ୍କୃତ ହୋଇପାରିଛି।

ଏବେ ଜନପ୍ରିୟ ବିଜ୍ଞାନ ମଞ୍ଚ ନାମକ ଏକ ସଂସ୍ଥା ଗଢ଼ି ବିଜ୍ଞାନର ଅନବଦ୍ୟ ସମ୍ଭାର କେମିତି ଜନତାଙ୍କ ସେବାରେ ଲାଗିବ ସେ ଦିଗରେ ଚେଷ୍ଟା ଜାରିରଖିଛି। ଏ ସବୁ ସମ୍ଭବ ହୋଇ ପାରିଛି କେବଳ ଗୁରୁଜନମାନଙ୍କର ଆଶୀର୍ବାଦ ହେତୁ।

ପରିଶେଷରେ ପ୍ରଭୁ ଜଗନ୍ନାଥଙ୍କ ନିକଟରେ ପ୍ରାର୍ଥନା - ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଆତ୍ମାର ସଦ୍‌ଗତି ହେଉ ଏବଂ ତାଙ୍କରି ଆଶୀର୍ବାଦ ସଦା ସର୍ବଦା ଆମ ସଭିଙ୍କ ଉପରେ ରହିଥାଉ। ତେଣୁ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ୍ ଆମ ସମସ୍ତଙ୍କ ପାଇଁ ବନ୍ଦନୀୟ ହୋଇ ରହିଥିଲେ, ରହିଛନ୍ତି ଏବଂ ରହିଥିବେ। ■■■

ପ୍ରାକ୍ତନ ଅଧ୍ୟକ୍ଷ,
ଧରଣୀଧର ଅଗ୍ରଣୀ ମହାବିଦ୍ୟାଳୟ, କେନ୍ଦୁଝର;
ସଭାପତି, ଜନପ୍ରିୟ ବିଜ୍ଞାନ ମଞ୍ଚ
ଇ.ବି.-୪୯୯, ବଡ଼ଗଡ଼ ବ୍ରିଟ୍ କଲୋନୀ,
ଭୁବନେଶ୍ୱର-୭୫୧୦୧୮
ଫୋନ୍-୯୪୩୭୬୯୬୧୪୦
Email: 73snbehera@gmail.com

The saddest aspect of life right now is that gathers knowledge faster than society gathers wisdom.

– Isaac Asimov

ପ୍ରଣମ୍ୟ ସାର୍ ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ : ଏକ ଯଶସ୍ୱୀ ଅମ୍ଲାନ ପ୍ରତିଭା

ଡକ୍ଟର ସୁବାସିନୀ ଲେଙ୍କା

ଗୁରୁବ୍ରହ୍ମା, ଗୁରୁବିଷ୍ଣୁଃ ଗୁରୁର୍ଦେବୋ ମହେଶ୍ୱରଃ

ଗୁରୁ ସାକ୍ଷାତ୍ ପରଂବ୍ରହ୍ମ ତସ୍ମୈଶ୍ରୀ ଗୁରବେନମଃ ।

ସେ ହିଁ ସର୍ବଶ୍ରେଷ୍ଠ ଗୁରୁ ଯିଏ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ନୀତି ଶିକ୍ଷା ପ୍ରଦାନ କରନ୍ତି, ସେମାନଙ୍କ ମନରେ ଅଦମ୍ୟ ସାହସ ଭରି ଦିଅନ୍ତି, କଠିନ ପରିଶ୍ରମ କରିବାକୁ ପ୍ରେରଣା ଦିଅନ୍ତି ଏବଂ ଅଜ୍ଞାନ ରୂପକ ଅନ୍ଧକାରକୁ ଦୂରୀଭୂତ କରି ଜ୍ଞାନର ଆଲୋକକୁ ବିତରଣ କରନ୍ତି । ସେମିତି ଜଣେ ଗୁରୁଥିଲେ ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ।

ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ରସାୟନ ବିଜ୍ଞାନ ଜଗତରେ ଜଣେ ଉଜ୍ଜ୍ୱଳ ଜ୍ୟୋତିଷ୍କ । ସେ ଥିଲେ ଜଣେ ଛାତ୍ରବତ୍ସଳ ଶିକ୍ଷାବିତ୍ତ, ଜଣେ ପ୍ରବୀଣ ଗବେଷକ ଓ ଶିକ୍ଷା ପ୍ରଶାସକ । ସେହି ପ୍ରବାଦ ପୁରୁଷଙ୍କର ଜନ୍ମ ୧୯୨୪ ମସିହା ଜାନୁଆରୀ ୪ ତାରିଖରେ ଅବିଭକ୍ତ ବାଲେଶ୍ୱର ଜିଲ୍ଲାର ଭଦ୍ରକ ସହରରେ । ପିତା ଲକ୍ଷ୍ମୀଧର ରାଉତ ଥିଲେ ଭଦ୍ରକରେ ଜଣେ ନାନାଜାଦା ଓକିଲ ଓ ମାତା ସୂର୍ଯ୍ୟମଣି ଦେଈ ଥିଲେ ଜଣେ ଧର୍ମପରାୟଣା ମହିଳା । ଭଦ୍ରକ ହାଇସ୍କୁଲରୁ ମାଟ୍ରିକ୍ ପାସ୍ କଲାପରେ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ସ୍ନାତକ ପର୍ଯ୍ୟନ୍ତ ଅଧ୍ୟୟନ କରି ପାଟଣା ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ସ୍ନାତକୋତ୍ତର ଡିଗ୍ରୀ ହାସଲ କରିଥିଲେ । ୧୯୪୪ ମସିହାରେ ସେ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ଅଧ୍ୟାପକ ଭାବରେ ଯୋଗ ଦେଇଥିଲେ ।

ଚାରିବର୍ଷ ପରେ ବାଲେଶ୍ୱରସ୍ଥ ଓଡ଼ିଆ ଜଗତର ଏକ ପ୍ରସିଦ୍ଧ ଗାଳ୍ପିକ ତଥା ଔପନ୍ୟାସିକ ଫକୀରମୋହନ ସେନାପତିଙ୍କ ସଂପର୍କୀୟା ନାତୁଣୀ ଶ୍ରୀମତୀ ସାବିତ୍ରୀ ସେନାପତିଙ୍କୁ ବିବାହ କରିଥିଲେ, ଯେ ପରବର୍ତ୍ତୀ ସମୟରେ ଶୈଳବାଳା ମହିଳା ମହାବିଦ୍ୟାଳୟରୁ ଅଧ୍ୟକ୍ଷା ଭାବରେ ଅବସର ଗ୍ରହଣ କରିଥିଲେ ।

ଡକ୍ଟର ରାଉତଙ୍କର ଗବେଷଣା ଆରମ୍ଭ ହୋଇଥିଲା ଜୈବ ରସାୟନ ବିଜ୍ଞାନରେ ପୁରୁଖା ବୈଜ୍ଞାନିକ ଡକ୍ଟର ସର୍ବାଣୀ ଗୁହସରକାରଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ । ତାଙ୍କ ବିଷୟବସ୍ତୁ ଥିଲା ପାରଦ ଧାତୁ ସଂଯୁକ୍ତ ଜୈବ ଯୌଗିକ ଉପରେ ଓ ତା'ର ଔଷଧୀୟ ଗୁଣ ନିର୍ଣ୍ଣୟ କରିବାରେ । ୧୯୫୨ ମସିହାରେ ପିଏଚ୍.ଡ଼ି. ଡିଗ୍ରୀ ହାସଲ କଲାପରେ ସେ ଥାୟାଜୋଲ୍ ନାମକ ଜୈବ ଯୌଗିକ ଉପରେ ନୂତନ ଧାରାରେ ଗବେଷଣା ଆରମ୍ଭ କଲେ । ତତ୍ପରେ ସେ ଗବେଷଣା କରିଥିଲେ ଫଟୋଗ୍ରାଫିରେ ବ୍ୟବହୃତ ସଂବେଦୀ ରଂଗ ପ୍ରସ୍ତୁତି ଓ ତା'ର ବର୍ଣ୍ଣାଳୀ ବୀକ୍ଷଣ ଅନୁଧ୍ୟାନ ଅନୁସନ୍ଧାନରେ । ପ୍ରଥମେ ତାଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ପ୍ରଫେସର ଡକ୍ଟର ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର ଓ ପ୍ରଫେସର ହୃଷୀକେଶ ପୂଜାରୀ, ପିଏଚ୍.ଡ଼ି. ଡିଗ୍ରୀ ପାଇଥିଲେ । ୧୯୫୫ ମସିହା ଜୁନ୍ ମାସରେ ଓଡ଼ିଶା ଲୋକସେବା ଆୟୋଗର ସୁପାରିସରେ ସେ ହେଲେ ପ୍ରାଧାପକ । ୧୯୫୬ ମସିହାରେ ସେ ଯାତ୍ରା କରିଥିଲେ ଆମେରିକା । ସେଠାରେ ବେଣ୍ଡିସ୍ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ପ୍ରଫେସର କନ୍‌ରୟଙ୍କ ସହିତ ଗବେଷଣା କରି ୩ଟି ଗବେଷଣାତ୍ମକ ପ୍ରବନ୍ଧ ଆମେରିକାନ୍ କେମିକାଲ୍ ସୋସାଇଟି ଜର୍ଣ୍ଣାଲରେ ପ୍ରକାଶ କଲେ ।

ରାସାୟନ ବିଜ୍ଞାନ ପାଠ୍ୟକ୍ରମରେ ଜୈବ ପ୍ରକ୍ରିୟାର ନୂତନ କ୍ରିୟାବିଧି ଅନ୍ତର୍ଭୁକ୍ତ କରିବାରେ ସେ ଥିଲେ ପ୍ରଥମ ରସାୟନିବିତ୍ । ଔଷଧ, ରଙ୍ଗ ଓ ଉପକ୍ଷାର ଉପରେ ଗବେଷଣା କରି ୧୯୫୯ ମସିହାରେ ଡକ୍ଟର ରାଉତ ଡ଼ି.ଏସ୍‌ସି. ଡ଼ିଗ୍ରୀ ଉତ୍କଳ ୟୁନିଭରସିଟିରୁ ପ୍ରଥମେ ପ୍ରାପ୍ତ ହେଲେ । ତାଙ୍କ ଗବେଷଣାମାନଙ୍କୁ ବିବେଚନା କରି ଓଡ଼ିଶା ସରକାର

ତାଙ୍କପାଇଁ ସ୍ୱତନ୍ତ୍ର ପ୍ରଫେସର ପଦବୀ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ସ୍ଥାପନ କଲେ। ୧୯୬୧ ମସିହାରେ ସେ ସେହି ପଦରେ ଅଧିଷ୍ଠିତ ହୋଇ ବିଭାଗୀୟ ମୁଖ୍ୟ ହେଲେ। ୧୯୬୯ ମସିହାରେ ସେ ନିମନ୍ତ୍ରିତ ଗବେଷକ ଭାବରେ ରୁଷିଆ ଯାଇ ୮୮ଟି ଗବେଷଣାଗାର ଓ ବିଶ୍ୱବିଦ୍ୟାଳୟ ପରିଦର୍ଶନ କରିଥିଲେ। ୧୯୬୮ ମସିହାରେ ଗଙ୍ଗାଧର ମେହେର ମହାବିଦ୍ୟାଳୟରେ ଓ ୧୯୭୦ ମସିହାରେ ଖଲ୍ଲିକୋଟ ମହାବିଦ୍ୟାଳୟରେ ରହି ରେଭନ୍ସା ମହାବିଦ୍ୟାଳୟକୁ ପ୍ରତ୍ୟାବର୍ତ୍ତନ କଲେ ଓ ସେଠାରେ ସେ ଅଧ୍ୟକ୍ଷ ପଦ ମଣ୍ଡନ କଲେ। ଦୀର୍ଘ ୯ ବର୍ଷପରେ ସେ ହେଲେ ଉଚ୍ଚଶିକ୍ଷା ନିର୍ଦ୍ଦେଶକ। ଅଧ୍ୟକ୍ଷ ଥିବା ସମୟରେ ଓଡ଼ିଶାର ଶିକ୍ଷା ଓ ଗବେଷଣାର ଉନ୍ନତି ପାଇଁ ୧୯୭୭ ମସିହାରେ ସେ ୟୁଜିସି ଦ୍ୱାରା ମନୋନିତ ହୋଇ ୬ ଜଣିଆ କମିଟି ସହିତ ଆମେରିକା ଯାଇଥିଲେ। ୧୯୮୦ ମସିହାରେ ସେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ହୋଇ ୧୯୮୩ ମସିହା ପର୍ଯ୍ୟନ୍ତ କାର୍ଯ୍ୟରତ ହେଲେ।

ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ଅବ୍ୟାହତ ନେଲାପରେ ୧୯୮୩ ମସିହାରେ ସେ ରାଜ୍ୟ ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ସଂସ୍ଥାରେ ଅଧ୍ୟକ୍ଷ ହେଲେ। ସେହି ସମୟରେ ସେ ବିଭିନ୍ନ ଅନୁଷ୍ଠାନ ଯଥା - ଜୟଶ୍ରୀ କେମିକାଲ, ଓଡ଼ିଶା ସିମେଣ୍ଟ, ତାଳଚେର ତାପଜ କେନ୍ଦ୍ର, ରାଉରକେଲା ଇସ୍ପାତ କରଖାନା, ଓରିଏଣ୍ଟ କାଗଜକଳ ଇତ୍ୟାଦି ପରିଦର୍ଶନ କରି ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ପାଇଁ ନିର୍ଦ୍ଦେଶମାନ ଦେଇଥିଲେ। ୧୯୮୬ ରୁ ୧୯୮୯ ମସିହା ପର୍ଯ୍ୟନ୍ତ ସେ ଓଡ଼ିଶା ବ୍ୟାଙ୍କିଂ ସର୍ଭିସ୍ ରିକ୍ରୁଟ୍‌ମେଣ୍ଟ ବୋର୍ଡ଼ର ଅଧ୍ୟକ୍ଷ ଭାବରେ କାର୍ଯ୍ୟ କରିଥିଲେ। ବିଭିନ୍ନ ପଦପଦବୀରେ ଥାଇ ମଧ୍ୟ ଜୀବନର ଅନ୍ତିମ ସମୟ ପର୍ଯ୍ୟନ୍ତ ସେ ବିଭିନ୍ନ ଶାଖାରେ ଗବେଷଣାରତ ରହି ୨୫୦ଟି ଗବେଷଣା ପ୍ରବନ୍ଧ ଜାତୀୟ ଓ ଅନ୍ତର୍ଜାତୀୟ ବିଜ୍ଞାନ ପତ୍ରିକାରେ ପ୍ରକାଶ କରିଥିଲେ ଓ ୩୯ ଜଣ ଗବେଷକଙ୍କର ସେ ଥିଲେ ଗବେଷଣା ତତ୍ତ୍ୱାବଧାରକ।

କେବଳ ଗବେଷଣା ନୁହଁ, ଡକ୍ଟର ରାଉତଙ୍କର ଅଧ୍ୟାପନା ଶୈଳୀ ଥିଲା ଖୁବ୍ ସରଳ ଓ ଶୃଙ୍ଖଳିତ। ଅଧିକାଂଶ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ନାମ ମନେରଖିବା ଓ ନାଁ ଧରି ଡାକିବା ତାଙ୍କର ଅନ୍ୟଏକ ସୁଗୁଣ।

ଉଚ୍ଚମାନର ଗବେଷଣା ପାଇଁ ଡକ୍ଟର ରାଉତ ୧୯୬୪ ଓ ୧୯୬୬ରେ କୁପର ମେମୋରିଆଲ ପୁରସ୍କାର ପାଇଥିଲେ ଓ ତାଙ୍କ ମୃତ୍ୟୁପରେ ୨୦୦୭ ମସିହାରେ ଓଡ଼ିଶା ବିଜ୍ଞାନ ଏକାଡେମୀ ଠାରୁ ଲକ୍ଷ ପ୍ରତିଷ୍ଠିତ ବୈଜ୍ଞାନିକ ପୁରସ୍କାର ପାଇଥିଲେ। ତାଙ୍କ ୬୦ ବର୍ଷ ପୂର୍ତ୍ତିରେ ଇଣ୍ଡିଆନ୍ କେମିକାଲ୍ ସୋସାଇଟି ଜର୍ଣ୍ଣାଲ୍ ତା'ର ଗୋଟିଏ ସ୍ୱତନ୍ତ୍ର ସଂଖ୍ୟାର ପ୍ରକାଶନ ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ନାଁରେ ଉତ୍ସର୍ଗ କରିଥିଲେ। ତାଙ୍କ ପ୍ରଚେଷ୍ଟାରେ ୧୯୭୮ ମସିହା ଡିସେମ୍ବର ୨୪ ତାରିଖରେ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟ ପ୍ରତିଷ୍ଠାର ଶତବାର୍ଷିକୀ ଉତ୍ସବ ପାଳନ ଉପଲକ୍ଷେ ଭାରତୀୟ ପୋଷ୍ଟ ଏବଂ ଟେଲିଗ୍ରାଫ୍ ବିଭାଗ ପ୍ରକାଶ କରିଥିଲା ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟର ଛବିଥିବା ଡାକ ଟିକେଟ୍।

ପୁତ୍ର ପ୍ରଫେସର ସ୍ୱୟଂପ୍ରକାଶ ରାଉତ, କନ୍ୟା ସ୍ୱର୍ଗୀୟା ଡକ୍ଟର ଅନୁରାଧା ରାଉତ, ପତ୍ନୀ ସ୍ୱର୍ଗୀୟା ସାବିତ୍ରୀ ରାଉତ ଓ ବୋହୂ ଡକ୍ଟର ଦୀପିକା ପଟ୍ଟନାୟକଙ୍କୁ ନେଇ ତାଙ୍କର ଥିଲା ଛୋଟ ସଂସାର। ୧୯୯୦ ମସିହା ଫେବ୍ରୁୟାରୀ ୭ ତାରିଖ ଏହି ମହାନ ବ୍ୟକ୍ତିଙ୍କର ତିରୋଧାନ ହୋଇଥିଲା। ସେ ଆଜି ନାହାନ୍ତି, କିନ୍ତୁ ବୈଜ୍ଞାନିକ, ଗବେଷକ ଓ ଛାତ୍ରମାନଙ୍କ ପାଖରେ ସେ ସଦା ଜୀବିତ।

ସବୁ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ଉପରେ ଝରି ପଡୁଥିଲା ତାଙ୍କର ଆଶୀର୍ବାଦ ଏବଂ ସ୍ନେହଶ୍ରଦ୍ଧାର ବାରି। ତାଙ୍କ ଅଞ୍ଚଳ ଭଦ୍ରକର ଆଖପାଖରେ ମୋର ଜନ୍ମ। ନିପଟ ମଫସଲରୁ ଆସି ଓଡ଼ିଶାର ପ୍ରାଚୀନତମ ମହାବିଦ୍ୟାଳୟ ରେଭେନ୍ସାରେ ପଢ଼ିବାର ସବୁ ସୁବିଧା କରିଦେଇ ମୋ ଜୀବନକୁ ଏକ ସରଳ ମାର୍ଗରେ ପରିଚାଳିତ କରିବାପାଇଁ ପଥ ପରିଷ୍କାର କରିଦେଇଥିଲେ ସେ। ଖାଲି ସେତକ ନୁହେଁ, ମୋର ପ୍ରଥମ ଅଧ୍ୟାପନା ରେଭେନ୍ସାରେ କରାଇଦେବାରେ ତାଙ୍କ ଅବଦାନ ମୋର ଚିରସ୍ମରଣୀୟ। ଗବେଷଣା ପାଇଁ ତାଙ୍କ ପରାମର୍ଶ ମୋ ଜୀବନକୁ କରିଥିଲା କୁସୁମିତ। ଶିକ୍ଷାପ୍ରାପ୍ତ ହେବା, ଅଧ୍ୟାପନା କରିବା ଓ ଗବେଷଣା କରିବାରେ ତାଙ୍କର ଅସୀମ କରୁଣା ମୋତେ ଆଜି ସମାଜରେ ଜଣେ ସଫଳ ନାଗରିକ ଭାବରେ ପରିଚିତ କରିଛି।

ସେହି ଗୁରୁ ଗରୀୟାନଙ୍କୁ ମୋର ଭକ୍ତିପୂର୍ଣ୍ଣ ପ୍ରଣାମ। ■■■

ପ୍ରାକ୍ତନ ପ୍ରାଧାପିକା
ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ
ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟ,
କଟକ - ୭୫୩୦୦୩
ଫୋନ ନଂ- ୯୮୬୧୪୨୨୨୨୨

ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ: ସେ ଓଡ଼ିଶାରେ ବୈଜ୍ଞାନିକ ଗବେଷଣାକୁ ସଂପ୍ରସାରିତ କରିଥିଲେ।

ପ୍ରଫେସର ରମେଶ ଚନ୍ଦ୍ର ପରିଡ଼ା

ସ୍ୱାଧୀନତୋତ୍ତର ଓଡ଼ିଶାରେ ବୈଜ୍ଞାନିକ ଗବେଷଣାର ଭିତ୍ତିପ୍ରସ୍ତର ସ୍ଥାପନ କ୍ଷେତ୍ରରେ ପ୍ରଫେସର ପ୍ରାଣକୃଷ୍ଣ ପରିଜା ଏବଂ ତାଙ୍କ ସହଯୋଗୀମାନେ ଯେ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଭୂମିକା ଗ୍ରହଣ କରିଥିଲେ ଏଥିରେ ସଂଦେହର ଅବକାଶ ନାହିଁ। କିନ୍ତୁ ଖୁବ୍ ଶୀଘ୍ର ତାଙ୍କୁ ଅନୁସରଣ କରି ଏହା ଉପରେ ଏକ ସୁଦୃଶ୍ୟ ଅଟ୍ଟାଳିକାର ନିର୍ମାଣ କରିଥିବା ପ୍ରଜ୍ଞାବାନ ବୈଜ୍ଞାନିକମାନଙ୍କ ଅଗ୍ରଗଣ୍ୟ ସ୍ଥପତି ହେଲେ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ। ଯଦିଓ ମୂଳତଃ ସେ ଥିଲେ ଜଣେ ଜୈବରସାୟନବିତ୍ ଗବେଷଣା କ୍ଷେତ୍ରକୁ ତାଙ୍କର ଅବଦାନ ରସାୟନ ବିଜ୍ଞାନର ପ୍ରାୟ ସମସ୍ତ କ୍ଷେତ୍ର ସହିତ ବିଜ୍ଞାନର ଅନ୍ୟାନ୍ୟ କ୍ଷେତ୍ରକୁ ମଧ୍ୟ ପରିବ୍ୟାପ୍ତ ହୋଇଥିଲା। ଏହାଫଳରେ ଆମ ରାଜ୍ୟରେ ବିଭିନ୍ନ ଗବେଷଣା କ୍ଷେତ୍ର ପ୍ରକୃତରେ ପରସ୍ପର ସହିତ ସଂପୃକ୍ତ ହୋଇ ପାରିଲା। ବିବିଧବର୍ଣ୍ଣା ଥିଲା ତାଙ୍କ ବ୍ୟକ୍ତିତ୍ୱ - ସେ ଥିଲେ ଏକାଧାରରେ ଜଣେ ଶ୍ରଦ୍ଧାବାନ ପୁରୁଷ, କୃତବିଦ୍ୟ ବୈଜ୍ଞାନିକ, ଉତ୍ସର୍ଗୀକୃତ ଶିକ୍ଷାବିତ୍ ଏବଂ ସୁଯୋଗ୍ୟ ପ୍ରଶାସକ ଓ ସଂଗଠକ।

ପ୍ରଫେସର ରାଉତ ୧୯୨୪ ମସିହା ଜାନୁୟାରୀ ୪ ତାରିଖରେ ଭଦ୍ରକର ସୁପ୍ରସିଦ୍ଧ ଆଇନଜ୍ଞ ଶ୍ରୀ ଲକ୍ଷ୍ମୀଧର ରାଉତ ଏବଂ ଶ୍ରୀମତୀ ସୂର୍ଯ୍ୟମଣି ଦେବୀଙ୍କ ପାଞ୍ଚୋଟି ସନ୍ତାନ-ସନ୍ତତି (୩ ପୁଅ ଏବଂ ୨ ଝିଅ)ଙ୍କ ମଧ୍ୟରୁ ସର୍ବକନିଷ୍ଠ ରୂପେ ଜନ୍ମଗ୍ରହଣ କରିଥିଲେ। ସେ ସ୍ଥାନୀୟ ଉଚ୍ଚବିଦ୍ୟାଳୟରୁ ମାଧ୍ୟମିକ, ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରୁ ଉଚ୍ଚ ମାଧ୍ୟମିକ ଏବଂ ରସାୟନ ବିଜ୍ଞାନ (ସମ୍ମାନ)ରେ ସ୍ନାତକ ଶିକ୍ଷା ସମାପନ ପରେ ପାଟଣା ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ସ୍ନାତକୋତ୍ତର ଡିଗ୍ରୀ ହାସଲ କରି (୧୯୪୪) ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ଅଧ୍ୟାପକ ରୂପେ ଯୋଗ ଦେଇଥିଲେ। ସେତେବେଳେ ପ୍ରଫେସର ପ୍ରାଣକୃଷ୍ଣ ପରିଜା ମହାବିଦ୍ୟାଳୟର ଅଧ୍ୟକ୍ଷ ଏବଂ ପ୍ରଫେସର ବଳଭଦ୍ର ପ୍ରସାଦ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ମୁଖ୍ୟ ଥାନ୍ତି। ସେହି ମହାନ୍ ବୈଜ୍ଞାନିକମାନଙ୍କ ପ୍ରଭାବ ତାଙ୍କୁ ଜଣେ ଉଚ୍ଚକୋଟିର ଗବେଷକ ତଥା ଶିକ୍ଷାବିତ୍ ହେବାଲାଗି ପ୍ରେରଣା ଯୋଗାଇଥିଲା।

ଉଚ୍ଚତର ଗବେଷଣା ଲାଗି ବିଦେଶ ଯିବା ପାଇଁ ୧୯୪୫ ଏବଂ ୧୯୪୬ରେ ଦୁଇଥର ସରକାରଙ୍କ ବୃତ୍ତି ମିଳି ଥିଲା। କିନ୍ତୁ ସ୍ୱାସ୍ଥ୍ୟଗତ ଅନୁପଯୁକ୍ତତା ହେତୁ ସେ ତାହା ଉପଯୋଗ କରି ପାରିଲେ ନାହିଁ। ତଥାପି ସେଥିରେ ହତୋତ୍ସାହିତ ନ ହୋଇ ସେ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟର ପ୍ରସିଦ୍ଧ ରସାୟନ ବିଜ୍ଞାନୀ ପ୍ରଫେସର ଏସ୍. ଏସ୍. ଗୃହ ସରକାରଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ଗବେଷଣା କରିବାକୁ ଲାଗିଲେ ଏବଂ ୧୯୪୯ ମସିହାରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ପିଏଚ୍.ଡି ଡିଗ୍ରୀ ହାସଲ କଲେ। ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ବିଜ୍ଞାନରେ ଓ ପିଏଚ୍.ଡି ଡିଗ୍ରୀ ପ୍ରାପ୍ତ ହେବାରେ ସେ ଥିଲେ ଦ୍ୱିତୀୟ ବ୍ୟକ୍ତି। ତାଙ୍କ ଗବେଷଣାର ବିଷୟ ଥିଲା "Synthesis and Pharmacological Studies on Organomercurials"। ତତ୍ପରେ ୧୯୫୯ ମସିହାରେ ଔଷଧ, ସଂଶ୍ଳେଷିତ ରଙ୍ଗ ଏବଂ ଆଲ୍‌କାଲଏଡ୍‌ସ ଉପରେ ଗବେଷଣା ଚଳାଇଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ପ୍ରଥମ ବିଜ୍ଞାନ ଗବେଷକ ହିସାବରେ ଡି.ଏସ୍‌ସି. ଡିଗ୍ରୀ ପ୍ରାପ୍ତ ହେଲେ। ଗବେଷଣା କ୍ଷେତ୍ରକୁ ତାଙ୍କର ଏ ଅବଦାନକୁ ସ୍ୱୀକୃତି ଦେଇ ଓଡ଼ିଶା ସରକାର ତାଙ୍କ ପାଇଁ ଏକ ନୂତନ ପ୍ରଫେସର ପଦବୀ ସୃଷ୍ଟି କଲେ।

ଥାଇଆଜୋଲ୍ସ (Thaiazles) ଗବେଷଣା କ୍ଷେତ୍ରରେ ପ୍ରଫେସର ରାଉତ ନୂତନ ଯୁଗର ଅୟମାରମ୍ଭ କରିଥିଲେ। ଏହାରି ଉପରେ ତାଙ୍କ ମାର୍ଗ ଦର୍ଶନରେ ଗବେଷଣା କରି ପ୍ରଥମେ ପିଏଚ୍.ଡ଼ି. ଲାଭ

କରିଥିଲେ ଓଡ଼ିଶାର ଦୁଇଜଣ ସୁବିଖ୍ୟାତ ବୈଜ୍ଞାନିକ - ପ୍ରଫେସର ହୃଷିକେଶ ପୂଜାରୀ ଏବଂ ପ୍ରଫେସର ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର। ଏହାପରେ ସେ ଅଧ୍ୟୟନ କରିବାକୁ ଲାଗିଲେ "Synthesis and Spectroscopic Studies on Photographic Sensitizing Dyes" ଉପରେ ଏବଂ କ୍ରମେ ତାଙ୍କ ଗବେଷଣାକୁ ରସାୟନବିଜ୍ଞାନର ପ୍ରାୟ ସମସ୍ତ କ୍ଷେତ୍ରକୁ ସଂପ୍ରସାରିତ କଲେ। ଏହାର ଅନ୍ତର୍ଭୁକ୍ତ ଥିଲା ଔଷଧ ଓ ଜୈବସକ୍ରିୟ ଯୌଗିକ ପଦାର୍ଥ, ପଲିମେଥିନ୍ ରଙ୍ଗ, ପ୍ରାକୃତିକ ଉତ୍ପାଦୀ, ସ୍ନେହସାର, କ୍ୱାଣ୍ଟମ୍ ରସାୟନ ବିଜ୍ଞାନ, ରାସାୟନିକ ପ୍ରତିକ୍ରିୟାର ହାର (Chemical Kinetics), ପଲିମର ବିଜ୍ଞାନ ଏବଂ ପରିବେଶ ବିଜ୍ଞାନ। ତାଙ୍କ ଗବେଷଣା ରସାୟନ ବିଜ୍ଞାନର ଯେଉଁ ଏକ ନୂତନ କ୍ଷେତ୍ରର ବିକାଶ ଘଟାଇଥିଲା ତାହା ହେଲା ଭୌତିକ-ଜୈବ ରସାୟନ ବିଜ୍ଞାନ। ସେଥିଲେ ଆମ ରାଜ୍ୟର ପ୍ରଥମ ଏବଂ ଦେଶର ବହୁକମ୍ ରସାୟନ ବିଜ୍ଞାନୀମାନଙ୍କ ମଧ୍ୟରୁ ଅନ୍ୟତମ ଯିଏକି ନୂତନ ରାସାୟନିକ ଯୌଗିକମାନଙ୍କ ସଂରଚନା ନିର୍ଦ୍ଧାରଣରେ Nuclear Magnetic Resonance Spectroscopy and Radioactive Isotope C^{14} ର ବ୍ୟବହାର କରିଥିଲେ।

ତାଙ୍କର ଅଧିକାଂଶ ଗବେଷଣା ବ୍ୟବହାରମୁଖୀ ଥିଲା। ଉଦାହରଣସ୍ୱରୂପ, ସେ ନୂତନ ଭାବେ ସଂଶ୍ଳେଷଣ କରିଥିବା ରସାୟନ ଗୁଡ଼ିକ ମଧ୍ୟରେ ଥିଲା ଅନେକ ଔଷଧ, ରୋଗପ୍ରତିରୋଧକ ଏବଂ ରଙ୍ଗ। ବିଭିନ୍ନ ତୈଳର ମେଦାମ୍ଳ ସଂରଚନା ନିର୍ଦ୍ଧାରଣ ମଧ୍ୟ ତାଙ୍କ ଅଧ୍ୟୟନର ଅନ୍ତର୍ଭୁକ୍ତ ଥିଲା। ଏସବୁରେ ସେ ସେତେବେଳେ ଉନ୍ନତ ପ୍ରଯୁକ୍ତିବିଦ୍ୟା ରୂପେ ପରିଗଣିତ – Thin Layer Chromatography, UV, IR-Spectra, Gas-Liquid Chromatography ଆଦିର ଉପଯୋଗ କରୁଥିଲେ। ସେହିପରି ସେ କ୍ୱାଂଟମ୍ – ରସାୟନ ବିଜ୍ଞାନ ଓ ଜୈବରସାୟନ ବିଜ୍ଞାନ ମଧ୍ୟରେ ଏକ ସାଧାରଣ ପରିସର ନିର୍ମାଣ କରିବାକୁ ମଧ୍ୟ ସମର୍ଥ ହୋଇଥିଲେ। ପରିବେଶ ବିଜ୍ଞାନକୁ ମଧ୍ୟ ତାଙ୍କର ଅବଦାନ ଥିଲା ଅତି ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ। ଇବ୍-ତାପଜ ବିଦ୍ୟୁତ୍ ଉତ୍ପାଦନକେନ୍ଦ୍ର ପ୍ରତିଷ୍ଠାର ପରିବେଶ ଉପରେ ପ୍ରଭାବ, ଓଡ଼ିଶାର ବନ୍ୟପଶୁ, ପରିସଂସ୍ଥା ଓ ଅରଣ୍ୟ, ଶକ୍ତି ସଂରକ୍ଷଣ, ବଡ଼ବଡ଼ ଇସ୍ପାତ କାରଖାନାମାନଙ୍କରୁ ନିର୍ଗତ କଠିନ ବର୍ଜ୍ୟବସ୍ତୁର ସୁପରିଚାଳନା ଆଦିର ଅଧ୍ୟୟନ ଏହାର ଅର୍ନ୍ତଭୁକ୍ତ ଥିଲା। ସେ ପ୍ରାୟ ୫୦ ଜଣରୁ ଅଧିକ ଗବେଷକଙ୍କୁ ଉଚ୍ଚତର ଗବେଷଣା ଲାଗି ଦିଗ୍‌ଦର୍ଶନ ଦେଇଥିଲେ। ତହିଁରୁ ଅନେକ ପରବର୍ତ୍ତୀ କାଳରେ ଜାତୀୟ ଏବଂ ଆର୍ନ୍ତଜାତିକସ୍ତରରେ ସୁଖ୍ୟାତି ଅର୍ଜନ କରିବାକୁ ସମର୍ଥ ହୋଇ ପାରିଥିଲେ। ପ୍ରଫେସର ରାଉତ "ଦ' ନେଚର", "ଦ' ଜର୍ଣ୍ଣାଲ୍ ଅଫ୍ ଆମେରିକାନ୍ କେମିକାଲ୍ ସୋସାଇଟି" ସମେତ ଦେଶ-ବିଦେଶର ବହୁ ସୁଖ୍ୟାତ ଗବେଷଣା ପତ୍ରିକାରେ ପ୍ରକାଶ କରିଥିଲେ ୨୫୦ ରୁ ଅଧିକ ଗବେଷଣା ନିବନ୍ଧ।

ସେ କେବଳ ଜଣେ ଉଚ୍ଚକୋଟିର ଶିକ୍ଷକ ଏବଂ ପ୍ରତିଶ୍ରୁତିବଦ୍ଧ ବୈଜ୍ଞାନିକ ନଥିଲେ, ସେଥିସହିତ ଥିଲେ ଶିକ୍ଷାବିଭାଗର ଜଣେ ଦକ୍ଷ ପ୍ରଶାସନ। ରେଭେନ୍‌ସା ମହାବିଦ୍ୟାଳୟର ରସାୟନବିଜ୍ଞାନ ବିଭାଗର ମୁଖ୍ୟ (୧୯୬୪-୧୯୬୮), ରାଜ୍ୟର ବିଭିନ୍ନ ପ୍ରମୁଖ ମହାବିଦ୍ୟାଳୟମାନଙ୍କ ଅଧ୍ୟକ୍ଷ (ଗଙ୍ଗାଧର ମେହେର ମହାବିଦ୍ୟାଳୟ- ୧୯୬୯ ରୁ ୧୯୭୯, ଖଲ୍ଲିକୋଟ ମହାବିଦ୍ୟାଳୟ-୧୯୭୦ ରୁ ୧୯୭୧ ଏବଂ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟ- ୧୯୭୧ ରୁ ୧୯୭୭) ଏବଂ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି (୧୯୮୦-୧୯୮୩) ରୂପେ କାର୍ଯ୍ୟ ନିର୍ବାହ କାଳରେ ସେ ଏହା ପ୍ରମାଣିତ କରିଛନ୍ତି। ଇତି ମଧ୍ୟରେ ସେ ମଧ୍ୟ ନବଗଠିତ ଓଡ଼ିଶା ରାଜ୍ୟ ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡର ପ୍ରଥମ ଚେୟାରମ୍ୟାନ (୧୯୮୩-୧୯୮୬) ରୂପେ ପ୍ରାଥମିକ ଅବସ୍ଥାରେ ଏହି ଅନୁଷ୍ଠାନଟିକୁ ସୁପ୍ରତିଷ୍ଠିତ କରିବାରେ ଅନନ୍ୟ ଭୂମିକା ଗ୍ରହଣ କରିଥିଲେ। ଏ ସମସ୍ତ ଦାୟୀତ୍ୱ ମଧ୍ୟରେ ବି' ପ୍ରଫେସର ରାଉତ ଗବେଷଣା ଠାରୁ ଦୂରେଇ ଯାଇନଥିଲେ। ତାଙ୍କର ଏ କ୍ଷେତ୍ରକୁ ପ୍ରତିଶ୍ରୁତିବଦ୍ଧତାକୁ ସ୍ୱୀକୃତି ଜଣାଇ ୧୯୮୪ ମସିହାରେ ତାଙ୍କ ୬୦ ତମ ଜନ୍ମଦିବସ ପାଳନ ଅବସରରେ "ଦ' ଜର୍ଣ୍ଣାଲ ଅଫ୍ ଇଣ୍ଡିଆନ୍ କେମିକାଲ୍ ସୋସାଇଟି" ପ୍ରକାଶ କରିଥିଲା ଏକ ବିଶେଷ ସଂଖ୍ୟା।

ଗବେଷଣା ଓ ଶିକ୍ଷା କ୍ଷେତ୍ରକୁ ତାଙ୍କର ଅନନ୍ୟ ଅବଦାନ ପାଇଁ ତାକୁ ମିଳିଥିଲା ଅନେକ ସମ୍ମାନ ଜନକ ପୁରସ୍କାର ଓ ସମ୍ମାନ। ତନ୍ମଧ୍ୟରେ ରହିଛି "ଦ' କୁପର୍ ମେମୋରିଆଲ୍ ମେଡାଲ୍ ଅଫ୍ ଦ' ଇନ୍‌ଷ୍ଟିଚ୍ୟୁଟ୍ ଅଫ୍ କେମିଷ୍ଟିସ୍" (୧୯୬୪ ଏବଂ ୧୯୬୬ ମସିହାରେ)। ବିଶ୍ୱବିଦ୍ୟାଳୟ ଅନୁଦାନ କମିଶନ ଏବଂ ଭାରତ ସରକାର ୧୯୭୭ ମସିହାରେ ଆମେରିକାର ବିବିଧ ଉଚ୍ଚ ଶିକ୍ଷାନୁଷ୍ଠାନମାନ ପରିଦର୍ଶନ କରି ତଦନୁଯାୟୀ ଆମ ଉଚ୍ଚତର ବିଜ୍ଞାନ ଶିକ୍ଷା ଓ ଗବେଷଣାକୁ

ଦିଗ୍‌ଦର୍ଶନ ଦେବାପାଇଁ ପ୍ରେରଣ କରିଥିବା ଶିକ୍ଷାବିତ୍‌ମାନଙ୍କ ମଧ୍ୟରେ ସେଥିଲେ ଅନ୍ୟତମ। ସେଠାରୁ ଫେରି ସେ ପ୍ରସ୍ତୁତ କିରଥିବା ରିପୋର୍ଟ ସର୍ବଭାରତୀୟ ସ୍ତରରେ ପ୍ରଶଂସିତ ହୋଇଥିଲା। ଓଡ଼ିଶା ବିଜ୍ଞାନ ଏକାଡେମୀ ୨୦୦୮ ମସିହାରେ ତାଙ୍କୁ ଆଜୀବନ ଅବଦାନ ପୁରସ୍କାରରେ ସମ୍ମାନିତ କରିଥିଲା।

କୁହାଯାଏ ଯେ ପ୍ରତ୍ୟେକ ପୁରୁଷର ସଫଳତା ପଛରେ ପ୍ରଚ୍ଛନ୍ନଭାବେ ନିହିତଥାଏ ଜଣେ ମହିଳାଙ୍କ ହାତ। ପ୍ରକୃତରେ ପ୍ରଫେସର ରାଉତଙ୍କ ଜୀବନରେ ତାହାହିଁ ଘଟିଥିଲା। ତେଣୁ ଅଧିକାଂଶ ସମୟରେ ତାଙ୍କର ସମସ୍ତ ସଫଳତା ପାଇଁ ତାଙ୍କ ପତ୍ନୀ ତଥା ରମାଦେବୀ ମହିଳା ମହାବିଦ୍ୟାଳୟର ପୂର୍ବତନ ଅଧ୍ୟକ୍ଷା ଡକ୍ଟର ସାବିତ୍ରୀ ରାଉତଙ୍କ ଅବଦାନକୁ ସ୍ୱୀକାର କରୁଥିଲେ। ମାତାମ୍‌ଥିଲେ ଓଡ଼ିଆ ସାହିତ୍ୟ ଆକାଶର ଅନ୍ୟତମ ଉଜ୍ଜ୍ୱଳ ଜ୍ୟୋତିଷ୍କ ଶ୍ରୀଫକିର ମୋହନ ସେନାପତିଙ୍କ ପୁତୁରା ସାହିତ୍ୟିକ ଶ୍ରୀ ଅଧିରାଜ ମୋହନ ସେନାପତିଙ୍କ କନ୍ୟା। ତାଙ୍କ ନିଜର ମଧ୍ୟ ଜଣେ ଉଚ୍ଚକୋଟିର ସଂସ୍କୃତଭାଷାବିତ୍ ଏବଂ ଗବେଷିକା ହିସାବରେ ବିଶେଷ ସୁଖ୍ୟାତି ଥିଲା।

ଚାଣକ୍ୟଙ୍କ ମତରେ ଧନବାନ୍ ବ୍ୟକ୍ତି ଭଦ୍ର ଏବଂ ବିଦ୍ୱାନ ବ୍ୟକ୍ତି ଦୀର୍ଘଜୀବୀ ହେବା କ୍ୱଚିତ୍ ଦେଖାଯାଏ। ପ୍ରଫେସର ରାଉତଙ୍କ କ୍ଷେତ୍ରରେ ଏହାର ସତ୍ୟତା ପ୍ରମାଣିତ ହୋଇଥିଲା, କାରଣ ମାତ୍ର ୬୬ ବର୍ଷ ବୟସରେ ୧୯୯୦ ମସିହା ଫେବୃୟାରୀ ୭ ତାରିଖ ଦିନ ତାଙ୍କ କର୍ମମୟ ଜୀବନର ଅବସାନ ଘଟିଲା। ଏଥିପୂର୍ବରୁ ତାଙ୍କର କର୍ମଠତା, କାର୍ଯ୍ୟଦକ୍ଷତା ଏବଂ ସମୟାନୁବର୍ତ୍ତିତା ପାଇଁ ସୁଖ୍ୟାତି ଅର୍ଜନ କରିଥିବା ଏହି ବୈଜ୍ଞାନିକ ମହାମାନବ Motor-Ncuron Disease ରେ ପୀଡ଼ିତ ହେଲେ। ଜୀବନର ଅବସାନ ନିକଟ ହୋଇ ଆସୁଥିବାର ଉପଲବ୍ଧି କରିସୁଦ୍ଧା ସେ ତାଙ୍କର ଶେଷ ନିଶ୍ୱାସ ପର୍ଯ୍ୟନ୍ତ ଗବେଷଣକମାନଙ୍କୁ ଦିଗ୍‌ଦର୍ଶନ ଦେବାରୁ ବିରତ ହୋଇନଥିଲେ। ତାଙ୍କର ଏ ଆଚରଣ ମନକୁ ଆଣିଥାଏ ପ୍ରଖ୍ୟାତ ଗାଣିତଜ୍ଞ ରାମାନୁଜନଙ୍କ କଥା – ମୃତ୍ୟୁଶଯ୍ୟାରେ ମଧ୍ୟ ସେ ତାଙ୍କ ବନ୍ଧୁ ଏଚ୍.ଜି.ହାର୍ଡିଙ୍କୁ "ହାର୍ଡି-ରାମାନୁଜମ୍ ରାଶି" ସଂପର୍କରେ ବ୍ୟାଖ୍ୟା କରି ଚାଲିଥିଲେ।

ପ୍ରଫେସର ରାଉତ ଆଜି ଆମ ଗହଣରେ ନାହାନ୍ତି, ତେବେ ସେ ଛାଡ଼ିଯାଇଥିବା ଉଚ୍ଚକୋଟିର ବୈଜ୍ଞାନିକ ଆଦର୍ଶ ପିଢ଼ିପିଢ଼ି ଧରି ଯୁବ ବୈଜ୍ଞାନିକମାନଙ୍କୁ ଅନୁପ୍ରାଣିତ କରିବ। ■■■

ଅବସରପ୍ରାପ୍ତ ପ୍ରଫେସର
ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ,
ମୌଳିକ ବିଜ୍ଞାନ ଓ କଳା ମହାବିଦ୍ୟାଳୟ
ଓଡ଼ିଶା କୃଷି ଓ ବୈଷୟିକ ବିଶ୍ୱବିଦ୍ୟାଳୟ, ଭୁବନେଶ୍ୱର
ଫୋନ୍-୯୯୩୭୩୦୧୪୬୦

Science without religion is lame,
religion without science is blind.

– Albert Einstein

ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ : ଏକ କିମ୍ବଦନ୍ତୀ

ଡକ୍ଟର ଦୀପ୍ତି ପଟ୍ଟନାୟକ

ସେଥିଲେ ଏମିତି ଜଣେ ରସାୟନବିଦ୍ ଯେ, ଓଡ଼ିଶାରୁ ପ୍ରାୟ ପ୍ରତିଟି ରସାୟନଶାସ୍ତ୍ରର ଛାତ୍ରଛାତ୍ରୀଙ୍କର ଗୁରୁଥିଲେ ଚାରି ଦଶନ୍ଧି ଧରି। ଷାଠିଏ ଦଶକରେ ମୁଁ ଯେତେବେଳେ ରେଭେନ୍ସା କଲେଜର ପ୍ରି-ୟୁନିଭରସିଟି କ୍ଲାସରେ ଯୋଗ ଦେଲି ସେତେବେଳେ ସେ ଖ୍ୟାତିର ଚରମ ସୀମାରେ। ସମସ୍ତେ ସମ୍ଭ୍ରମରେ ଓ ଭୟରେ ଥରହର ହେଉଥିଲେ ତାଙ୍କୁ ଦେଖିଲେ। ପ୍ରାୟ ସୁଟ୍‌ବୁଟ୍ ପିନ୍ଧି ନିଖୁଣ ଭାବେ ବେଶ ହେଉଥିବା ଡକ୍ଟର ରାଉତଙ୍କ ବ୍ୟକ୍ତିତ୍ୱ ସେହିପରି ସମ୍ଭ୍ରମ ଉଦ୍ରେକକାରୀ ଥିଲା। ରେଭେନ୍ସା କଲେଜ ସହିତ ସେ ଓତଃପ୍ରୋତ ଭାବରେ ଜଡ଼ିତ ଥିଲେ। ସେହି କଲେଜରେ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ କହିଲେ ଯେଉଁ କେତେଜଣ ବିଶିଷ୍ଟ ବୁଦ୍ଧିଜୀବୀଙ୍କ ନାଁ ସ୍ୱତଃ ମନକୁ ଆସିଯାଉଥିଲା ସେମାନଙ୍କ ଭିତରୁ ଜଣେ ଥିଲେ ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ। ସେ ଜଣେ ଛାତ୍ର ବତ୍ସଳ ଓ ଉଚ୍ଚଦରର ଶିକ୍ଷକ ଥିବା ସହିତ ଥିଲେ ଜଣେ ବିଖ୍ୟାତ ଗବେଷକ। ବହୁ ସଂଖ୍ୟକ ଛାତ୍ର ତାଙ୍କ ଅଧୀନରେ କାମ କରି ପିଏ.ଡ଼ି ପାଇଛନ୍ତି ଓ ଦେଶ-ବିଦେଶରେ ବହୁ ଉଚ୍ଚ ପଦପଦବୀରେ ଅଧିଷ୍ଠିତ ହୋଇ ରହିଛନ୍ତି। ସେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ଥିବା ସମୟରେ ମୁଁ ପ୍ରଫେସର ଏସ୍.ଆର ମହାନ୍ତିଙ୍କ ଅଧିନରେ ଗବେଷଣା କରୁଥିଲି। ସେତେବେଳେ ମୋର ଥିସିସ୍‌କୁ ପରୀକ୍ଷକମାନଙ୍କୁ ଖୁବ୍ ଶୀଘ୍ର ପଠାଇ ମୋର କାମ ସାରିବାକୁ ବ୍ୟଗ୍ର ଥିଲି କାରଣ ସେତେବେଳେ ମୋର ବହୁ ପାରିବାରିକ ସମସ୍ୟା ଥିଲା ଓ ମୋର ମା' କ୍ୟାନସର୍‌ରେ ପୀଡ଼ିତ ଥିଲେ। ସେଥିପାଇଁ ସାର୍ ମୋତେ ବହୁତ ସାହାଯ୍ୟ କରିଥିଲେ। ମୋର ଦୁର୍ଭାଗ୍ୟ ଯେ, ମୁଁ କେବେ ତାଙ୍କର ପ୍ରତ୍ୟକ୍ଷ ଛାତ୍ରୀ ନଥିଲି କିନ୍ତୁ ତାଙ୍କର ପତ୍ନୀ ସ୍ୱର୍ଗୀୟା ଶ୍ରୀମତୀ ସାବିତ୍ରୀ ରାଉତ ଶୈଳବାଳା ମହିଳା କଲେଜରେ ଅଧ୍ୟକ୍ଷା ଥିବା ବେଳେ ମୋତେ ତାଙ୍କ ସହିତ କାମ କରିବାର ସୁଯୋଗ ମିଳିଥିଲା। ଏତେ ସରଳ, ସ୍ନେହୀ ଓ ଅମାୟିକ ଭଦ୍ରମହିଳା ମୁଁ ବହୁତ୍ କମ୍ ଦେଖିଛି।

ପ୍ରଫେସର ରାଉତଙ୍କ ପାଖରେ ପାଠ ପଢ଼ିନାହିଁ ସତ କିନ୍ତୁ ତାଙ୍କ ପ୍ରତି କୃତଜ୍ଞ ଅସଂଖ୍ୟ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପ୍ରତ୍ୟକ୍ଷ ସଂସ୍ପର୍ଶରେ ଆସି ଜାଣିଛି, ସେ ଯେତିକି ବିଦ୍ୱାନ ଥିଲେ, ବିଦ୍ୟାଦାନ ପାଇଁ ତା'ଠାରୁ ଅଧିକ ଉତ୍ସାହୀ ଥିଲେ। ଓଡ଼ଶାର ଅସଂଖ୍ୟ ରସାୟନଶାସ୍ତ୍ରର ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କ ମନରେ ଜଣେ ଉଜ୍ଜ୍ୱଳ ଜ୍ୟୋତିଷ୍କ ଭାବରେ ସେ ସର୍ବଦା ଜ୍ୟୋତି ବିଚ୍ଛୁରଣ କରିଥିବେ; ଏଥିରେ ମୋର ସନ୍ଦେହ ନାହିଁ। ତାଙ୍କର ଜନ୍ମଶତବାର୍ଷିକୀରେ ତାଙ୍କର ଅସଂଖ୍ୟ ଗୁଣମୁଗ୍ଧ ପ୍ରିୟ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କ ସହିତ ମୁଁ ତାଙ୍କ ପ୍ରତି ମୋର ଗଭୀର ଶ୍ରଦ୍ଧାଞ୍ଜଳି ଜ୍ଞାପନ କରୁଛି। ■ ■ ■

ଅବସରପ୍ରାପ୍ତ ପ୍ରାଧ୍ୟାପିକା, ରେଭେନ୍ସା କଲେଜ, କଟକ
ଶ୍ୟାମଚନ୍ଦ୍ରିକା, ଦାସସାହି, ଜୋବ୍ରା, କଟକ-୭୫୪୦୦୩
ଫୋନ୍ ନଂ-୭୦୦୮୪୧୩୭୦୭

ସ୍ୱଗତଃ ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ: ଏକ ଅମ୍ଳାନ ସ୍ମୃତି ଅର୍ଘ୍ୟ

(ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ଜାନୁଆରୀ ୪, ୨୦୨୩ ଦିନ ଆୟୋଜିତ ଡଃ ରାଉତଙ୍କ ଜନ୍ମ ଶତବାର୍ଷିକୀ ଉଦ୍‌ଘାଟନ ସମାରୋହ ଉପଲକ୍ଷେ ଦୈନିକ ସମ୍ବାଦପତ୍ର 'ସର୍ବସାଧାରଣ'ରେ ପ୍ରକାଶିତ।)

ଡକ୍ଟର ଚିତ୍ତରଂଜନ ମିଶ୍ର

ଓଡ଼ିଶା ରସାୟନ ଜଗତର ମୁକୁଟ ବିହୀନ ସମ୍ରାଟ, ଲବ୍ଧପ୍ରତିଷ୍ଠ ବୈଜ୍ଞାନିକ, ଜଶସ୍ୱୀ ଗବେଷକ, ପ୍ରବୀଣ ଶିକ୍ଷାବିତ୍, ବରିଷ୍ଠ ଶିକ୍ଷା ପ୍ରଶାସକ ଓ ପରିବେଶବିତ୍ ସ୍ୱର୍ଗତଃ ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ବିଶ୍ୱ ବିଜ୍ଞାନ ଆକାଶର ଏକ ଉଜ୍ୱଳତମ ଜ୍ୟୋତିଷ୍କ ଭାବେ ଚିର ଯାଦୁଲ୍ୟମାନ ହୋଇ ରହିବେ କାଳକାଳକୁ। ଏହି ପ୍ରଶମ୍ୟ ମହାନୁଭବ, ଯୋଗଜନ୍ମା ବୈଜ୍ଞାନିକ ମହାପୁରୁଷ ଜଣକ ତତ୍କାଳୀନ ବାଲେଶ୍ୱର ଜିଲ୍ଲାର ଭଦ୍ରକ ସହରରେ ଜନ୍ମଗ୍ରହଣ କରିଥିଲେ ୧୯୨୪ ମସିହା ଜାନୁଆରୀ ମାସ ୪ ତାରିଖରେ। ତାଙ୍କ ପିତା ସ୍ୱର୍ଗତଃ ଲକ୍ଷ୍ମୀଧର ରାଉତ ସ୍ୱାଧୀନତା-ପୂର୍ବ ଭାରତବର୍ଷରେ ଭଦ୍ରକର ଏକ ଖ୍ୟାତନାମା ଓକିଲ ଭାବେ ବେଶ୍ ପ୍ରସିଦ୍ଧି ଲାଭ କରିଥିଲେ। ତାଙ୍କ ମା' ସ୍ୱର୍ଗତଃ ସୂର୍ଯ୍ୟମଣୀ ଦେବୀ ଜଣେ ଅତ୍ୟନ୍ତ ଧର୍ମ ପରାୟଣା ମହିଳା ଥିଲେ। ତାଙ୍କ ବାପା ମାଆଙ୍କର ମୋଟ ୫ଟି ସନ୍ତାନ ସନ୍ତତି ଥିଲେ ଏବଂ ଡକ୍ଟର ରାଉତ ସେମାନଙ୍କ ମଧ୍ୟରେ ସର୍ବ କନିଷ୍ଠ ଥିଲେ। ତାଙ୍କର ଦୁଇ ବଡ଼ ଭାଇଙ୍କ ନାଁ ଥିଲା ମନୀନ୍ଦ୍ର କୁମାର ରାଉତ ଓ ଜ୍ଞାନେନ୍ଦ୍ର କୁମାର ରାଉତ ଓ ଦୁଇ ବଡ଼ ଭଉଣୀଙ୍କ ନାଁ ଥିଲା ଶରତ କୁମାରୀ ରାଉତ ଓ ବସନ୍ତ କୁମାରୀ ରାଉତ। ଡଃ ରାଉତଙ୍କୁ ସ୍ନେହରେ ସମସ୍ତେ 'କୁନିଆ' ବୋଲି ଡାକୁଥିଲେ। ତାଙ୍କ ମା' ଯାଜପୁର ଜିଲ୍ଲାର ରାମବାଗର ଜମିଦାର ପରିବାରର ଅଲିଅଳି ଝିଅ ଥିଲେ। ଭଦ୍ରକ ସହରର ନରିପୁର ଠାରେ ଥିବା ତାଙ୍କ ବାପାଙ୍କ ହାତଗଢ଼ା ଦୁଇ ମହଲା ଘରେ ସପରିବାର ସମସ୍ତେ ଆନନ୍ଦରେ କାଳାତିପାତ କରୁଥିଲେ। ଡକ୍ଟର ରାଉତ ସେହି ଘରେ ତାଙ୍କର ସମ୍ପୂର୍ଣ୍ଣ ସ୍କୁଲ ଜୀବନଟିକୁ ବିତାଇଥିଲେ।

ଡକ୍ଟର ରାଉତ ୧୯୩୮ ମସିହାରେ ଭଦ୍ରକ ହାଇସ୍କୁଲରୁ ପ୍ରଥମ ଶ୍ରେଣୀରେ କୃତୀତ୍ୱର ସହ ମାଟ୍ରିକ ପାଶ୍ କରିଥିଲେ। ସେତେବେଳେ ମାଟ୍ରିକ୍ୟୁଲେସନ୍ ପରୀକ୍ଷା ପାଟଣା ବିଶ୍ୱବିଦ୍ୟାଳୟ ଅଧିନରେ ପରିଚାଳିତ ହେଉଥିଲା। ସେ ରେଭେନ୍ସା କଲେଜରୁ ୧୯୪୦ ମସିହାରେ ଆଇ.ଏସ୍‌ସି ଓ ୧୯୪୨ ମସିହାରେ ରସାୟନ ବିଜ୍ଞାନରେ ବି.ଏସସି (ଅନର୍ସ) ପାଶ୍ କରିଥିଲେ। ସେ ରେଭେନ୍ସା କଲେଜର ପଶ୍ଚିମ ଛାତ୍ରାବାସର ଅନ୍ତେବାସୀ ଥିଲେ। ସେ ୧୯୪୪ ମସିହାରେ ପାଟଣା ସାଇନ୍ସ କଲେଜରୁ ରସାୟନ ବିଜ୍ଞାନରେ ଏମ୍.ଏସ୍.ସି. ପାଶ୍ କରିଥିଲେ।

ଏମ୍.ଏସସି ରସାୟନ ବିଜ୍ଞାନ ଶ୍ରେଣୀରେ ପାଟଣା ସାଇନ୍ସ କଲେଜରେ ଓଡ଼ିଶାରୁ ମାତ୍ର ୪ ଜଣ ଛାତ୍ର ଥିଲେ। ସେମାନେ ହେଲେ ଅମର କୁମାର ଚାଟାର୍ଜି, ଦାଶରଥି ମିଶ୍ର, ପ୍ରସନ୍ନ କୁମାର ଦାସ ଓ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ। ଡଃ ରାଉତଙ୍କ ଖୁବ୍ ଭଲ ସାଙ୍ଗ ଥିଲେ ପ୍ରସନ୍ନ କୁମାର ଦାସ ଯେକି ପରବିର୍ତ୍ତୀ ସମୟରେ ରେଭେନ୍ସା କଲେଜର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ପ୍ରଫେସର ପଦବୀ ମଣ୍ଡନ କରିଥିଲେ ଏବଂ ପରେ ଖଲ୍ଲିକୋଟ କଲେଜର ଅଧ୍ୟକ୍ଷ ଆସନ ମଧ୍ୟ ଅଳଂକୃତ କରିଥିଲେ। ଡଃ ଦାଶରଥି ମିଶ୍ର ଓଡ଼ିଶା ଶିକ୍ଷା ସେବାରେ ଯୋଗଦାନ ଦେଇଥିଲେ ଓ ପରେ ସମ୍ବଲପୁର ଗଙ୍ଗାଧର ମେହେର କଲେଜର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ପ୍ରଫେସର ପଦବୀରେ ଅଭିଶିକ୍ତ ହୋଇଥିଲେ। ଅମର କୁମାର ଚାଟାର୍ଜି ଓଡ଼ିଶା ପ୍ରଶାସନିକ ସେବାରେ ଯୋଗଦେଇ ବହୁ ପଦ ପଦବୀରେ କାର୍ଯ୍ୟକରି ଓଡ଼ିଶା ସରକାରଙ୍କ ବିକ୍ରୀକର କମିଶନର ଭାବେ ଅବସର ଗ୍ରହଣ କରିଥିଲେ। ଡଃ ରାଉତ ଉଭୟ ଗ୍ରାଜୁଏଟ ଓ ପୋଷ୍ଟ-ଗ୍ରାଜୁଏଟ ସ୍ତରରେ ପ୍ରଫେସର ବଳଭଦ୍ର ପ୍ରସାଦ, ପ୍ରଫେସର ଆର.ସି. ରାୟ, ପ୍ରଫେସର ପି.ବି. ଗାଙ୍ଗୁଲି, ପ୍ରଫେସର ଏମ.କେ. ଡୋଜା ଓ ଅନ୍ୟାନ୍ୟ କୃତବିଦ୍ୟ ମନୀଷୀଙ୍କ ଅଶୀର୍ବାଦ ଓ ଶୁଭେଚ୍ଛାର ପାତ୍ର ହୋଇପାରିଥିଲେ।

୧୯୪୪ ମସିହାରେ ପାଟଣା ସାଇନ୍ସ କଲେଜରୁ ଏମ୍.ଏସସି ପାଶ୍ କଲା ପରେ ଡଃ ରାଉତ ସେହି ବର୍ଷ ରେଭେନ୍ସା କଲେଜରେ ଅଧ୍ୟାପକ ଭାବେ ଯୋଗଦାନ ଦେଲେ। ସେତେବେଳେ ବିଶିଷ୍ଟ ରସାୟନବିତ୍ ଡଃ ବଳଭଦ୍ର ପ୍ରସାଦ ରେଭେନ୍ସା କଲେଜ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ପ୍ରଫେସର ଓ ବିଭାଗୀୟ ମୁଖ୍ୟ ଥାଆନ୍ତି। ରେଭେନ୍ସା କଲେଜର ଅଧ୍ୟକ୍ଷ ଥାଆନ୍ତି ପ୍ରଫେସର ପ୍ରାଣକୃଷ୍ଣ ପରିଜା। ରେଭେନ୍ସା କଲେଜର ରସାୟନ ବିଜ୍ଞାନ ପ୍ରଫେସର ଡଃ ସର୍ବାଣୀ ସହାୟ ଗୁହ ସରକାରଙ୍କ ଅଧିନରେ ଗବେଷଣା କରି ଡଃ ରାଉତ ୧୯୫୨ ମସିହାରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ପିଏଚ୍ଡ଼ି ଡ଼ିଗ୍ରୀ ଲାଭ କଲେ। ତାଙ୍କ ଥେସିସ୍‌ର ବିଷୟବସ୍ତୁ ଥିଲା – "Synthesis and Pharmacological Studies of Organomercurials".

ଧିରେ ଧିରେ ଡଃ ରାଉତ ଗବେଷଣା କ୍ଷେତ୍ରରେ ସଂପୂର୍ଣ୍ଣ ଭାବେ ମନୋନିବେଶ କଲେ ଏବଂ Thiazole ଉପରେ ନୂଆ ନୂଆ ଗବେଷଣା କାର୍ଯ୍ୟ ଆରମ୍ଭ କଲେ। ଡଃ ରାଉତଙ୍କ ଅଧିନରେ ଗବେଷଣା କରି ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ପିଏଚ.ଡି ଉପାଧି ଲାଭ କରିଥିବା ପ୍ରଥମ ଦୁଇ ଜଣ ବ୍ୟକ୍ତି ଥିଲେ ୧୯୫୬ ମସିହାରେ ଡଃ ହୃଷୀକେଶ ପୁଜାରୀ ଓ ୧୯୫୮ ମସିହାରେ ଡଃ ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର। ପରବର୍ତ୍ତୀ ସମୟରେ ଡଃ ରାଉତ Synthesis and Spectroscopic Studies on Photographic Sensitizing ଉପରେ ତାଙ୍କର ପୋଷ୍ଟ- ଡକ୍ଟରାଲ୍ ଗବେଷଣା କରିଥିଲେ। ପରେ ଏହି ବିଷୟ ବସ୍ତୁ ଉପରେ ତାଙ୍କର ଏକାଧିକ ପିଏଚ.ଡ଼ି ଛାତ୍ର ଗବେଷଣାକୁ ଆଗକୁ ବଢ଼େଇ ନେଇଥିଲେ।

୧୯୫୫ ମସିହା ଜୁନ୍ ମାସରେ ଡଃ ରାଉତ ରିଡର ପଦବୀକୁ ଉନ୍ନିତ ହେଲେ। ୧୯୫୬ ମସିହାରେ ଡଃ ରାଉତ ପରିଦର୍ଶକ ଫେଲୋ ଭାବେ ଆମେରିକା ଯାତ୍ରା କରିଥିଲେ। ସେ ଆମେରିକାର ବ୍ରାଣ୍ଡେଇସ୍ ବିଶ୍ୱବିଦ୍ୟାଳୟର ପ୍ରଫେସର Harold J. Conroy ସହ ଗବେଷଣା କଲେ। ହାର୍ଭାଡ୍ ବିଶ୍ୱବିଦ୍ୟାଳୟର ପ୍ରଫେସର ରବର୍ଟ ବି. ଉଡୱାର୍ଡ ତାଙ୍କ ଗବେଷଣାର ମୁଖ୍ୟ ମାର୍ଗଦର୍ଶକ ଥିଲେ। ସେ ସେଠାରେ Synthesis & Structural Elucidation of the Alkaloid Aspidospermine ଉପରେ ଗବେଷଣା କରୁଥିଲେ। Nuclear Magnetic Resomance (NMR) ଏବଂ Radio Active Technique ବ୍ୟବହାର କରି ଅଣୁର ଗଠନ ଶୈଳୀ ନିର୍ଣ୍ଣୟ କରିବାରେ ସେ ବେଶ୍ ଖ୍ୟାତି ଅର୍ଜନ କରିଥିଲେ।

ଭାରତକୁ ପ୍ରତ୍ୟାବର୍ତ୍ତନ କରି ଡଃ ରାଉତ ରେଭେନ୍ସା କଲେଜର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗରେ ପୂର୍ବ ସ୍ଥାନରେ ରିଡର ଭାବେ ଯୋଗଦାନ ଦେଲେ। Drugs, Synthetic Dyes Gaõ Alkaloid କ୍ଷେତ୍ରରେ ତାଙ୍କର ଅସାଧାରଣ ଗବେଷଣା ପାଇଁ ଡଃ ରାଉତ ୧୯୫୯ ମସିହାରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ଡକ୍ଟର ଅଫ୍ ସାଇନ୍ସ (D.Sc.) ଉପାଧି ଲାଭ କରିଥିଲେ। ଡଃ ରାଉତ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ଫାକଲ୍‌ଟି ଅଫ୍ ସାଇନ୍ସରେ ଡି.ଏସସି ଉପାଧି ଲାଭ କରିବାରେ ପ୍ରଥମ ବ୍ୟକ୍ତି ହେବାର ବିରଳ ଗୌରବର ଅଧିକାରୀ ହୋଇଥିଲେ। ଡଃ ରାଉତଙ୍କ ଉଚ୍ଚକୋଟୀର ଗବେଷଣାକୁ ଉପଯୁକ୍ତ ସମ୍ମାନ ପ୍ରଦର୍ଶନ କରି ଓଡ଼ିଶା ସରକାର ରେଭେନ୍ସା କଲେଜର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗରେ ଏକ Special Chair of Professorship ସୃଷ୍ଟି କଲେ ଏବଂ ଡକ୍ଟର ରାଉତ ଏହି ପଦବୀରେ ପ୍ରଫେସର ଓ ବିଭାଗୀୟ ମୁଖ୍ୟ ଭାବେ ୧୯୬୧ ମସିହା ମାର୍ଚ୍ଚ ମାସରେ ଯୋଗଦାନ ଦେଲେ। ଜଣେ ଅତ୍ୟନ୍ତ ଛାତ୍ରବତ୍ସଳ ଅଧ୍ୟାପକପ ଭାବେ ଡଃ ରାଉତ ଛାତ୍ର ସମାଜରେ ବେଶ୍ ପରିଚିତ ଥିଲେ।

୧୯୬୮ ମସିହାରେ ଡଃ ରାଉତ ସମ୍ବଲପୁର ଗଙ୍ଗାଧର ମେହେର କଲେଜରେ ଅଧ୍ୟକ୍ଷ ଭାବେ ଯୋଗଦାନ ଦେଲେ ଏବଂ ସେଠାରେ ସେ ଦୁଇବର୍ଷ ଅତିବାହିତ କରିଥିଲେ। ୧୯୭୦ ମସିହାରେ ସେ ବ୍ରହ୍ମପୁର ଖଲ୍ଲିକୋଟ କଲେଜର ଅଧ୍ୟକ୍ଷ ଭାବେ ଯୋଗଦାନ ଦେଲେ ଏବଂ ସେଠାରେ ସେ ପ୍ରାୟ ବର୍ଷେକାଳ ରହିଲେ ଏବଂ ପରେ ୧୯୭୧ ମସିହାରେ ରେଭେନ୍ସା କଲେଜର ଅଧ୍ୟକ୍ଷ ପଦବୀ ମଣ୍ଡନ କଲେ। ଏହି ମର୍ଯ୍ୟାଦାବନ୍ତ ପଦବୀରେ ଡଃ ରାଉତ ଦୀର୍ଘ ୯ ବର୍ଷ କାଳ ରହିଲେ। ରେଭେନ୍ସାରେ ଅଧ୍ୟକ୍ଷ ଥିଲାବେଳେ ନଭେମ୍ବର ୧୯୭୬ରୁ ଫେବୃୟାରୀ ୧୯୭୭ ପର୍ଯ୍ୟନ୍ତ ଡଃ ରାଉତ ଓଡ଼ିଶାର ଡି.ପି.ଆଇ ଭାବେ ଅତିରିକ୍ତ ପଦବୀରେ ମଧ୍ୟ ଅଧିଷ୍ଠିତ ହୋଇଥିଲେ। ୧୯୭୭ ମସିହା ଏପ୍ରିଲରୁ ଜୁନ୍ ମାସ ମଧ୍ୟରେ ଡଃ ରାଉତ ୟୁ.ଜି.ସି. ଦ୍ୱାରା ମନୋନୀତ ହୋଇ ଆମେରିକାର ୧୦୦ ଟି ବିଶ୍ୱବିଦ୍ୟାଳୟ ଓ କଲେଜ ପରିଦର୍ଶନ କରିଥିଲେ। ଦେଶର ୬ ଜଣ ବରିଷ୍ଠ ଶିକ୍ଷା ପ୍ରଶାସକଙ୍କ ମଧ୍ୟରେ ସେ ଅନ୍ୟତମ ସଦସ୍ୟ ଭାବେ ଏହି ବୈଜ୍ଞାନିକ ଓ ଶୈକ୍ଷିକ ପରିଭ୍ରମଣରେ ଯୋଗଦେଇଥିଲେ।

ପରିଭ୍ରମଣ ରିପୋର୍ଟ ଭାରତ ସରକାର ଏବଂ ଆମେରିକା-ଭାରତ ଏଜୁକେସନାଲ୍ ଫାଉଣ୍ଡେସନ୍ ଦ୍ୱାରା ବିଶେଷ ଭାବେ ଆଦୃତ ହୋଇଥିଲା।

୧୯୮୦ ମସିହା ମଇ ମାସ ୧ ତାରିଖ ଦିନ ଡଃ ରାଉତ ଓଡ଼ିଶାର ଡି.ପି.ଆଇ ଭାବେ ଯୋଗଦାନ ଦେଲେ ଓ ସେହି ପଦବୀରେ ୬ ମାସ କାଳ ଅଧିଷ୍ଠିତ ଥିଲେ। ୧୯୮୦ ମସିହା ସେପ୍ଟେମ୍ବର ୧୪ ତାରିଖରେ ଡଃ ରାଉତ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ଆସନ ଅଳଂକୃତ କରିଥିଲେ ଏବଂ ଏହି ମର୍ଯ୍ୟାଦାବନ୍ତ ପଦବୀରେ ସେ ୧୯୮୩ ମସିହା ସେପ୍ଟେମ୍ବର ୧୩ ତାରିଖ ପର୍ଯ୍ୟନ୍ତ ଅଧିଷ୍ଠିତ ଥିଲେ। ତାପରେ ଡଃ ରାଉତ ନୂଆକରି ଗଢ଼ା ଯାଇଥିବା ରାଜ୍ୟ ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡର ଅଧ୍ୟକ୍ଷ ପଦରେ ଆସୀନ ହୋଇଥିଲେ ଏବଂ ୧୯୮୬ ମସିହା ଏପ୍ରିଲ ୩୦ ତାରିଖ ପର୍ଯ୍ୟନ୍ତ ସେ ଏହି ପଦବୀ ଅଳଂକୃତ କରିଥିଲେ।

ନାନାବିଧ ପ୍ରଶାସନିକ ଦାୟିତ୍ୱ ମଧ୍ୟରେ ଲିପ୍ତ କରି ମଧ୍ୟ ଡଃ ରାଉତ ନିୟମିତ ଭାବେ ଗବେଷଣା କାର୍ଯ୍ୟର ତଦାରଖ କରୁଥିଲେ ଏବଂ ଗବେଷକ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କର କାର୍ଯ୍ୟଧାରା ଓ ଅଗ୍ରଗତି ସମ୍ବନ୍ଧରେ ଟିକିନିଖି ବିବରଣୀ ରଖୁଥିଲେ। ତାଙ୍କ ମାର୍ଗ ଦର୍ଶନରେ ଗବେଷଣା କରି ୪୫ ଜଣ ଛାତ୍ରଛାତ୍ରୀ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ଡକ୍ଟରେଟ ଉପାଧି ଲାଭ କରିଛନ୍ତି। ଏହି ଛାତ୍ରଛାତ୍ରୀମାନେ ପରବର୍ତ୍ତୀ ସମୟରେ ସମ୍ମାନାସ୍ପଦ ବ୍ୟକ୍ତିବିଶେଷ ଭାବେ ସମାଜରେ ପ୍ରତିଷ୍ଠା ଅର୍ଜନ କରି ପାରିଛନ୍ତି।

ଓଡ଼ିଶା ରାଜ୍ୟ ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡର ଅଧ୍ୟକ୍ଷ ପଦରୁ ଅବ୍ୟାହତି ନେଲାପରେ ଡଃ ରାଉତ ବ୍ୟାଙ୍କିଙ୍ଗ୍ ସର୍ଭିସ ରିକ୍ରୁଟମେଣ୍ଟ ବୋର୍ଡର ଅଧ୍ୟକ୍ଷ ଭାବେ ୧୯୮୬ ମସିହା ମଇ ମାସ ୧ ତାରିଖରେ ଯୋଗଦାନ ଦେଇଥିଲେ ଏବଂ ୧୯୮୯ ମସିହା ଏପ୍ରିଲ ମାସ ୧୩ ତାରିଖ ପର୍ଯ୍ୟନ୍ତ ଏହି ପଦବୀରେ ଅଧିଷ୍ଠିତ ଥିଲେ। Banking Service Recruitment Boardରୁ ଅବ୍ୟାହତି ନେଲାପରେ ଡଃ ରାଉତ ହଠାତ୍ ଅସୁସ୍ଥ ହୋଇ ପଡ଼ିଲେ। କଟକ ମେଡ଼ିକାଲ କଲେଜର ବିଶେଷଜ୍ଞ ଡାକ୍ତରମାନେ ଡଃ ରାଉତ ଗକ୍ଟ୍ସକ୍ଟ୍ସ ଘରଙ୍କ୍ସକ୍ଟ୍ସଭ ରୋଗରେ ପୀଡ଼ିତ ବୋଲି ମତବ୍ୟକ୍ତ କଲେ। ଚିକିତ୍ସା ପାଇଁ ଡକ୍ଟର ରାଉତ ଆମେରିକା ଗଲେ ଓ ଝିଅ ଅନୁରାଧା ଓ ଜାମାତା ଡଃ ଦେବ ନାରାୟଣ ପଟ୍ଟନାୟକଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ରହି ସେଠାରେ ଚିକିତ୍ସିତ ହେଲେ। କିଛିଦିନ ଚିକିତ୍ସା ପରେ ଡଃ ରାଉତ ଭାରତ ପ୍ରତ୍ୟାବର୍ତ୍ତନ କଲେ ଏବଂ ଏହାର କିଛି ମାସ ପରେ ୧୯୯୦ ମସିହା ଫେବୃୟାରୀ ୭ ତାରିଖରେ ଇହଲୀଳା ସମ୍ବରଣ କଲେ। ତାଙ୍କ ଅବର୍ତ୍ତମାନରେ ଓଡ଼ିଶା ରସାୟନ ଜଗତ ମୁରବୀ ଶୂନ୍ୟ ହୋଇଗଲା। ବାପ ଛେଉଣ୍ଡ ହୋଇଗଲା।

ସେହି ମହାନ ଆତ୍ମାର ଅମ୍ଳାନ ସ୍ମୃତିକୁ ଚୀର ଉଜ୍ଜୀବିତ କରି ରଖିବା ପାଇଁ ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟ ୨୦୨୩ ମସିହା ଜାନୁୟାରୀ ୪ ତାରିଖ ଦିନ ଡଃ ରାଉତଙ୍କ ୯୯ ତମ ଜନ୍ମ ଜୟନ୍ତୀ ଠୁଁ ଆରମ୍ଭ କରି ୨୦୨୪ ମସିହା ଜାନୁଆରୀ ୩ ତାରିଖ ପର୍ଯ୍ୟନ୍ତ ଜନ୍ମ ଶତବାର୍ଷିକୀ ଉତ୍ସବ ମହାଆଡ଼ମ୍ବରରେ ପାଳନ କରିବାକୁ ସିଦ୍ଧାନ୍ତ ନେଇଛି। ଆଜି ହେଉଛି ସେହି ଐତିହାସିକ ବୈଜ୍ଞାନିକ ମହାପର୍ବର ଉଦ୍‌ଘାଟନ ଉତ୍ସବ। ଏହି ଉଦ୍‌ଘାଟନ ସମାରୋହରେ ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ତଥା ପ୍ରଖ୍ୟାତ ବୈଜ୍ଞାନିକ ପ୍ରଫେସର ସଞ୍ଜୟ କୁମାର ନାୟକ, ରେଭେନ୍ସା କଲେଜର ପ୍ରାକ୍ତନ ଅଧ୍ୟକ୍ଷ ତଥା ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ପ୍ରାକ୍ତନ ପ୍ରଫେସର ଓ ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଭାତ କୁମାର ମିଶ୍ର ଏବଂ ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ମୁଖ୍ୟ ଡଃ କୁମାର ସିଦ୍ଧାର୍ଥ କେ. ଭରଦ୍ୱାଜ ଅତିବିଶିଷ୍ଟ ଅତିଥି ଭାବେ ଯୋଗଦାନ ଦେଉଛନ୍ତି। ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟିର ପ୍ରତିଷ୍ଠାତା ସଭାପତି ଡଃ ରାଉତଙ୍କ ଏହି ମହାନ ସ୍ମୃତି ଯଜ୍ଞରେ ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟ ସହ ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟି ମଧ୍ୟ ନିଜର ଅଖଣ୍ଡ ଯୋଗଦାନ ପ୍ରଦାନ କରି ଉତ୍ସବଟିକୁ ସାଫଲ୍ୟ ମଣ୍ଡିତ କରିବାକୁ ଆଗେଇ ଆସିଛି। ଡଃ ରାଉତଙ୍କ ଅଗଣିତ ଛାତ୍ରଛାତ୍ରୀ, ସହକର୍ମୀ, ଶୁଭେଚ୍ଛୁ ତଥା ରାଜ୍ୟର ଗଣ୍ୟମାଣ୍ୟ ବ୍ୟକ୍ତି ବିଶେଷ ସମସ୍ତେ ମିଳିମିଶି ଏକଜୁଟ ହୋଇ କାନ୍ଧରେ କାନ୍ଧ ମିଳେଇ ଏହି ମହାନ ସ୍ମୃତି ଯଜ୍ଞରେ ଆହୁତୀ ପ୍ରଦାନ କରନ୍ତୁ ଏବଂ ତାଙ୍କ ଅମର ଆତ୍ମାର ସଦ୍‌ଗତି ପାଇଁ ଜଗତର ନାଥ ଜଗନ୍ନାଥଙ୍କ ପାଖରେ ପ୍ରାର୍ଥନା କରନ୍ତୁ। ■■■

ପ୍ରାକ୍ତନ ସଭାପତି, ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟି ଏବଂ
ଯୁଗ୍ମ ମ୍ୟାନେଜିଂ ଟ୍ରଷ୍ଟି, କଳିଙ୍ଗ ଫାଉଣ୍ଡେସନ୍ ଟ୍ରଷ୍ଟ,
କଳିଙ୍ଗ ଭବନ, ଏ/୬୨/୧, ନୟାପଲ୍ଲୀ, ଭୁବନେଶ୍ୱର-୭୫୧୦୧୨
ଫୋନ୍-୯୩୩୮୨୦୪୯୩
Email : crmisrha49@yahoo.in

ମୋର ଚିର ନମସ୍ୟ
ପ୍ରଫେସର ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ : ସ୍ମୃତିର ଉତ୍ତରାୟଣ

ଡକ୍ଟର ଶରତ ଚନ୍ଦ୍ର ଦାସ

୧୯୭୪ ମସିହାର କଥା। ମୁଁ ସେତେବେଳେ ଭଦ୍ରକ ମହାବିଦ୍ୟାଳୟରେ ରସାୟନଶାସ୍ତ୍ର ସମ୍ମାନରେ ସ୍ନାତକ ଛାତ୍ର। ଆମ ଆଖି ଆଗରେ ଥିଲେ ଆମର ଶିକ୍ଷକ ଚିର ଆଦର୍ଶ ଓ ନମସ୍ୟ ଡଃ ମହେନ୍ଦ୍ର ପ୍ରସାଦ ପାଢ଼ୀ, ଡଃ ଦୁର୍ଗା ପ୍ରସାଦ ଦାସ, ଡଃ ଗଙ୍ଗାଧର ସାହୁ, ଡଃ ଦେବେନ୍ଦ୍ର କୁମାର ରାଉତ ମହୋଦୟ। କେବଳ ଦେବେନ୍ଦ୍ର ସାରଙ୍କୁ ଛାଡ଼ି ଦେଲେ ଅନ୍ୟମାନେ ସମସ୍ତେ ଏବେ ଆର ପାରିରେ। ସେମାନଙ୍କର ସ୍ନେହ, ଶ୍ରଦ୍ଧା ଆମ ସମସ୍ତଙ୍କୁ ବାନ୍ଧି ରଖିଥିଲା ରସାୟନ ଶାସ୍ତ୍ରର ପରିବାର ଭିତରେ। ଚାହୁଁ ଚାହୁଁ ଶେଷ ବର୍ଷ ପରୀକ୍ଷା ସମୟ ଆସିଗଲା। ଫଳ ମଧ୍ୟ ପ୍ରକାଶ ପାଇଲା। ମୁଁ କୃତୀତ୍ୱର ସହ ପ୍ରଥମ ଶ୍ରେଣୀରେ ଉତ୍ତୀର୍ଣ୍ଣ ହେଲି। ମନ ଭିତରେ ସ୍ୱତଃ ଆଶା ଜାଗିଥାଏ କିଭଳି ଉଚ୍ଚତର ଶିକ୍ଷା ପାଇଁ କଟକସ୍ଥିତ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ପାଠ ପଢ଼ିବି। ଆର୍ଥିକ ଅବସ୍ଥା ସେତେ ସ୍ୱଚ୍ଛଳ ନ ଥିଲେବି ମନର ଦୃଢ଼ତା, ନିଜ ଭିତରେ ଥିବା ଅଦମ୍ୟ ଜିଜ୍ଞାସା ମୋତେ ଆଗକୁ ଯିବାକୁ ଉତ୍ସାହ ଦେଇଥିଲା। ସେତେବେଳେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ନୂଆ ନୂଆ ଭାବରେ ରସାୟନ ଶାସ୍ତ୍ରରେ ସ୍ନାତକୋତ୍ତର ଶ୍ରେଣୀ ଖୋଲିଥାଏ। ମାତ୍ର ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟର ଆକର୍ଷଣ ଥିଲା ମୋ ପାଇଁ ପ୍ରାବଲ୍ୟ। ତା'ର କାରଣ ସେ ସମୟରେ ଓଡ଼ିଶାର ରସାୟନ ବିଦ୍ୟାର ତୁଙ୍ଗ ଶିକ୍ଷକ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ (ଯେ କି ଭଦ୍ରକର ମୂଳ ବାସିନ୍ଦା), ପ୍ରଫେସର ଗୋକୁଳାନନ୍ଦ ମହାପାତ୍ର (ସେ ମଧ୍ୟ ଭଦ୍ରକର ମୂଳ ବାସିନ୍ଦା), ଏହି ମହାବିଦ୍ୟାଳୟରେ ଶିକ୍ଷକତା କରୁଥିଲେ। ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ ପ୍ରତି ଅନାକର୍ଷିତ ହୋଇ ରେଭେନ୍ସାରେ ପଢ଼ିବା ପାଇଁ ଆମ ଗ୍ରୁପର ସମସ୍ତ ଛାତ୍ର ମନସ୍ଥ କଲୁ ଏବଂ ସମସ୍ତେ ମଧ୍ୟ ନାମ ଲେଖାଇବା ପାଇଁ ଚୟନ ହୋଇଥିଲୁ। ଆମେ କେବଳ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ଯେ କି ୧୯୭୪-୭୫ ମସିହା ବେଳକୁ ରେଭେନ୍ସାରେ ଅଧ୍ୟକ୍ଷ ଥିଲେ ତାଙ୍କ ନାମଟି ଶୁଣିଥିଲୁ, କିନ୍ତୁ ତାଙ୍କୁ ଦେଖିବା ଏବଂ ତାଙ୍କ ଠାରୁ ସିଧାସଳଖ ଭାବରେ ଶ୍ରେଣୀ ଗୃହରେ ଶିକ୍ଷା ଲାଭ କରିବା ଆମ ଭଳି କିଛି ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କର ସୌଭାଗ୍ୟ ହୋଇଥିଲା। ପ୍ରତ୍ୟକ୍ଷ ଭାବରେ ମୁଁ ତାଙ୍କ ଠାରୁ ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ମୋର ରସାୟନ ବିଦ୍ୟାର ସ୍ନାତକୋତ୍ତର ଶିକ୍ଷା ଓ ପରୀକ୍ଷାଗାରର ତାଲିମ ପାଇଥିଲି। ମୋର ଦୀର୍ଘ ଦୁଇ ବର୍ଷର ସ୍ନାତକୋତ୍ତର ଶିକ୍ଷା ସମୟରେ ମୁଁ ସ୍ନାତକୋତ୍ତର ବୃତ୍ତି ବାବଦ ମାସିକ ୭୫ ଟଙ୍କା (ପଚସ୍ତରୀ ଟଙ୍କା) ପାଉଥିଲି, ଏହା ପୁଣି ବିନା ପରିଚୟ ପତ୍ରରେ। ଏହା ଥିଲା ମୋର ପୂଜ୍ୟ ଶିକ୍ଷକ ପ୍ରଫେସର ରାଉତଙ୍କ ଶୁଭାଶୀର୍ବାଦ ପାଇଁ। ମୋର ଠିକ୍ ମନେ ଅଛି ଏକଦା ମୋର ବୃତ୍ତି ପଇସା ପାଇବା ପାଇଁ ଅଫିସ୍ କାଉଣ୍ଟର ଆଗରେ ଧାଡ଼ିରେ ଛିଡ଼ା ହୋଇଥିଲି। ସେଦିନ କାଉଣ୍ଟର ଅତି ଅସ୍ୱାଭାବିକ ଭାବେ ଭିଡ଼ ଥିଲା। ହଠାତ୍ ଆମର ଅଧ୍ୟକ୍ଷ ତଥା ଆମର ପୂଜ୍ୟ ଶିକ୍ଷକ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ସେଇ ବାଟ ଦେଇ ଯାଉଥିଲେ। ମୋ ଉପରେ ତାଙ୍କ ନଜର ପଡ଼ିଗଲା। କାରଣ ମୁଁ ସମସ୍ତଙ୍କ ଭିତରେ ସବୁଠାରୁ ଉଚ୍ଚତାରେ ସାନ ପିଲା ଏବଂ ରସାୟନ ଶାସ୍ତ୍ର ବିଭାଗର ଛାତ୍ର ଭାବରେ ସଙ୍ଗେ ସଙ୍ଗେ ସେ କାଉଣ୍ଟର ପାଖକୁ ଆସି ଆମର କ୍ୟାସିୟର ଚକ୍ରଧର ବାବୁଙ୍କୁ ଡାକି କରି କହିଲେ ଏ ପିଲାକୁ ସଙ୍ଗେ ସଙ୍ଗେ ତା'ର ବୃତ୍ତି ଟଙ୍କା ଦେଇଦିଅ। ସେ ମୋ ବିଭାଗର ଛାତ୍ର ଏବଂ ମୋ ଅଞ୍ଚଳର ମଧ୍ୟ। ଏହାଥିଲା ତାଙ୍କର ମହନୀୟତା। ସେଦିନଠାରୁ ମୋର ସମସ୍ତ ବୃତ୍ତି ଟଙ୍କା କାଉଣ୍ଟରରେ ପହଞ୍ଚିଲାକ୍ଷଣି ମିଳିଯାଏ ଏବଂ ଏପରିକି କ୍ୟାସିୟର ମହୋଦୟ ମଧ୍ୟ ମୋର ପରିଚୟପତ୍ର ଆଉ ମାଗୁନଥିଲେ। ଯେହେତୁ ମୁଁ ଭଦ୍ରକ ଅଞ୍ଚଳର ଛାତ୍ର ପୁଣି

ଅଧ୍ୟକ୍ଷଙ୍କ ବିଭାଗର ସ୍ନାତକୋତ୍ତର ଛାତ୍ର ତେଣୁ ସେ ଆଉ ମୋତେ ସେବେଠୁଁ ମୋର ପରିଚୟପତ୍ର ମାଗୁନଥିଲେ।

ଆଉ ଦିନକର ଘଟଣା ଏବେବି ମୋ ମନ ଭିତରେ ପୂରା ସତେଜ ଅଛି। ଏମ୍.ଏସ୍‌ସି ଶେଷ ବର୍ଷ Special Paper (Organic) ର Practical ପରୀକ୍ଷାରେ Prof. D. Nasipuri, IIT Kharagpur ରୁ External Examiner ହୋଇ ଆସିଥାଆନ୍ତି। ଆମର Organic Group ର ପ୍ରତ୍ୟେକ ପିଲାଙ୍କ ମନରେ ବହୁ ଶଙ୍କା ଓ ଭୟ ଥାଏ। କାରଣ ସେ ପ୍ରତ୍ୟେକ ପିଲାଙ୍କର ହାରାହାରି ୩୦-୪୦ ମିନିଟ୍ ବ୍ଲାକ୍‌ବୋର୍ଡ ପାଖରେ ମୌଖିକ ପରୀକ୍ଷା ନେଉଥିଲେ। ପାଖରେ ବିଭାଗୀୟ ମୁଖ୍ୟ ପ୍ରଫେସର ଅଶୋକ ଶଙ୍କର ମିତ୍ର ମଧ୍ୟ ବସିଥାଆନ୍ତି। ଯେତେବେଳେ ମୋ ପାଳି ପଡ଼ିଲା ସେତେବେଳେ ପ୍ରାୟ ଅପରାହ୍ନ ୧.୩୦ ମିନିଟ୍ ପାଖାପାଖି ହେବ। ମୁଁ ଯେତେବେଳେ ବ୍ଲାକ୍‌ବୋର୍ଡ ପାଖରେ ପହଞ୍ଚିକି ଗୋଟିଏ କି ଯୋଡ଼ିଏ ପ୍ରଶ୍ନର ଉତ୍ତର ଦେଇଥିବି ପ୍ରାୟ, ତୃତୀୟ ପ୍ରଶ୍ନ ପଚାରିଲା ପୂର୍ବରୁ ହଠାତ୍ ପ୍ରଫେସର ରାଉତ ସାର ବିଜ୍ଞାନାଗାର ଭିତରକୁ ପଶି ଆସିଲେ। ସଙ୍ଗେ ସଙ୍ଗେ ସେ ମୋ ପାଖକୁ ଚାଲି ଆସି ମୋ ପିଠି ଥାପୁଡେଇ ଦେଇ ଡକ୍ଟର ନାସିପୁରୀଙ୍କ ଆଡ଼କୁ ଚାହିଁ କହିଲେ ଶରତ ବହୁତ ଭଲ ପିଲା। ବର୍ଷସାରା ସେ ଠିକ୍ ଠିକ୍ କାମ କରିଛି। Prof. Nasipuri it is lunch time, let us go. ବାସ୍ ଏତିକି, ମୋ ପାଖକୁ ଆଉ ତୃତୀୟ ପ୍ରଶ୍ନ ଆସିବାର ଅବକାଶ ନଥିଲା । ସେଦିନ Prof. Nasipuri ଆମ ସାରଙ୍କ ଘରେ ଅତିଥି ହୋଇଥିଲେ। ପରେ ଏକ ଦୀର୍ଘ ନିଶ୍ୱାସ ପକାଇ ମୋର ଇଷ୍ଟଦେବଙ୍କୁ ସ୍ମରଣ କରିଥିଲି। ଏମିତି ବହୁତ କିଛି ଘଟଣା। ମୋର ଚିର ନମସ୍ୟ ଶିକ୍ଷକଙ୍କ ଆଶୀର୍ବାଦରୁ ମୁଁ ଧନ୍ୟ ହୋଇଛି। ମୋ ଜୀବନ ଚରିତାର୍ଥ ହୋଇଛି। ଆମ ବିଭାଗରେ ପ୍ରତ୍ୟେକ ସେମିନାର, ଭୋଜି, ସରସ୍ୱତୀ ପୂଜା, ଗଣେଶ ପୂଜା, ସବୁ କାର୍ଯ୍ୟକ୍ରମରେ ସେ ଯୋଗଦେଇ ଥାଆନ୍ତି ଯଦିଓ ସେ ସାରା ମହାବିଦ୍ୟାଳୟର ଅଧ୍ୟକ୍ଷ ଥିଲେ। ଆମ୍ଭମାନଙ୍କର ସୌଭାଗ୍ୟ ତାଙ୍କ ଠାରୁ ସିଧାସଳଖ ଶ୍ରେଣୀ ଗୃହରେ ଶିକ୍ଷା ପାଇବା। ରେଭେନ୍ସା ଭଳି ସାରା ରାଜ୍ୟରେ ଏକ ଅଗ୍ରଣୀ ଶିକ୍ଷାନୁଷ୍ଠାନର ଅଧ୍ୟକ୍ଷ ଦାୟିତ୍ୱ ତୁଲାଉଥିବା ବେଳେ ସେ ଦୈନନ୍ଦିନ ଗୋଟିଏ କ୍ଲାସ୍ ନେବାକୁ କେବେବି ହେଳା କରି ନଥାନ୍ତି। ସବୁଦିନ ପ୍ରାୟତଃ ଆମ ରସାୟନ ବିଭାଗର ସମୟ ସାରଣୀ (Time Table) ରେ ତାଙ୍କ ନାମ ୧.୧୫ ମିନିଟ୍ ପିରିୟର୍ଡଟି ଉଦ୍ଧିଷ୍ଟ ହୋଇରହିଥାଏ। ସେ ସିଧାସଳଖ ଅଧ୍ୟକ୍ଷ ଅଫିସରୁ ବାହାରି ବିଭାଗ ଅଭିମୁଖେ ଆସନ୍ତି ଏବଂ ମଧ୍ୟାହ୍ନ ବିରତିର ପୂର୍ବ କ୍ଲାସଟି ସେ ନିଶ୍ଚୟ ନିଅନ୍ତି। ଏପରକି ପ୍ରି-ୟୁନିଭରସିଟି ରୁ ଏମ୍.ଏସିସି. ପର୍ଯ୍ୟନ୍ତ ସବୁ କ୍ଲାସ୍ ସେ ନେଉଥିଲେ।

ଶିକ୍ଷକତା ସହ ଗବେଷଣା, ପୁଣି ମହାବିଦ୍ୟାଳୟ ପରିଚାଳନାର ଦକ୍ଷତା ଥିଲା ତାଙ୍କର ବିଶେଷ ଗୁଣବତ୍ତା। ଏଭଳି ବିରଳ ପ୍ରକୃତିର ମଣିଷଟିଏ ଆମ ରସାୟନ ପରିବାରରେ ଏ ଯାବତ୍ ବିରଳ। ବର୍ତ୍ତମାନ କର୍ପୁର ଉଡ଼ିଯାଇଛି, କେବଳ କନା ଖଣ୍ଡେ ପଡ଼ି ରହିଛି। ସେ ସମୟର ରସାୟନ ବିଭାଗ ସକାଳୁ ଅର୍ଦ୍ଧରାତ୍ର ପର୍ଯ୍ୟନ୍ତ କର୍ମ ତତ୍ପର ରହୁଥିଲା। ଆମର ପ୍ରତ୍ୟେକ ଶିକ୍ଷକ ନିଜ ନିଜ କ୍ଷେତ୍ରରେ ପିଲାମାନଙ୍କ ପାଇଁ, ସମାଜ ପାଇଁ ଏକ ଆଦର୍ଶ ହୋଇଥିଲେ। ଆଜି ତାହା ବିରଳ ଓ ଅନିଶ୍ଚିତ। ସମୟ ବଦଳି ଯାଇଛି। ଆମେ ତାଙ୍କର ଦାୟାଦ ହୋଇ ଅତ୍ୟନ୍ତ ବିନୀତ ଭାବରେ ଆଜି ଜନ୍ମଶତବାର୍ଷିକୀ ଉତ୍ସବ ପାଳନ କରୁଛୁ। କିନ୍ତୁ ତାଙ୍କର ଆଦର୍ଶ, ମହନୀୟତା ଏବଂ ଶାଶ୍ୱତ ଶକ୍ତିକୁ ଆମେ କେତେଦୂର ଆପଣାଇଛୁ ତାହା ଏକ ବିରାଟ ପ୍ରଶ୍ନବାଚୀ। ରେଭେନ୍ସା କଲେଜ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଚାରିକାନ୍ଥର ବାସନା ଏବେବି ଆମକୁ ପ୍ରଣୋଦିତ, ପ୍ରଚୋଦିତ, ସମ୍ମୋହିତ, ଉନ୍ମାଦିତ, ଜାଗ୍ରତ ଓ ପ୍ରୋତ୍ସାହିତ କରୁଅଛି। ଦିନ ପରେ ଦିନ ନୂଆ ନୂଆ ବୈଜ୍ଞାନିକଙ୍କୁ ସୃଷ୍ଟି କରିଚାଲିଛି। ମୋର ଆଶା ଓ ବିଶ୍ୱାସ ଏବର ପିଢ଼ି ଓ ଭବିଷ୍ୟତ ପିଢ଼ି ଆମର ପୂଜ୍ୟ ଶିକ୍ଷକ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଅମ୍ଳାନ ଆଦର୍ଶକୁ ଚିର ଯାଜ୍ଞଲ୍ୟମାନ କରି ରଖିବାର ଦୃଢ଼ ସଂକଳ୍ପ ନିଅନ୍ତୁ। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ହୃତ ଗୌରବ ପୁଣି ଉଜ୍ଜୀବିତ ହେଉ, ସମୟର ଆଶୀର୍ବାଦରେ ବିଭାଗ ଧନ୍ୟ ହେଉ, ଯଶସ୍ୱୀ ହେଉ ଓ କାଳଜୟୀ ହେଉ। ଜୟ ଜଗନ୍ନାଥ, ଜୟ ରେଭେନ୍ସା । ■■■

ଅବସରପ୍ରାପ୍ତ ଅଧ୍ୟକ୍ଷ
ଗୋପବନ୍ଧୁ ବିଜ୍ଞାନ ମହାବିଦ୍ୟାଳୟ, ଆଠଗଡ଼
Sreevihar Colony,
Tulasipur
Cuttack - 753008
Odisha , INDIA
ମୋ – ୯୪୩୭୦୮୧୦୨୦

ସାର୍ ଥିଲେ ମୋ' ପାଇଁ ଦେବଦୂତ

ଅକ୍ଷୟ କୁମାର ଦାସ

ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ଦୀର୍ଘ ଛଅ ବର୍ଷକାଳ ମୋର ମହାର୍ଘ ଛାତ୍ର ଜୀବନ କଟିଛି। ପାଖାପାଖି ଗୋଟିଏ ଶିକ୍ଷାବର୍ଷକୁ ଛାଡ଼ିଦେଲେ ବାକି ସମୟତକ ଡକ୍ଟର ରାଉତ ଅଧ୍ୟକ୍ଷ ଥିବା ସମୟରେ ହିଁ ଅତିବାହିତ ହୋଇଛି। ସାର୍‌ଙ୍କ କଥା ମନେ ପଡ଼ିଲେ, ସେଇ ଧୋବ ଫରଫର ପୋଷାକ, ପାଦରେ ଆଇନା ଭଳି ଚକ୍ ଚକ୍ କରୁଥିବା ହଳେ କଳା ମଚ ମଚ ଜୋତା, ହାତରେ ଖଣ୍ଡେ ଛତା ଆଉ ଗୌରବର୍ଣ୍ଣ ଚେହେରା ଆଖି ଆଗରେ ନାଚି ଉଠେ। ସ୍ମୃତି ଶକ୍ତି ଥିଲା ତାଙ୍କର ଅତି ପ୍ରଖର। ଥରେ ଯାହାକୁ ଦେଖିଛନ୍ତି ଏବଂ କଥା ହୋଇଛନ୍ତି ତାକୁ ଆଉ ମନରୁ ପାସୋରି ଯିବାର ସମ୍ଭାବନା ନଥାଏ। ସବୁ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ନାଁ ମନେ ରଖନ୍ତି। କିଏ କେଉଁ ଶ୍ରେଣୀରେ ପଢୁଛି, କ'ଣ ବିଷୟ ନେଇଛି, ସବୁ ସାର୍‌ଙ୍କ ସ୍ମୃତି ପଟଳରେ ରହିଥାଏ। ପାଠପଢ଼ାରେ ଯେମିତି ଦକ୍ଷ, ଗବେଷଣାରେ ସେମିତି ଧୂରୀଣ। ସଫଳ ପ୍ରଶାସକ ଭାବରେ ସାରା ରାଜ୍ୟରେ ସେ ପରିଚିତ। ହୃଦୟଟା ବିଶାଳ। ଭଲ ପଢୁଥିବା ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପାଇଁ ତାଙ୍କର ଦରଦୀ ପଣିଆ ତାଙ୍କୁ ଏକ ଅନନ୍ୟ ଶିକ୍ଷକର ମର୍ଯ୍ୟାଦା ଦେଇଛି।

ମୁଁ ବିଜ୍ଞାନର ଛାତ୍ର ନଥିଲି। ମୁଁ ଥିଲି କଳା ବିଭାଗର ଛାତ୍ର। ଗ୍ରାଜୁଏସନ୍‌ର ଶେଷବର୍ଷ ମୁଁ ଛାତ୍ର ସଂସଦ ନିର୍ବାଚନରେ ଭାଗ ନେଇଥିଲି। ଭୋଟ ପ୍ରଚାର ପାଇଁ ବିଭିନ୍ନ ଶ୍ରେଣୀରେ ଶିକ୍ଷକଙ୍କ ଅନୁମତି ନେଇ ପାଞ୍ଚ ମିନିଟ୍‌ରେ ନିଜର ମତାମତ ଦେବାକୁ ହୋଇଥାଏ। ଥରେ ବିଜ୍ଞାନ ଶ୍ରେଣୀରେ ସାର୍‌ଙ୍କର ଗୋଟିଏ କ୍ଲାସ୍ ଥିଲା। ଇଣ୍ଟରମେଡିଏଟ୍ ବିଜ୍ଞାନ ଶ୍ରେଣୀ। ସାର୍ ଦୁଇ ସେକ୍‌ସନ୍‌ର ଏକାଠି କ୍ଲାସ୍ ନିଅନ୍ତି। ମୁଁ ଅତି ବିନମ୍ରତାର ସହିତ ସାର୍‌ଙ୍କ ଆସିବାକୁ ଅପେକ୍ଷା କରିଥାଏ। ହଠାତ୍ ସାର୍ ଆସି ପହଞ୍ଚିଗଲେ ଓ ଶ୍ରେଣୀ ଭିତରକୁ ଗଲେ। ମୁଁ ବାହାରେ ଅପେକ୍ଷା କଲି । ମନରେ କିଛି ଭୟ, କିଛି ଆଶଙ୍କା। ମାତ୍ର ସାର୍‌ଙ୍କ ନଜରରେ ମୁଁ ପଡ଼ିବା ମାତ୍ରେ ମୋତେ ଭିତରକୁ ଯିବାକୁ ଅନୁମତି ଦେଲେ। ମୁଁ ଯାଇ ମୋର ଯାହାକିଛି ବକ୍ତବ୍ୟ ଦେଲି। ସାର୍ ମୋ ପିଠିରେ ଟିକେ ହାତ ବୁଲେଇ ଦେଇ ଆଶୀର୍ବାଦ ଦେଲେ। ମୁଁ ସେଠାରୁ ବିଦାୟ ନେଲି। ନିର୍ବାଚନ ଫଳାଫଳ ବାହାରିଲା। ମୁଁ ଛାତ୍ର ସଂସଦର ସାଧାରଣ ସମ୍ପାଦକ ଭାବେ ନିର୍ବାଚିତ ହେଲି। ନିର୍ବାଚନ ଫଳ ଘୋଷଣା ହେବା ପରେ ସମସ୍ତ ସଫଳ ନିର୍ବାଚିତ ଛାତ୍ର ସାର୍‌ଙ୍କ ପାଦ ସ୍ପର୍ଶ କରି ଆଶୀର୍ବାଦ ନେଲୁ। ଏ ଥିଲା ଆମ ସମୟର ଶିକ୍ଷକ-ଛାତ୍ର ପରମ୍ପରା।

ତା' ପରଠାରୁ ସାର୍‌ଙ୍କ ସହିତ ମୋର ସମ୍ପର୍କ ନିବିଡ଼ ହେବାରେ ଲାଗିଲା। ମୁଁ ସାରଙ୍କୁ ଯେମିତି ସମ୍ମାନ ଦେଉଥିଲି, ସେ ମୋତେ ସେମିତି ଶ୍ରଦ୍ଧା କରୁଥିଲେ। ଅର୍ଥନୀତିର ଛାତ୍ର ହୋଇ ମଧ୍ୟ ମୁଁ ସାର୍‌ଙ୍କୁ ହିଁ ମୋର ଶିକ୍ଷକ ବୋଲି ଧରିନେଇଥିଲି। ସେ ଥିଲେ ମୋ ଦିଗ୍‌ଦର୍ଶକ। ପରବର୍ତ୍ତୀ ସମୟରେ କଲେଜ ୟୁନିୟନ୍‌ର ବିଭିନ୍ନ ଉତ୍ସବରେ ସେ ମୋତେ ଅଯାଚିତ ସହଯୋଗ ପ୍ରଦାନ କରୁଥିଲେ। ସେଇ ସମୟରେ ଯେଉଁମାନେ ଛାତ୍ର ସଂସଦର କର୍ମକର୍ତ୍ତା ଥିଲେ, ସମସ୍ତେ ଭଲ ପଢୁଥିବା ଛାତ୍ର ଥିଲେ, ତେଣୁ ସମସ୍ତଙ୍କୁ ସାର୍ ଭଲ ପାଉଥିଲେ।

ଥରେ ଗୋଟିଏ ଛାତ୍ର ସଂସଦର ଉତ୍ସବ ପାଇଁ କଲିକତା ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତିଙ୍କୁ ନିମନ୍ତ୍ରଣ କରିବାକୁ ମୁଁ ଏବଂ ଉପସଭାପତି ସାର୍‌ଙ୍କ ଚିଠି ନେଇ କଲିକତା ଯାଇଥିଲୁ। କୁଳପତି ମହୋଦୟ ଆମ ହାତରୁ ଚିଠି ନେଇ ଡକ୍ଟର ରାଉତଙ୍କୁ ଯେଉଁ ପ୍ରଶଂସା କଲେ ତାକୁ ସାମାନ୍ୟ ଶବ୍ଦ ମାଧ୍ୟମରେ ମୁଁ ପ୍ରକାଶ କରି ପାରୁନାହିଁ। ସେଥିରୁ ସାର୍‌ଙ୍କର

ସୁଦୂରପ୍ରସାରୀ ପରାଭବ ପ୍ରମାଣିତ ହୁଏ। ସେ ଏକାଧାରରେ ଜଣେ ବିଶିଷ୍ଟ ଶିକ୍ଷକ, ଗବେଷକ, ପ୍ରଶାସକ ତଥା ସର୍ବୋପରି ମାନବବାଦୀ ପରମ ପୁରୁଷ ଥିଲେ ।

ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ ଯଥାସାଧ୍ୟ ସାହାଯ୍ୟ କରିବା ଥିଲା ତାଙ୍କର ଧର୍ମ। ଥରେ ପି.ଜି. ଆଡମିଶନ୍ ବେଳେ ହଠାତ୍ ପାଖରେ ପଇସା ନଥିବା ଯୋଗୁଁ ମୋ ଭଳି ଦୁଇ ଚାରିଜଣ ଛାତ୍ରଙ୍କୁ ସେ ବିନା ଅର୍ଥରେ ଆଡ୍‌ମିଶନ କରିବା ପାଇଁ ନିର୍ଦ୍ଦେଶ ଦେଇଥିଲେ। ଅବଶ୍ୟ ଆମେ ସମସ୍ତେ ବୃତ୍ତିଧାରୀ ଛାତ୍ର ହୋଇଥିବାରୁ ପରବର୍ତ୍ତୀ ସମୟରେ ବୃତ୍ତି ଅର୍ଥରୁ ଆଡ୍‌ମିଶନ ପଇସା କାଟି ଅବଶିଷ୍ଟ ଅର୍ଥରାଶି କର୍ତ୍ତୁପକ୍ଷ ଆମକୁ ଫେରସ୍ତ ଦେଉଥିଲେ। ଏ ଥିଲା ସାର୍‌ଙ୍କର ମହାନତା।

ରେଭେନ୍ସା ମହାବିଦ୍ୟାଳୟରେ ପି.ଜି. କରିବା ସମୟରେ ସେ ମୋତେ ଆଇନ୍ ପଢ଼ିବା ପାଇଁ ପରାମର୍ଶ ଦେଇଥିଲେ। ଅବଶ୍ୟ ମୁଁ ଆଇନ୍ ପାଠ ପଢ଼ିପାରି ନଥିଲି। କ'ଣ ତାଙ୍କ ମନରେ ଥିଲା ମୁଁ ଜାଣି ନଥିଲି। ବୋଧେ ଆଇନ୍ ପାଠ ସାରି ଜଣେ ଭଲ ଓକିଲ ହେବାପାଇଁ ସାର୍ ଚାହୁଁଥିଲେ। ମୁଁ ଅଧ୍ୟାପକ ହେଲି ତା' ଥିଲା ଈଶ୍ୱରଙ୍କ ନିର୍ଦ୍ଦେଶ।

ସାର୍‌ଙ୍କ ସହିତ ମୋର ଶେଷ ଦେଖା ହୋଇଥିଲା ୧୯୭୭ ମସିହାର ପ୍ରଥମ ଭାଗରେ ଯେଉଁଦିନ ଶ୍ରୀ ବିଜୁ ପଟ୍ଟନାୟକ ଦିଲ୍ଲୀରୁ ଭୁବନେଶ୍ୱର ବିମାନ ବନ୍ଦରରେ ଆସି ପହଞ୍ଚିଥିଲେ ଓଡ଼ିଶାର ନୂତନ ମୁଖ୍ୟମନ୍ତ୍ରୀ ଚୟନ କରିବା ପାଇଁ। ସାର୍ ଦିଲ୍ଲୀ ଅଭିମୁଖେ ଯାତ୍ରା କରୁଥାଆନ୍ତି। ଏୟାରପୋର୍ଟର ଲାଉଞ୍ଜ୍‌ରେ ସାକ୍ଷାତ, ମୁଁ ପ୍ରଣାମ ଜଣେଇଥିଲି। ସେଇଠି ବି ପଚାରିଥିଲେ ଆଇନ୍ ପାଠ ସାରିଲ କି ନାହିଁ? ମୋର ସ୍ପଷ୍ଟ ମନେ ଅଛି ସାର୍‌ଙ୍କର ଶେଷ କଥା।

ସାର୍ ରେଭେନ୍ସା କଲେଜ ଅଧ୍ୟକ୍ଷ ପଦରୁ ଉଚ୍ଚଶିକ୍ଷା ନିର୍ଦ୍ଦେଶକ, ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି, ଓଡ଼ିଶା ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡର ପ୍ରଥମ ଅଧ୍ୟକ୍ଷ ଇତ୍ୟାଦି ପଦବୀରେ ଆସୀନ ରହି ନିଜର ଅସୀମ ଦକ୍ଷତା ପ୍ରତିପାଦନ କରିଛନ୍ତି।

ସାର୍‌ଙ୍କର ଜନ୍ମଶତବାର୍ଷିକୀରେ ଏକ ସ୍ମରଣିକା ପ୍ରକାଶ ପାଇବାକୁ ଯାଉଥିବା ଜାଣି ମୁଁ ବିଶେଷ ଆନନ୍ଦିତ। ସେଭଳି ଅନନ୍ୟ ଓ ଅସାଧାରଣ ବ୍ୟକ୍ତିତ୍ୱ ଛାତ୍ର ସମାଜକୁ ସଦା ପ୍ରେରଣା ଯୋଗାଉଥିବ ଓ ଭବିଷ୍ୟତ ଉଜ୍ଜ୍ୱଳମୟ କରିବାରେ ସହାୟକ ହେଉଥିବ।

ଯେଉଁ ଅନୁଷ୍ଠାନ ତଥା ବ୍ୟକ୍ତିବିଶେଷମାନଙ୍କର ପ୍ରଚେଷ୍ଟାରେ ଏଇ ସ୍ମରଣିକାଟି ପ୍ରକାଶ ପାଉଛି ସେମାନଙ୍କୁ ଅଶେଷ ହୃଦୟରୁ ଅଶେଷ ଧନ୍ୟବାଦ ଜଣାଉଛି। ■■■

ପୂର୍ବତନ ଅଧ୍ୟକ୍ଷ,
ସାଲେପୁର ମହାବିଦ୍ୟାଳୟ
ପ୍ଲଟ ନଂ ୨୩/୨୩୮, ସିଡ଼ିଏ ସେକ୍ଟର-୧୧
କଟକ-୭୫୩୦୧୫
ଫୋନ୍ ନଂ-୮୨୪୯୨୫୨୧୩୦

A man who dares to waste one hour of time
has not discovered the value of life.

– Charles Darwin

ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ : ଏକ କାଳଜୟୀ ବ୍ୟକ୍ତିତ୍ୱ

କୃଷ୍ଣ ଚନ୍ଦ୍ର ବଡୁ, ଆଇ.ଏ.ଏସ୍ (ଅବସରପ୍ରାପ୍ତ)

ରେଭେନ୍ସା କଲେଜରେ ମୋତେ ରସାୟନ ବିଜ୍ଞାନରେ B.Sc. (Honours) ୧୯୬୭ ରୁ ୧୯୬୯ ଏବଂ ଗ.ଝମ. ରେ ୧୯୬୯ ରୁ ୧୯୭୧ ମସିହା ପର୍ଯ୍ୟନ୍ତ ୪ ବର୍ଷ ପଢ଼ିବାର ଅପୂର୍ବ ସୁଯୋଗ ମିଳିଥିଲା। ରେଭେନ୍ସା କଲେଜର ବିଭିନ୍ନ ବିଭାଗର ଜଣେ ଜଣେ ଯଶସ୍ୱୀ ପ୍ରଫେସରଙ୍କ ଖ୍ୟାତି ଓ ଶିକ୍ଷା ପ୍ରଦାନର ଅଦ୍ଭୁତ ଯାଦୁକରୀ ଶୈଳୀ ମେଧାବୀ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ସେହି ବିଭାଗରେ ପଢ଼ିବାକୁ ଆକର୍ଷିତ କରୁଥିଲା। ସମସ୍ତ ବିଭାଗ ମଧ୍ୟରେ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗରେ ପଢ଼ିବାକୁ ଆପେ ଆପେ ଅନେକ ମେଧାବୀ ଛାତ୍ରଛାତ୍ରୀ ପ୍ରଚଣ୍ଡ ଉତ୍କଣ୍ଠାର ସହ ଆଗଭର ହୋଇ ଆସୁଥିଲେ। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ କ୍ଷେତ୍ରରେ ତାହାର ମୂଳ କାରଣ ଥିଲା ବିଭାଗୀୟ ମୁଖ୍ୟ ଡକ୍ଟର ବଳଭଦ୍ର ପ୍ରସାଦ, ଡକ୍ଟର ଦୟାନିଧି ପଟ୍ଟନାୟକ ଓ ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଭଳି ଲବ୍ଧପ୍ରତିଷ୍ଠ ବୈଜ୍ଞାନିକ ବ୍ୟକ୍ତିତ୍ୱ ଓ ଖ୍ୟାତନାମା ଶିକ୍ଷାବିତ୍ ମାନଙ୍କର ଶୁଭାଶୀର୍ବାଦ। ମୁଁ ୧୯୬୭ରେ ରେଭେନ୍ସାରେ ନାମ ଲେଖାଇଲାବେଳେ ଯଦିଓ ପ୍ରି-ପ୍ରଫେସନାଲ ପରୀକ୍ଷାରେ ପ୍ରାୟ ୮୦% ନମ୍ବର ରଖି ପାଶ କରିଥିଲି ହେଲେ ପଦାର୍ଥ ବିଜ୍ଞାନରେ B.Sc. (Honours) ନକରି ରସାୟନ ବିଜ୍ଞାନରେ ଅନର୍ସ କରିବାକୁ ପ୍ରାଧାନ୍ୟ ଦେଲି। ତାହାର ମୂଳ କାରଣ ଥିଲା ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ପିଲାମାନଙ୍କ ପ୍ରତି ଥିବା ଅହେତୁକ ସ୍ନେହ, ଶ୍ରଦ୍ଧା, ଗରିବ-ଧନୀ ପିଲାଙ୍କୁ ସମ ଦୃଷ୍ଟିରେ ଦେଖିବା ଓ ରସାୟନ ବିଜ୍ଞାନରେ M.Sc. କରିଥିବା ପିଲାମାନେ ଶିକ୍ଷା ବିଭାଗ ବ୍ୟତୀତ ବଡ଼ ବଡ଼ କଳକାରଖାନା, ଗବେଷଣାଗାର ଓ ଅନ୍ୟାନ୍ୟ ପ୍ରସିଦ୍ଧ ଅନୁଷ୍ଠାନମାନଙ୍କରେ ଚାକିରୀ ପାଇବାର ଖ୍ୟାତି। ସବୁଠାରୁ ବଡ଼ କଥା ଥିଲା ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ଚକ୍ଷର-University ଓ Pre-Professional ଶ୍ରେଣୀରେ ମଧ୍ୟ ଯାଇ ପିଲାମାନଙ୍କୁ ରସାୟନ ବିଦ୍ୟାର ଜଟିଳ ତଥ୍ୟକୁ ସରଳ ଓ ସାବଲୀଳ ଭାଷାରେ ପଢ଼ାଇବାର ବିଶେଷ ଖ୍ୟାତି ଓ ପିଲାମାନଙ୍କୁ ନିଜର ପିଲାଭଳି ଭାବି ସେମାନଙ୍କୁ ଅଧ୍ୟାପନା ଓ କଥାବାର୍ତ୍ତା ମାଧ୍ୟମରେ ଆତ୍ମୀୟତାର ବନ୍ଧନରେ ବାନ୍ଧି ରଖିବାର ସୂକ୍ଷ୍ମ କଳା ଥିଲା ଅତୁଳନୀୟ।

ରେଭେନ୍ସା କଲେଜର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗରେ ଦିନରାତି ବୌଦ୍ଧିକ ଆଲୋଚନା, ପାଠଚକ୍ର, ଅନୁସନ୍ଧାନ (Research) ଇତ୍ୟାଦି ଚାଲିଥାଏ। ସେଥିପାଇଁ ରେଭେନ୍ସା କଲେଜ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗରେ କେବେ ଆଲୁଅ ଲିଭେନାହିଁ। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ଗୋଟିଏ ଏକାନ୍ନବର୍ତ୍ତୀ ପରିବାର ଭଳି ଲାଗେ। ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ଅସଂଖ୍ୟ କୃତୀ ଛାତ୍ରଛାତ୍ରୀ ଓ ବୈଜ୍ଞାନିକ ସୃଷ୍ଟି କରିବା ସହ ଅପନ୍ତରା ଗାଁଗହଳିରୁ ଆସିଥିବା ପିଲାମାନଙ୍କ ପ୍ରତି ସ୍ୱତନ୍ତ୍ର ଦୃଷ୍ଟି ଦେଇ ସେମାନଙ୍କୁ ସମାଜରେ ପ୍ରତିଷ୍ଠା କରିଛନ୍ତି। ସ୍ୱର୍ଗତ ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ପାର୍ଥିବ ଶରୀର ଛାଡ଼ିଥିଲେ ମଧ୍ୟ ଅମର ହୋଇ ରହିଛନ୍ତି ତାଙ୍କର ଅସଂଖ୍ୟ ଛାତ୍ରଛାତ୍ରୀ, ବୈଜ୍ଞାନିକ, ଅଧ୍ୟାପକ ଓ ବିଭିନ୍ନ ବୁଦ୍ଧିଜୀବୀଙ୍କ ହୃଦୟର ଗଭୀରତମ ପ୍ରଦେଶରେ।

ତାଙ୍କର ଜନ୍ମ ଶତବାର୍ଷିକୀରେ ସେହି ଅମର ଆତ୍ମା ପ୍ରତି ହୃଦୟର ନିଭୃତ କୋଣରୁ ଶ୍ରଦ୍ଧା ସୁମନ ଅର୍ପଣ କରିବା ସଙ୍ଗେ ସଙ୍ଗେ ଆମେ ଯଦି ତାଙ୍କର ଜ୍ଞାନ, ଆଦର୍ଶ, ଅନ୍ୟମାନଙ୍କୁ ସାହାଯ୍ୟ କରିବା ମନୋବୃତ୍ତି ଆମର ଆଚାର ବ୍ୟବହାର ଓ କର୍ମରେ ଦେଖାଇପାରିବା ତାହାହିଁ ହେବ ସ୍ୱର୍ଗତଃ ଡକ୍ଟର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଅମର ଆତ୍ମା ପ୍ରତି ଆମର ପ୍ରକୃତ ଶ୍ରଦ୍ଧାଞ୍ଜଳି। ■■■

ଆଇ.ଏ.ଏସ୍ (ଅବସରପ୍ରାପ୍ତ)
ଓଡ଼ିଶା ସରକାରଙ୍କ ଅର୍ଥ ବିଭାଗର ସ୍ୱତନ୍ତ୍ର ସଚିବ ଓ
ଓଡ଼ିଶା ବିଦ୍ୟୁତ୍ ନିୟାମକଙ୍କର ଅବସରପ୍ରାପ୍ତ ସଦସ୍ୟ
ଫୋନ୍ - ୯୪୩୭୯୬୫୧୬୧
Email:krushnachandrabadu@gmail.com

ଅମୃତ ଅନୁଭବ

ଅଭୟ ଚରଣ ନାଥ

ଡିସେମ୍ବର ମାସ ୧୯୮୦ ମସିହାର କଥା। ମୁଁ ଉତ୍କଳ ବିଶ୍ୱ ବିଦ୍ୟାଳୟର ଅତିଥି ଭବନରେ ଦିନକୁ ୫ ଟଙ୍କା ମଜୁରୀରେ କାର୍ଯ୍ୟ କରୁଥାଏ। ସାର୍ (ଡ. ମହେନ୍ଦ୍ର କୁମାର ରାଉତ) ନୂଆ ନୂଆ Vice-Chanceller ହୋଇ ଗେଷ୍ଟ ହାଉସ୍ ଆସିଥାନ୍ତି। ଖାଇଲାବେଳେ ମୋତେ ଦେଖି ଅନ୍ୟ ଷ୍ଟାଫ୍‌ଙ୍କ ଜରିଆରେ ମୋ ବିଷୟରେ ସବୁ ତଥ୍ୟ ନେଇ ତାଙ୍କ ଘରକୁ ମୋତେ ଡକାଇଥିଲେ। ସେତେବେଳେ ସେ କଟକରେ ରହୁଥିଲେ। ମୁଁ ଯାଇ କଟକ ଘରେ ସାରଙ୍କୁ ଦେଖାକଲି ଓ ପରେ ସେ ମୋତେ ତାଙ୍କ ଘରେ ରହି କାମ କରିବାକୁ କହିଲେ। ଦିନକୁ ୨ ଟଙ୍କା ହିସାବରେ ମାସକୁ ୬୦ ଟଙ୍କା ଅଧିକ ଦେବାପାଇଁ କହିଥିଲେ।

ମୁଁ ରାଜିହୋଇ ସେହିଦିନଠାରୁ ତାଙ୍କ ଘରେ ରହି କାମ କଲି। କଟକରେ ରହି ଶୈଳବାଳା ମହିଳା ମହାବିଦ୍ୟାଳୟରେ ସାର୍‌ଙ୍କ ମ୍ୟାଡାମ୍‌ଙ୍କ କାର୍ଯ୍ୟାଳୟରେ ଅସ୍ଥାୟୀ ପିଅନ କାର୍ଯ୍ୟ ୧୯୮୩ ପର୍ଯ୍ୟନ୍ତ ତୁଲାଇଥିଲି। ୧୯୮୩ ମସିହାରେ ଯେତେବେଳେ ପ୍ରଥମ କରି ରାଜ୍ୟ ପ୍ରଦୂଷଣ ବୋର୍ଡ଼ ଆରମ୍ଭ ହେଲା ସାର୍ ପ୍ରଥମ ଚେୟାରମ୍ୟାନ ଭାବରେ ନିଯୁକ୍ତି ପାଇବା ପରେ ମୋତେ ସେଠାରେ ଆଡହକ୍ ପିଅନ ଭାବରେ ନିଯୁକ୍ତି ଦେଲେ। ନିଯୁକ୍ତି ସମୟରେ ସରକାରଙ୍କ ତରଫରୁ କୌଣସି ଆର୍ଥିକ ସହଯୋଗ ନ ଥିଲା ତଥାପି ସାର୍ ଆମକୁ ତାଙ୍କ ନିଜ ରୋଜଗାରରୁ ଦରମା ଦେଉଥିଲେ। କିନ୍ତୁ ସାର୍‌ଙ୍କ କର୍ତ୍ତବ୍ୟନିଷ୍ଠ ଏବଂ କାର୍ଯ୍ୟଦକ୍ଷତା ଯୋଗୁଁ ବୋର୍ଡ଼ ଆଜି ଏକ ସମ୍ପୂର୍ଣ୍ଣ କାର୍ଯ୍ୟାଳୟରେ ପରିଣତ ହୋଇଛି ଏବଂ ମୋର ମଧ୍ୟ ସରକାରୀ ଚାକିରି ୧।୪।୧୯୮୪ରୁ ନିୟମିତ ହୋଇଗଲା। ସେଥିପାଇଁ ମୁଁ ଏବଂ ମୋର ପରିବାର ତାଙ୍କ ନିକଟରେ ଚିରଋଣୀ।

କିନ୍ତୁ ଭାଗ୍ୟର ବିଡ଼ମ୍ବନା ଯେ ୧୯୮୯ ମସିହାରେ ସାର୍‌ଙ୍କ ସ୍ୱାସ୍ଥ୍ୟାବସ୍ଥା ବିଗିଡ଼ି ଗଲା। ସେ ସମୟରେ ମୁଁ ସାରଙ୍କ ସେବା କରୁଥାଏ। ଖାଦ୍ୟ ଖାଇବାରେ ଅସୁବିଧା ହେତୁ ଜୁସ୍ ଆଣି ମୁଁ ନିଜେ ତିଆରି କରି ଦେଉଥାଏ। କିନ୍ତୁ ୭.୨.୧୯୯୦ ମସିହାରେ ଯେତେବେଳେ ଶେଷ ସମୟ ଉପନୀତ ହେଲା ସେତେବେଳେ ମୁଁ ସାର୍‌ଙ୍କ ଅତି ନିକଟରେ ଥାଏ। ସେ ମୋତେ ହାତଠାରି ଡାକିଲେ ଏବଂ ପାଣି ପିଇବାପାଇଁ ସଙ୍କେତ ଦେଲେ। ମୁଁ ଯଥାଶୀଘ୍ର ସାର୍‌ଙ୍କୁ ଅଳ୍ପ ପାଣି ପିଆଇଥିଲି। କିନ୍ତୁ ଭଗବାନ୍‌ଙ୍କ କି ଲୀଳା ମୋରି ହାତରୁ ପାଣି ଟୋପେ ପିଇ ସାରିବା ପରେ ସାର୍ ସେଦିନ ଚିରନିଦ୍ରାରେ ଶୋଇଯାଇଥିଲେ। ଆମକୁ ଶୋକସାଗରରେ ଭସାଇ ସେଦିନ ସାର୍ ଆମକୁ ସବୁଦିନ ପାଇଁ ଛାଡ଼ି ଚାଲିଯାଇଥିଲେ। କିନ୍ତୁ କେଜାଣି କାହିଁକି ମୋତେ ଲାଗେ ସାର୍ ଯେମିତି ମୋର ଅତି ଆପଣାର ମୋରି ହାତରୁ ପାଣି ପିଇ ଚାଲିଗଲେ।

ସାର୍ ସିନା ଆଜି ନାହାନ୍ତି। କିନ୍ତୁ ସାର୍‌ଙ୍କ ଉପକାର ମୁଁ କେବେହେଲେ ଭୁଲିପାରିବିନି। ତାଙ୍କରି ଦୟାରୁ ଆଜି ମୁଁ ସରକାରୀ ଚାକିରି କରି ଅବସର ଗ୍ରହଣ କରିବାପରେ ମଧ୍ୟ ମୋତେ ପେନ୍‌ସନ୍ ମିଳୁଛି। ସତରେ ସାର୍ ମୋ ପାଇଁ ଜଣେ ଦେବଦୂତ। କୌଣସି ପାରିବାରିକ ସମ୍ପର୍କ ନ ଥାଇ ମଧ୍ୟ ସାର୍ ମୋ ପାଇଁ ଯାହାସବୁ କରିଯାଇଛନ୍ତି ତାହା ଯେକୌଣସି ଦେବତୁଲ୍ୟ କାର୍ଯ୍ୟ କହିଲେ ଅତ୍ୟୁକ୍ତି ହେବ ନାହିଁ।

ଭଗବାନ ଆମ ସାର୍‌ଙ୍କ ଆତ୍ମାକୁ ପରମାତ୍ମା ସହ ଲୀନ କରିଦିଅନ୍ତୁ ଏତିକି ମୋର ଈଶ୍ୱରଙ୍କ ନିକଟରେ ପ୍ରାର୍ଥନା। ଓଁ ତତ୍ ସତ୍।

ପୂର୍ବତନ କର୍ମଚାରୀ,
ରାଜ୍ୟ ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡ଼, ଓଡ଼ିଶା ଭୁବନେଶ୍ୱର
ଦୂରଭାଷ: ୯୪୩୭୪ ୯୬୮୪୨

ENGLISH SECTION

Celebrating a Century of Excellence: A Tribute to Professor Dr. Mahendra Kumar Rout

Justice Madam Mohan Das

We are celebrating a remarkable milestone in the world of science and academia—the 100th birthday of Professor Mahendra Kumar Rout. Born in Bhadrak town, Mahendra Kumar Rout was the youngest son of his parents Late Lakshmidhar Rout and Suryamani Devi. His father was an advocate by profession and was a philanthropic person.

It is with great pride and joy that we commemorate the life and work of Professor Rout, whose journey through the world of science has been nothing short of extraordinary.

He has spent a lifetime delving into the mysteries of matter and the fundamental building blocks of our universe. This brilliant mind has illuminated our understanding of chemistry, leaving an indelible mark on the academic and scientific communities. As we reflect on this incredible journey, we are reminded of the countless lives that have been touched and transformed by Professor Rout's teachings and research.

Born in a time of great change and upheaval, He witnessed the evolution of chemistry from its classical roots to the modern marvel it is today. Throughout this period of transformation, He remained at the forefront, guiding generations of students and scientists into uncharted territories.

In the world of chemistry, certain names shine brightly, leaving an indelible mark on the field through their unwavering dedication to education, and profound influence on the scientific community. Professor Rout was one such person

He has dedicated a lifetime to advancing our understanding of the molecular world and nurturing generations of aspiring scientists. As we commemorate this momentous occasion, let us reflect on the incredible contributions and enduring legacy of a true luminary in the field of chemistry.

As we reflect on Professor Rout's remarkable journey, let us also look to the future. The world of chemistry is ever-evolving, and the challenges we face are complex and multifaceted. It is up to the next generation of scientists, inspired by the legacy of Professor Rout, to continue pushing the boundaries of our understanding and addressing the pressing issues of our time. His journey into

-2-

the world of chemistry began with an insatiable curiosity that would drive a lifetime of scientific exploration. From the early years of his education to the groundbreaking research and illustrious teaching career, his passion for chemistry has been unwavering.

Beyond his research, Professor Rout was also a dedicated educator and mentor. His commitment to nurturing the next generation of scientists is evident in the countless students he has inspired over the years. Many of his former students have gone on to make significant contributions to the field of chemistry, a testament to his exceptional teaching and mentorship. One of the hallmarks of

his career has been an unwavering commitment to fostering the next generation of chemists. He has mentored and inspired countless students, instilling in them a passion for discovery and a dedication to rigorous scientific inquiry. Many of these students have gone on to become leaders in their own right, further amplifying his impact on the world.

He always believed that "Science is not a solitary pursuit but a collective endeavour that pushes the boundaries of human knowledge."

Professor Rout's contributions extend far beyond the classroom. He has illuminated the beauty and complexity of the chemical world, leading to discoveries that have touched every aspect of our lives. From groundbreaking advances in green chemistry to innovative breakthroughs in material science, Professor Rout's work has left an indelible mark on the scientific community and society as a whole.

It would be worthwhile to mention that As a Principal in all the major colleges of Odisha, he never failed to take classes at all levels. Even as the Vice-Chancellor of Utkal University, he continued his teaching at M. Sc. level.

Prof. Rout was a very kind person. I have heard that anybody in difficulty was able to receive help from him. I remember a bright girl student from Balangir approached him for admission since she was a late applicant for M.Sc. Physics. She was a bright student, and he had to talk to the Principal several times and became successful in giving her admission. Any employee could approach him to solve his financial problems temporarily, and he was ready to help the person. Many a time, when the research students were busy in their experiments, he would order food for all. Occasionally he asks his research students to visit a

picture with him, and thus an intimate relationship was built up between him and his students. His house, his room, was open to all his students.

On the occasion of Professor Rout's 100th birthday, we celebrate not only a remarkable individual but also his scientific achievement and dedication to the field of chemistry. His passion, research, and mentorship have left an indelible mark on the world of science, and I am honoured to join in this celebration of a life well-lived.

We are reminded not only of his extraordinary achievements but also of the values that have guided him throughout his journey of life. His commitment to the pursuit of knowledge, his passion for teaching, and his unwavering dedication to the betterment of humanity stand as a testament to the power of science and the indomitable spirit of the human intellect.

In a world where change is constant and the pursuit of knowledge is relentless, Professor Rout has been a beacon of stability and wisdom. His contributions to the field of chemistry are a testament to the enduring power of science to shape our world for the better.

On this historic occasion, I pay tribute to Professor M.K. Rout, a true icon. His life has been a testament to the power of science and the enduring quest for knowledge. As we celebrate his remarkable journey and contributions, let us remember the importance of curiosity, dedication, and the pursuit of excellence in the world of chemistry and beyond. Professor Rout's legacy will continue to inspire generations to come, reminding us all that the pursuit of knowledge knows no age limit.

ॐ सर्वे भवन्तु सुखिनःसर्वे सन्तु निरामयाः।
सर्वे भद्राणि पश्यन्तु मा कश्चिद्दखभाग्भवेत।
ॐ शान्तिः शान्तिः शान्तिः॥

Former Justice Orissa High Court

Academician Par Excellence: A Tribute

Prof. Madhusudan Pati

In the observance of the birth centenary of a distinguished teacher, while the primary objective is adoration and fond remembrance, the deeper purpose is cultural and educational enrichment even beyond the specific academic ethos. for the organisers of the celebration, the occasion furnishes an opportunity to gratefully recapitulate the inspiring leadership of the teacher of abiding memory and feel chastened afresh to carry on the legacy for the future generations. Indeed, the historical stature of a teacher is known from the creative use made by his students and readers of the academic endowment left behindby him, and from the character and personality his example has fashioned among them. And so, the celebration of the birth centenary of Professor Mahendra Kumar Raut affords an occasion for honest self-introspection and renewed dedication.

Professor Raut was known for his devotion for teaching and research; also for his enthusiasm for growth of excellence across disciplines. He was a class apart among his contemporaries in nurturing a band of dedicated research scholars through whose work- ethic and discipline Departments of Chemistry in the state - notwithstanding all their infrastructural deficiencies-acquired distinction as centers of research. His students (and grand students) constitute the real homage to his personality and spirit.

As educational administrator, too, Dr Raut left his mark wherever he served. He was more a leader than an administrator. And administration for him was just another instrument for ensuring academic excellence. His concern for students was not limited to the classroom. He took a personal interest in building a proper academic ambience all round and making available adequate infrastructural support for the students and teachers. I would mention just a small- but telling-instance, when Dr Raut was Principal, Ravenshaw College, once I happened to call on him at his office. He was, as usual, cordial, and enthusiastically narrated a few things he had initiated. And then, suddenly he got up from his chair and said, 'Come'. I followed him to a new-look Kanika Library, and just a few minutes later, to the newly installed Reading Room. All the seats had been occupied by students silently poring over books. As an old alumni, I felt very happy and wished we had such facilities in our days. As we went out I wished to say it aloud, but stopped short, looking at the face of Dr Raut. It was beaming with satisfaction. Such joy could wreathe the face of only one who was truly a loving, dedicated teacher.

I was a Lecturer in English in Gangadhar Meher college when Dr Raut joined there as Principal. That is where I had an opportunity of knowing certain important facets of his character. He was

hardworking, also a hard taskmaster, without ever being hard of conduct. His devotion to the welfare of students and the institution as a whole was truly heartening. It was not only through administrative competence and developmental dynamism that he made a mark. His engagement was intimately personal. Of many illustrative examples, I will cite only one.

Once the students had taken out a huge procession to submit certain demands before the Collector. On the way, some miscreants had thrown a few stones at a police quarters. A heavy contingent of police personnel was already stationed nearby. There was a merciless lathicharge, with students running away through by lanes. But a large number of students were still there, with some having climbed up the roofs of certain buildings with the intent of pelting stones. The situation could have gone out of control. When Dr Raut came to know of it he urgently summoned me and Professor A.K.Meeshraw of the Department of Physics and asked us to rush to the spot. We did as told, and luckily succeeded in persuading the students to leave the place. It was around 3:00 P.M. when we informed this to Dr Raut who was still in office and left for lunch. The rented home I was living in then was close to the college. Hardly had I begun eating when Dr Raut sent for me. Dr Raut said we should immediately go to the police station where a number of innocent students who were fleeing at the time of the lathicharge had been picked up by the police and detained in the Thana.

Dr Raut first of all talked to the students and then ensured that they had some snacks. Thereafter enquiring about the certain details from the IIC. Then he got in touch with the SP to clarify certain things, and then signed a personal bond to get the students released. We returned around 4:30 P.M. Dr Raut's concern for the students, his feelings as a guardian and the efficiency with which he managed the whole thing made a deep impression in my mind. Another Principal might have informed the local guardians of the students and left for lunch.

One of the highlights of Dr Raut's tenure as Principal was his management of the Silver Jubilee Celebration of the college. His meticulous planning indefatiguable pursuit of certain commemorative developmental works (a Silver Jubilee hostel among others) and year- long cultural and educational programmes evoked the praise of even the townsfolk. A number of dignitaries were invited, among them the famous 'Frontier Gandhi'. I still have with me a copy of the Silver Jubilee Souvenir bearing his words of appreciation. Incidentally, the Hostel has a bit of historical significance for the Sambalpur University. It is there that the Department of English commenced functioning in the ground floor of yet to be completed structure. I had just joined the Department. The only one to do so for some months - and had made a request to Dr Raut for the space (subsequently formalised by the University along with a request for teaching space for the Department of History, as well). I make a mention of it because Dr Raut not only immediately accorded permission but also saw to it that we had the requisite furniture and electrical fittings to go with it. Once again it demonstrated his personal involvement in all academic undertakings.

I continue to cherish all his excellences, and also all his silent teaching.

I am thankful to the organisers for cordially inviting me to associate myself in a small way with the commendable exercise. ■■■

Former Professor & Head
Department of English
Sambalpur University
Jyoti Vihar, Burla
At-Rugdipada, Balangir
Ph. No.-9437708046

In Memorium

Prof. Prabhat Kumar Misra

I have spent my childhood days, school days, college days, service period, research career and retirement from service, all during my stay in the Ravenshaw College Campus. When in school, I used to see two gentlemen with cotton suits and hats crossing the play ground from their quarters to the college. Later I learnt – they were close friends Prof. Mahendra Kumar Rout & Prof. Prasanna Kumar Das. Both were Professors of Chemistry, one in Organic and the other in Physical, both were renowned in their respective fields.

When I joined Ravenshaw College as a student in 1951 after passing out from Ranihat High School, I saw them in the Chemistry Department. Prof. Rout was taking B. Sc (Hons.) & Post -Graduate classes. He was a teacher & researcher par excellence. He knew all students by their first names and also the names of their fathers and guardians. Besides teaching, he was playing Tennis and was the Tennis Doubles Champion of the College.

He was my research guide in the PG stage for my thesis. He had to leave for USA under the International Exchange Programme selected by the Government of India under the UGC. Dr. Birendra Kumar Patnaik was looking after my work and Prof. Rout was regularly in touch from USA. On his return, he changed the structure of the curriculum in the PG classes introducing Organic Reaction Mechanism. Later, the teachers of the department were also attending classes with the PG students to learn & acquaint themselves with modern topics. As a research guide, he was very serious still remembers his first PhD student Hrusikesh Pujari preparing for the viva voce. It was much more than preparing for the PG Examination. Prof. Rout used to stay in the laboratory for long hours and so were his PhD students - a tradition of the department. In those days foreign PhD and Indian PhD were treated differently with regard to sanction of additional increments and promotion. He fought it out with the Government of Odisha and made them equivalent. He was the first PhD in Chemistry from Utkal University along with Prof. Sukumar Aditya in the year 1952. I came to Ravenshaw College on transfer from SCS College, Puri and he asked me to do research under him. I carried out my PhD work under his supervision on the topic 'Heterocyclic Compounds for Structure& Spectra Correlation' and obtained my PhD degree from Utkal University in the year 1971. I still remember how I was summoned for viva-voce from Ooty where I was attending a conference. Prof. Rout always used to take a test and asked his M. Sc and PhD thesis students to give a talk before the viva-voce is taken by the external expert.

1962 was the year when 49th Session of Indian Science Congress Association (ISCA) was held at Ravenshaw College, Cuttack under the General Presidentship of Prof. B. Mukherjee. Title of his Presidential Address was 'Impact of Life Sciences on Man'. Prof. Rout asked me to be with Prof. N.R. Dhar and look after him. I was really proud

to get that assignment and that too with absolute satisfaction of Prof. Dhar. Prof. Dhar was the General President of 48th Session of ISCA in the year 1961 when it was held at Roorkee. 1st Session of Indian Science Congress Association was held at Calcutta in the year 1914 and Hon'ble Justice Sir Asutosh Mukhejee was the General President of the Session. Title of his Presidential Address was 'About Science Congress'. For the first time in the history of Odisha, Ravenshaw College hosted the Indian Science Congress in the year 1962 and it was a grand success. In the year 1960, University of Bombay hosted 47th Session of Indian Science Congress and Renowned Odia Scientist Prof. Prana Krushna Parija, World Famous Botanist, Former Principal of Ravenshaw College, Cuttack and Former Vice-Chancellor of Utkal University was the General President. Title of his Presidential Address was 'Impact of Society on Science'. Subsequently 64th Session of Indian Science Congress was held at Utkal University in the year 1977 and Dr. H.N. Sethna was the President and title of his Presidential Address was 'Survey, Conservation and Utilization of Resources'. Further, Odisha hosted for the 3rd time 99th Indian Science Congress at KIIT University, Bhubaneswar and Prof. Geetha Bali was the General President. Title of Presidential Address was 'Science & Technology for Inclusive Innovation- Role of Women'.

Research Group of Prof. Rout was a compact one. After the evening session in the department, Prof. Rout used to take a walk in the college field along with his research team, talking and joking with them. Prof. Rout was Head of the Chemistry Department for 7 years and Principal for 9 years in Ravenshaw College. He was also Principal in GM College, Sambalpur and Khallikote College, Berhampur. He was the only person to be the Principal of three major colleges of the state. He did commendable works in these colleges and students still talk of that. The Chemistry Department of Ravenshaw College was known over the country for the research work done here. Prof. Rout was engaged in research work in various subjects and was rewarded for the quality of work. He loved his work and his students immensely. In whichever position he was, his laboratory was the best place for him and he continued his work. I only wish, he had spent more time as Director of Higher Education, Odisha so that he could put his ideas and thought to improve the quality of education in the state.

He was appointed as Director of Higher Education, Odisha and was about to handover. The atmosphere was so charged with emotions that he could not take it and decided to leave quickly. I was asked to come with him to Bhubaneswar. On reaching the office, I was not only surprised, but shocked to find the chair empty. Prof. Rout went in quietly to the room.

Sat down and waited, waited and waited. He was so calm and took it so casually, that others were also surprised. He was almost sleeping on the chair unperturbed. After long waiting what happened is history. After spending few months as DPI, he joined as Vice -Chancellor of Utkal University. In all the educational institutions he headed, he was a brave administrator and took the staff and students together for the betterment of the institution.

He was the founder of Odisha Association for Advancement of Science formed in line with Indian Science Congress Association. Slowly other departments formed their separate associations, but still he was not willing to close the parent body and form Chemistry Association. After long persuasion, Orissa Chemical Society was formed in the year 1985 with Prof. Rout as the Founder President. He was President of Orissa Chemical Society for three years 1986, 1988 and 1989 when the annual function of the society was held at Ravenshaw College, Cuttack; P.N. College, Khurda and Khallikote College, Berhampur respectively.

On 15th July 1983, State Pollution Control Board, Odisha was formed and Dr. Rout was the first Chairman of the Board. He improved its functioning and quality. It is worthwhile to mention it here that Department of Chemistry, Ravenshaw College has given three Chair Persons to State Pollution Control Board, Odisha- they are Prof. Mahendra Kumar Rout, Prof. Rebati Charan Das and Prof. Lalit Mohan Patnaik. As Chairman of Banking Service Recruitment Board, Bhubaneswar, Prof. Rout distinguished himself as a very fair and judicious person. I must confess that every job, and assignments he held, he excelled himself with credit.

Certain facts are common to both of us. Mrs. Savitri Rout, a great Sanskrit Scholar was wife of Prof. Rout. They had one son Swayam Prakash and one daughter Anuradha and both were in Chemistry. My wife Aparna was in Sanskrit. We have one son in Chemical Engineering and one daughter in Chemistry.

Towards later part of his life, Prof. Rout suffered with failing health and was not able to move. He used to call me frequently. I have spent many hours in his residence talking and discussing with him many matters including his personal ones.

He left us for his heavenly abode at the age of 66 on 7th February, 1990. When this information reached us, the Department of Chemistry and Ravenshaw College stood in silence and profound grief. I went to Bhubaneswar to pay my last respect the great person who shaped my career. Whatever I have achieved in life was due to him and he was the master architect of my persona. He was a colossus and all before him were insignificant. His generosity and kindness has no substitute. ■■■

Former Principal
Ravenshaw College, Cuttack
Phone: 7978489997

The good thing about science is that it's true
whether or not you believe in it.

– Neil deGrasse Tyson

Dr. Mahendra Kumar Rout: An Educationist Extraordinaire

Dr. Debakanta Mishra

During my higher studies at Ravenshaw College, Cuttack, I was a student of Dr. Rout and was very much impressed by his unique way of teaching Chemistry. But I came in personal contact with him only when he joined as Principal of Ravenshaw College and continued in that post for a good number of years.

By the time he joined as Principal of Ravenshaw College, I had established myself as one amongst the foremost writers of popular science. Dr. Rout very much appreciated my literary pursuits and even expressed appreciation once or twice in the meetings of the staff council. Fortunately, I had to meet him frequently as I was then the Officer-in-charge of the College Power House and he assigned me certain responsibilities to conduct university examinations and to be involved in some extracurricular activities of the college. Eventually he developed a personal affection for me and asked me to translate his articles in Odia in favor of publication in the daily news paper 'The Samaja'. I knew that editor of Samaja, Padmabhusan Dr. Radhanath Rath, was one of his admirers and consulted him as and when he needed his suggestions. I had translated a good number of his articles into Odia for this purpose.

I specifically remember that along with Dr. Rath and Sri Girija Bhusan Patnaik, the founder of the cultural organization 'The Universe', he formed a 'trio' to see that Ravenshaw College gains the status of a university. In this connection, he wrote a good number of articles and I translated them if favor of publication in 'The Samaja'. Even I remember, Dr. Rath published one of his articles in English in view of its importance and significance in this matter. Through the consistent and persistent efforts of the 'trio', along with a few others, a strong background was created to convert Ravenshaw College into unitary University, which in fact became a reality belatedly, but by that time he had left Ravenshaw College.

During my long stay at Ravenshaw College and in Ravenshaw College quarters, I have seen no other principal like him trying to improve the physical infrastructure of the college. During his tenure, the new extension of Kanika Library was built and the college hall along with the entire arts block was thoroughly repaired. He developed the road all around the college campus and improved the physical infrastructure of various hostels for the convenience and comfortable living of the boarders. Every day during the late evening hours he regularly visited various hostels along with some colleagues by foot and spent considerable time till late hours, contacting the boarders to know about their inconveniences if any for earliest redressal. I had the good fortune to accompany him in this regular inspection many a times.

It is a well known fact by now that because of his pioneering and leading efforts, as a research guide, Ravenshaw College could find a respectable place in the research-map of India. He produced a good number of research scholars, who earned Ph.D and D.Sc degrees under his supervision.

In spite of his busy schedule he could find time to make arrangements to build an open – air theatre, where in addition to celebrating various cultural functions of the college, the commemoration meeting of Ravenshaw College Old Boys' Association took place. I had the good fortune to be elected as secretary of the association along with another local philanthropist, Sri Khatau Sunder Das; Dr. Rout started the healthy tradition of felicitating a few old eminent professors of the college along with a few other people who have excelled in various disciplines such as literature, political leadership, and public administration, in that function. As per his suggestions, I used to write brief biographies of the felicitated functions, which was published in the previous day in the daily 'Samaja'. I continued this practice for a few more years.

Another memorable event happened when Dr. Rout when Dr. Rout was principal of the college. He tried his best to become successful in enabling the postal authorities at the centre to publish a commemorative postal stamp in favour of celebration of the birth centenary of Ravenshaw College. The photograph of the Arts Block was exhibited in the beautiful stamp. He also arranged a special function to celebrate the birth centenary of the college also by publishing a souvenir for the purpose. This souvenir was mostly edited by me and was published free of cost by the editor of 'Samaja', Dr. Radhanath Rath, who could see to it that the copies of the souvenir were delivered a day before the function at the residence of principal and also he attended the function next day as an invited guest. The incidents at this function are still fresh in my memory , in which Sri Biju Patnaik, then a cabinet minister at the centre, attended as Chief Guest along with a few of his colleagues.

Like Prof. B. Das, Dr. Rout came to my rescue when I was disturbed twice during his tenure to leave Ravenshaw College. He used his tactfulness and administrative expertise to see that I am accommodated as a member of the teaching staff of the college.

When my father died, the very next morning Dr. Rout expressed his condolence to the members of my bereaved family over phone. He also told me that he is relieving me from examination duties along with taking care of the college power house till I have completed my last rites for my father.

Dr. Rout remained my guide and well wisher till he breathed his last. When he was felicitated by Ravenshaw College Old Boys' Association along with a few others in the commemorative function, I also wrote their biographical details in favour of publication in daily 'Samaja'. I last met him, accompanied by Smt. Manorama Mohapatra at his residence at Bhubaneswar when he was critically ill. We stayed at his bed side for about an hour, when he expressed his views only writing over a piece of paper, as he lost his power of speech. His inevitable sad demise was very shocking and painful news for me. I published an obituary in the daily 'Samaja', giving details of his outstanding achievements as an ideal teacher, an efficient research guide, an able administrator and above all a charming personality with an empathetic and holistic outlook.

I have still maintained contact with his family through his worthy son. Dr. Swom Prakash Rout, who has also excelled like his father in guiding research on environmental sciences. I am also regularly keeping contact with his son –in-law, Dr. Dev Patnaik through face book, who was my student and has spent his professional career at USA as a reputed physicist. Only sad fact is that Dr. Rout's married daughter Anuradha has died in the meanwhile.

I am immensely pleased to know from Dr. Prabhat Kumar Misra that Ravenshaw College Chemistry Department will celebrate his birth centenary on 4th January, 2024 for which adequate preparations are going on from now. ■■■

Mahatab Road
Cuttack- 753012
Phone: 9937241414

A Tribute to a Great Personality

Surya Prasad Mishra

I feel privileged and honored to share my feelings about one of the icons on the subject of Chemistry, Prof. Dr. Mahendra Kumar Rout, a legend amongst his contemporaries.

I was fortunate to be a student of Ravenshaw College, Cuttack in Science stream and was having chemistry as one of the subjects (PCM with 4th optional Biology) in 1st year and PCM with Mathematics honors in graduation. To be a student of Prof. M. K. Rout is a blessing of God. He was my teacher and my Principal as well.

I knew Prof. Rout before I joined in college as Mrs. Sabitri Rout was a writer and her books were published by my father Anant Mishra, Proprietor of Cuttack Students Store. I had accompanied my brother-in-law Dr. Balabhadra Bhatta Mishra who was a Scientist and Ground Engineer in NASA to the residence of Prof. M. K. Rout (as both were classmates during their college days). Incidentally, Prof. M. K. Rout's daughter Annuradha Rout (fondly called Baby) was my classmate and she had Chemistry honors in her graduation.

Prof. Rout was an outstanding teacher. He was teaching on different branches of Chemistry and allied subjects during my graduation and none of the students ever think of missing his class. Prof. Rout had a tremendous memory and knew the students by their names. Those were the days when the relationship between the teacher and students was completely different and the mutual love and respect was predominant.

Prof. Rout was a strict disciplinarian and had always maintained punctuality. When he would be teaching there was pin drop silence in the classroom (chemistry laboratory theatre- II in upstairs). The memories of the college days flashes back and still linger in the mind and I feel really proud to be a Ravenshawvian.

He became the Principal of Ravenshaw College, Cuttack during my graduation days. Because of his administrative skills and outstanding personality as an academician, Ravenshaw College, Cuttack was considered to be one of the best colleges of that time and was ranked very high globally.

Those are the golden days of my life as a student of Ravenshaw College, Cuttack which had outstanding teachers in different departments and the atmosphere was congenial for academic pursuit. The ambience of Ravenshaw College was something different than other colleges and one cannot visualize the same unless experienced. I feel proud to be a Ravenshawvian.

I express my gratitude to Orissa Chemical Society for granting me the opportunity to pen down a few words about Prof. M.K. Rout a legend who lives in the hearts of his students forever. ■■■

Former Advocate General, Odisha
Ganesh Ghat, Nimchouri,
Cuttack, Mundamuhan,
Odisha 753002

Tribute to a Legendary Teacher

Prof. Balaram Sahoo

Professor Mahendra Kumar Rout was a renowned organic chemist from India who made pioneering contributions to the field of chemistry at Ravenshaw College (now Ravenshaw University) in Cuttack. His research encompassed various aspects of organic chemistry, including the synthesis of organic compounds, polymer chemistry, and kinetics and mechanisms of organic reactions. He mentored numerous bright students from the state, shaping a new era of organic chemistry, and served as a doctoral supervisor to many distinguished scholars from Odisha who achieved fame and recognition on the international stage.

I first had the privilege of meeting Prof. Rout in 1953 when I joined the B.Sc. Honours course in chemistry. He was an exceptional teacher, an inspiring mentor, and an exemplary Karma Yogi. His teachings are etched in my memory, like his exceptional explanations of the structure of benzene during Honours classes and vitamin B2 during postgraduate classes. Few from the present generation can truly grasp the profound impact this man had on the scientific corridors of Ravenshaw College.

Throughout his academic journey in Odisha, Prof. Rout held various significant positions, including serving as the principal of prominent educational institutions, Director of Public Instruction, Vice-Chancellor of Utkal University, and Chairman of the Pollution Control Board. At each of these institutions, he made remarkable contributions to advancing education and setting pollution control standards in the state.

Upon returning from the University of Brandish, USA, in 1957-58, where he worked in the School of Research under Woodward (N.L), Prof. Rout brought about a transformation in the postgraduate curriculum. He introduced new concepts that elevated the standard of research for many of his doctoral students, guiding them to align with emerging areas in organic chemistry.

During my research in 1957, focusing on uranium, thorium, and rare earth compounds, I shifted to I.I.T. Kharagpur in 1963 and switched my focus to complex coordination chemistry. One crucial area of my research involved isolating poly-nuclear complexes, for which I needed to design and synthesize organic ligand molecules with appropriate structures that could bond with multiple metal ions. One of my doctoral students, Sri Sudhakar Satapathy, had completed his postgraduate education at Ravenshaw College and worked under Prof. Rout on pyrazole derivatives for his M.Sc. project. We collaborated to synthesize complexes with the pyrazolate anion, capable of bonding with two metal ions in close proximity and exhibiting super exchange phenomena. Although there was no direct method available to prepare the pyrazolate anion, we succeeded in

synthesizing the pyrazolate complexes through an in situ process using tri and tetra-nuclear 2,4-pentanedionate complexes of nickel(II) and cobalt(II), respectively, along with hydrazine. This groundbreaking work paved the way for research in many international laboratories, firmly establishing the pyrazolate ligand as a prominent nitrogen donor ligand (Advanced Inorganic Chemistry, F.A Cotton; G. Wilkinson; C.A. Murillo; M. Bochman; 6th edition; 2004, p 352).

I have had the pleasure of working with Prof. Rout on several confidential academic matters. His amiable nature, warm smile, and welcoming demeanor have always endeared him to me.

I must also recount an event that showcases Dr. Rout's independent judgment, unaffected by external influences. In the year 1961-62, the Government of Odisha formed a commission comprising Ranjit Singh, Advocate General of Odisha, Professor Sriram Chandra Dash from the Department of Political Science at Ravenshaw College, and Prof. Rout to select and report on the establishment of two colleges, one on the southern side of Mahanadi (Banki/Baideswar/ Padmabati) and another on the northern side (Athgarh/Badamba/Narasinghpur). While Banki was an undisputed choice, the decision for the northern side was challenging as each location had its merits according to the local people's views. However, higher educational institutions require considerations beyond the imagination of common people.

In Athgarh, a delegation led by Dr. Radhanath Rath, the Editor of The Samaj and former Education and Finance Minister of Odisha, along with the then local MLA, argued in favor of establishing the college at Athgarh, considering Badamba and Narasinghpur as backward areas unsuitable for a higher institution of learning. On the other hand, Sri Bidyadhar Nayak, the MLA of Badamba and Narasinghpur, advocated for the college's establishment in Narasinghpur, closer to his birthplace. Badamba was represented by a group of prominent citizens, none of whom held an officially recognized people's representative position.

At the time, I was stationed at Baripada, and Sri Nimai Charan Naik was a lecturer at Ravenshaw College. We both hailed from Badamba and were aware of these developments. When I learned of the ongoing discussions, I happened to be in Cuttack, and along with Sri Nimai Charan Naik, we approached Prof. Rout to plead the case for Badamba. We highlighted its natural location on a hilltop, offering a vast green valley to the south, the nearby flow of the river Mahanadi, and its central position in the Athagarh subdivision, which Prof. Rout seemed to appreciate due to his familiarity with the area's natural beauty. Additionally, there was already a proposed college functioning from Raja Biswambhar Club. Prof. Rout, listening to us, smiled heartily and wrote a letter to the Government recommending Badamba. He then sent the letter to Ranjit Singh after getting it signed by Prof. Sriram Chandra Das. As a result, M.S. College, Badamba, came into existence as the first government-aided college in the Athgarh subdivision. We remain forever grateful to Prof. Rout for his unbiased judgment and decisive action.

Professor Rout was a valuable asset to the scientific community of Odisha. His contributions have left an indelible mark, and he remains highly regarded as one of the finest ornaments of our scientific endeavors. May his soul rest in peace, and may his blessings continue to guide future generations of Odisha's scholars. ■■■

Former Professor of Chemistry,
I.I.T. Kharagpur. WB.
Village: Gopapur, Badamba, Dist
Cuttack. 754 031
Ph. No.: 8117092286

Tributes to My Father on his Birth Centenary

Professor Swoyam Prakash Rout
PhD, DSc, FRSC(London), MACS(USA)

Thirty-three years ago on the 7th February 1990 my father Professor Mahendra Kumar Rout passed away peacefully in his sleep. He went to USA to undergo medical treatment in the month of November 1989 where he had hopes for a cure to Amyotrophic Lateral Sclerosis (ALS) as it was known.

My Father belonged to a different era. Not many people had opportunities for higher education. Many of those who had the opportunity concentrated on establishing themselves with a lucrative job and building their own house for their families.

In that respect my father was different from others. Mahendra was the youngest among his three brothers Manindra and Jnanendra, the most studious and ambitious. Right from his childhood he had realized that in order to be someone among his contemporaries he has to excel by devoting more time to study. He believed in the motto "Work is Worship"

Being very good in academics, it was his trump card as he was ready to utilize for his ambition. Mahendra as he was called concentrated on scientific research when others enjoyed novels, watching sports and reading literary books. He set his goals from the beginning and worked hard in that direction. Mahendra knew that ne was not rich and famous at the same time nor did he have the business acumen to start an industry. Therefore he chose the alternative path to work hard and aspire to become a distinguished person. Conditions prevailing at that time in Ravenshaw College were favorable for his ambition.

Scientific research was an ongoing process then, which was initiated by stalwarts like Prof. Bawa Kartar Singh, Prof. Balabhadra Prasad and Prof. S.S Guha Sircar. Father decided to follow their footsteps. During those days just after independence getting a Doctorate degree in Science was not that easy. The infrastructure for research was not conducive due to the non-availability of funds. It was very though for a newcomer to do research as the work had to be evaluated by foreign examiners which was the benchmark in those days. Research scholars had to dedicate themselves in hard work for getting everything mundane. Father treaded on the same path. He worked very hard and luck favors the brave. Thus, he became a Reader and Professor at a very young age by merit. Dr. Rout was recognized for his scientific research by publishing his work in reputed journals like Nature and journal of the American Chemical Society, built a team of research scholars and received awards viz Cooper Memorial Medal twice for the best publication in

the Indian Chemical Society. He was truly a great scientist in the making. But he was born a teacher who loved to teach and he loved his students. He cared for their studies as well as their wellbeing. In the process, the respect he acquired was mind blowing and was a superman to them. In today's world one can never find a teacher of his caliber and the discerning students. Their relationship was unique something we hear in folklore. Most of his students felt that he was a Gurukul teacher. Prof. Rout was very respectful to all his teachers.

My father's Sixtieth Birthday Celebration was Organized by his students in the Department of Chemistry, Ravenshaw College on February 17, 1984. A souvenir was released on the occasion and Prof. Rout was felicitated by his teachers, colleagues, students and well-wishers. Notable teachers present on that eventful day were Prof. Bama Charan Das former DPI and Vice Chancellor, Sambalpur University, Prof. Balabhadra Prasad former Vice Chancellor of Patna and Allahabad Universities, Others students were Prof. Khirod Kumar Patnaik former Principal Ravenshaw College and Member, Odisha Public Service Commission, Prof. Hrusikesh Pujari, Kurukshetra University, Prof. Dinabandhu Mishra, Principal Ravenshaw College and Prof. Gopabandhu Behera, Sambalpur University.

The Odisha Bigyan Academy honored Prof. Mahendra Kumar Rout posthumously in 2007 by awarding him Distinguished Award for his lifetime achievements in Chemistry. The awarded was presented Hon'ble Naveen Patnaik, Chief Minister of Odisha in July 2008.

An oil painting of Dr. Mahendra Kumar was unveiled in the oldest cultural organization of Odisha the Utkal Sahitya Samaj on 28th December 2019 in the presence of Prof. Santanu Kumar Acharya, Renowned writer of Odisha, Prof. Prabhat Kumar Misra, President, Kala Vikash Kendra, Shri Manoranjan Panigrahi. Principal Secretary and Dr. Bijay Kumar Nayak, Director in the Odia Language, Literature and Culture Department of Government of Odisha and the public at large.

Today we are celebrating the One Hundredth Birthday which is a solemn occasion for all of us in Ravenshaw University to resolve to work hard and establish a world class University in teaching, research and cultural activities. All our efforts would be rewarded by Lord Jagannath.

Bande Utkala Janani ! ■■■

Former Professor of Chemistry,
Utkal University, Vani Vihar,
Bhubaneswar 751004
Ph. No.-9437307595

If I have seen further it is by standing on the shoulders of Giants.

– Isaac Newton

Dr. Mahendra Kumar Rout : My Esteemed Guru

Dr. Sanjay Kumar Panda, IAS (Retd.)

"Guru", meaning teacher, occupies the highest pedestal in the traditional Indian society, as he shapes the mind, character, and life of an individual. In our personal and professional life, each one of us come across number of teachers. However, rarely one is lucky to come across someone, who leaves a permanent imprint in one's life. This is somewhat like the millions of stars twinkling on a clear sky in the night; but it is only at the sunrise that one sees the "Sun" removing the darkness of the night and providing energy crucial for sustenance of life on the planet earth. This has been best spelt out in the salutation to the teacher, which is widely recited on the Fifth September - Teachers Day every year.

"ॐ अज्ञानतिमिरान्धस्य ज्ञानाञ्जनशलाकया ।
चक्षुरुन्मीलितं येन तस्मै श्रीगुरवे नमः ॥"

"I offer obeisance unto Śrī Guru, who has opened my eyes,

which were blinded by the cataract of ignorance, with the collyrium of knowledge."

Dr, Mahendra Kumar Rout came to my life like the "Sun" illuminating my path in a rare and unparalleled way.

Born in Cuttack town in December 1955, I lost my father at the tender age of one. With no brother and sister, my mother brought me up in a difficult situation. After completing school education in the Christ Collegiate School (commonly known as Mission School) in the year 1970, I entered the red citadel of the Ravenshaw College, fulfilling my long-cherished dream. As we don't have enough means for buying a cycle, I had to walk nearly five kilometres daily from our house to the college in my first year of Pre-University science. On some days, I used to take the Odisha Road Transport Corporation bus way back on payment of twenty-five paise. In the middle of my second year in the Pre- Professional (Science), my aunt purchased a cycle for me. This was much more hilarious experience for me than getting our first Maruti 800 car while in service (in 1998).

Well life is like that!

In 1972, I joined BSc and initially opted for Physics honours. Sachi, my day-scholar college mate, persuaded me to change in favour of Chemistry honours, as it has much wider job prospects. I recall I had gone to meet Dr Mahendra Kumar Rout, principal of the college for this change. This first meeting with him was short and sweet, but it introduced me to a great person, who had profound impact in shaping my life. In the two years in BSc graduation general and honours classes, I used to eagerly look for the chemistry classes of Dr Rout. His way of teaching the subjects was extraordinary. Clarity of concepts with affection and keeping eye contact had a mesmerizing impact on my mind. As a matter of fact, in organic chemistry taught by him, I acquired enough knowledge and confidence that I started explaining the basic

concepts to my friends in the class, who were struggling with understanding these. I feel Dr Rout had the outstanding ability to emotionally bond with his students in a manner, which is similar to the bond in the benzene ring (unique type with unusual strength, which formed the core of organic

1 Written by Dr. Sanjay Kumar Panda IAS (Retd), who feel privileged to study Chemistry under Dr M K Rout in the Ravenshaw College from 1970-76. He served in the IAS and superannuated as Secretary, Ministry of Textiles. Views expressed are personal.

2 chemistry, responsible for the formation of millions of organic molecules in the plants and animals including human being).

I recall Dr Rout as the happiest person (apart from my mother) with my performance securing highest mark in graduation in the Utkal University in 1974, standing first in BSc and in Chemistry honours. This brought me closure to Dr Rout. The next step was logical - getting admission in MSc in Chemistry with specialization in organic chemistry. Some of my friends of BSc days left (Sachi for IIT Kanpur, Dilip for USA). I could not think of leaving Ravenshaw College due to financial and personal reasons (taking care of my mother). Quoting his personal example, Dr Rout always used to inspire me mentioning that I have not lost anything and that I can always make my mark from Ravenshaw College by dint of sincerity and hard work. The two years in MSc gave me lots of opportunities to get closure to Dr Rout and understand him from a close quarter. Life was like living in an extended family of Dr Rout with many friends and well-wishers like Prabhat sir, Dr D C Pati, Nin nani, Baishnab sir, Lalit sir.

Dr Rout was very persuasive in making his student continue in academic and scientific research. He was not in favour of looking for careers in IAS and other central /state civil services, as he felt it is a wastage of talents. I vividly remember the day I had my last paper in MSc. Dr Rout had come to me and whispered asking me to meet him on the next day in his lab. When I met him the next day, he asked me about my plans. All through my graduation and post-graduation days, I was doing private tuition, which provided a good financial support. I readily agreed to Dr Rout's suggestion to work in his research lab. This made a smooth transition from student life to service. This was very important in supporting our two members family of a mother and her son.

It was another coincidence that vacancy of a laboratory assistant (Chemistry) in Ravenshaw college came up and my name was sponsored in the panel sent by the employment exchange. I appeared in the interview bit reluctantly but got selected. Those days were different, and things were decided in a straight-forward manner than any recommendations or any other dubious methods, which eclipsed the situation later on.

Meeting and interacting with Dr Rout was a daily affair in the next one year, till I had to leave Cuttack in July 1977 for joining as an ad-hoc lecturer in chemistry in the Government Science College, Rourkela.

The event, which changed the course of my life, is a vacancy, which came up in organic chemistry in the Utkal University in 1977. I was overconfident of getting this as I was much ahead of others in the panel for consideration. I was very happy as this job will enable me to stay in Cuttack and look after my mother.

However, God's wish was different. I was deeply shocked and anguished to find that another candidate with inorganic chemistry specialization was selected for this post in organic chemistry. Later I learnt that my candidature for the post was overlooked as I was a student of Dr Rout and head of the selection panel (Head of Chemistry department of the University) was averse to

Dr Rout and towards his student as well. This incident left a deep impression in my life, and I had promised not to compromise on merit later in my service career.

While in Rourkela, I had applied for Indian Forest Service exam in UPSC in 1978. Clarity in fundamentals and stronghold in chemistry enabled me to crack the examination in my first

3 attempt. On the hindsight, this led to my getting delinked with Chemistry, academics, and Dr Rout (in the professional life).

After 1978, I had few occasions to meet Dr Rout, which were brief but very touching with his characteristic smile, coated with lots and lots of affection. I was fortunate be in Odisha on the day of his demise, to have the last darshan and paying respect to my Guru.

The emotional support, grooming and affection, I was privileged to have from Dr Rout, a fatherly figure, are too big for me to pen down in a few words. In the last 45years (1978-2023), I had the opportunity of working in Tripura, Odisha, Delhi in several assignments and meeting a large cross section of people starting from the farmer/ weaver to the Ministers, Chief Minister and Prime Minister on several occasions; but the impact Dr Rout had on my mind and life has few parallel.

Notwithstanding the herculean nature of the task in summing up the personality of Dr Rout, I would like to make a humble attempt as I feel the present writeup will be incomplete without it. To be very specific for me, Dr Rout was an embodiment of

i. “Hard work along with positive mindset is the key to success” - as a real-life illustration of the principles of the Bhagabat Gita.

ii. “Make best use of whatever you have, do your duty with sincerity, without any grumble and comparing with others”.

iii. “Feel proud of your profession, students, state and work with compassion, affection, warmth and sense of belonging, which enables one to leave a place in others mind and heart, which no power or authority can”.

The list is long. My feelings on this issue of paying my sincere love, respect and gratitude to my dear teacher Dr Rout flashed back in my mind with reference to a recent statement of Infosys founder, Narayana Murthy asking youngster “to work for 70 hours a week for making India a developed country”, which generated lots of discussion in the electronic and social media. As expected, a section vehemently opposed this in the name of being exploitative and against human rights. I feel this statement needs to be seen in the wider context of the society at large, from the prospective of the common citizen, the disadvantaged, the small and marginal farmers, the tribal and Scheduled caste looking for food, education, and health care, the unemployed youths struggling to make their both ends meet. This once again made me recall the statement of Dr Rout that “any success is 99% hard work and only one percent luck”, which he had proved in his own Iife, and in the lives of thousands of students, who came in his touch and got magnetised in the process and went ahead to earn accolades in different fields in India and abroad.

I bow on the Lotus feet of lord Jagannath seeking peace of the soul of my esteemed guru Dr Mahendra Kumar Rout. ■■■

Former Secretary,
Ministry of Textiles,
Government of India
&
Chief Secretary,
Government of Tripura

Siddheswar Sahi,
In front of Shri Siddheswar Temple
Cuttack, Odisha 753008
Phone: 8527661800

Prof. Mahendra Kumar Rout : A Jewel in the Crown of Ravenshaw

Manoj Kumar Parida, IAS

Mahendra Kumar Rout – the Ex-principal of Ravenshaw College was a living legend, in his life time and a folklore after his death. His memories remain engraved in the red bricks of Ravenshaw college. Any one even remotely connected with Ravenshaw during his tenure as Principal would have felt the vibrations of his powerful presence and possible patronage. Many of his colleagues and students have left this world, but those remaining will testify to the unique contribution of this teacher who moulded his students to transform them from stones to diamonds. The sheer power of his personality brought order and discipline to the huge campus, where thousands of students from multiple backgrounds were struggling to make their destiny.

I did not have the privilege of being taught directly by him, since I studied Humanities. However, two encounters with Principal M. K. Rout remain etched in my memory. In the year 1977, me and two other students qualified in National Talent Search examination conducted by NCERT. It was a tough examination. Only three from Odisha had qualified after a national level written test and a lengthy interview in Kolkata. Suddenly, one day I got a call from Principal's Office to meet him. till that time, I was not aware of the agenda of the meeting or the provocation of the summon. Scared, anxious and with lot of trepidations, I entered the Principal's chamber "So you are Manoj Parida who has qualified in NTS? Good… what will you do with the scholarship money?" I fumbled for words and spurted out "Sir I will buy books". He gave his patented bright smile and said "Are you sure? Or will you spend it on cinema ticket?" "No sir" I replied and he waived me off with an affection advice to "study hard". Years have passed since this small, routine "pat on the back" incident happened, but even now the face of this man, his smile, his inspiring words flash in my mind. My head automatically bows down in respect to his soul whenever someone mentions his name.

The second incident was freak and interesting. I was in third year with Political Science Honours. Those were the salad days with youthful energy overflowing in veins. Once during class interval, I was flirting with girls in the corridor, pretending to be discussing serious academic matters. From a distance, I saw over my shoulders Principal M. K. Rout coming from behind in long strides, in his spotless white dress, with an attendant, holding an umbrella for him. This personal inspection of campus was his daily routine. For a second, I thought, "Let me move out to the corner since the principal was coming" but then another powerful thought took over "What will these girl friends think if I timidly end the discussion and run away". I pretended as if nothing was happening

and continued gossiping with the girls with greater animation and a care-free body language. Suddenly after a few minutes, I felt a strong hand on my shoulders and a commanding voice "Young man, when your principal comes, you must learn to move away". The verbal sermon was also put in action by him, physically but mildly, pushing me aside. In less than a second, I fled from the spot giving a permanent good bye to my chivalry and foolhardiness.

M. K. Rout was a blessed soul. God had created him to spread the light of education. He did not simply teach chemistry, he changed the chemical composition of each student who came in contact with him and converted them into ideal human beings. He injected virtues of honesty, punctuality and perseverance. He had the Midas' touch. Any student he touched became pure Gold.

I salute this magician. ■■■

Ex-Chief Secretary
Pondicherry
Phone: 9560099996

One, remember to look up at the stars and not down at your feet. Two, never give up work. Work gives you meaning and purpose and life is empty without it. Three, if you are lucky enough to find love, remember it is there and don't throw it away.

– Stephen Hawking

In Memory of our Principal Dr. Mahendra Kumar Rout

Prof. Satyakam Mishra

During my second year of being a student at Ravenshaw College in 1971, there was a change of guard and we had a new principal, Dr. Mahendra Kumar Rout. But this fact was rather unknown to most of us, junior students, who had nothing to do with the college administration apart from visiting the office once in a while to pay the tuition fees.

During our early years in the college, we would spend our leisure time near the college portico. In the course of time all the day scholars of our batch had developed a habit of gathering at the portico in the afternoon and sitting there till all classes were over. Various topics, certainly not related to academics, were discussed in the rather engaging portico sessions and the tutorial classes allotted in the afternoon mostly remained unattended.

One afternoon, while some of us were sitting on the dwarf wall of the portico, a gentleman with an umbrella in his hand appeared before us and asked us to go to the students' common room. We just stared at him and none of us could recognise him. A man with khaki shorts, who accompanied the gentleman informed us in low voice that he was the new Principal. All of us stood up and greeted him. Later on, we came to know that the person who introduced the Principal to us was Rabindra Kumar Baliarsigh, one of the most trusted attendants of the Principal 's office. Before leaving the place, the Principal advised us that instead of sitting near the portico we should go to the library or the students' common room during leisure hours. But his warning could hardly dampen our spirit or end our portico sessions and post the holiday season which followed, we reconvened at our usual spot. While our deliberations were in full swing we noticed the Principal entered the verandah from the quadrangle side. Before we could disperse, he appeared before us and wanted to know the reason for flouting his orders. We tried to convince him that there was not enough space either in the common room or in the reading room to accommodate all those who wanted to sit there." Let me verify, come with me" with these words he went straight to the common room and some of us followed him. The situation he saw in the common room was even worse than what we had reported. Needless to say, that necessary steps were taken on the next day to improve the facilities at the common room. It was an exciting experience for us to interact with the Principal. This incident brought us closer to him and we had to permanently shift our meeting place from the portico to the commerce block. He continued as our Principal till we left the college in 1977.

We came to know from our seniors and friends about his academic achievements and interest in research. In the academic circle, he was held in high esteem. During his tenure, a lot of

developmental works were done in the college. Students had free access to his office. His student-centric administration made him popular among the students and there was virtually no student unrest during his tenure.

Dr Rout was an embodiment of love and affection. He had a genuine concern for poor and meritorious students. He used to help them in all possible manner. Without his help, it would not have been possible for many to continue their studies.

In those days the postgraduate examinations of Utkal University were held in the month of November every year. But in 1976 the Administrator of Utkal University, Shri Gian Chand, insisted on conducting the examination in the month of July, and accordingly, notification was issued. We were not prepared to take the examination four months ahead of the ongoing schedule.

Therefore we decided to send a delegation of students to the Administrator for shifting the examination to July. Dr. Rout came to know about our plan. He called for me into his office. I along with other classmates met him in the office. He persuaded us to not take the risk of approaching the Administrator. A national emergency was in force and Utkal University was superseded. There was no syndicate to consider the demand of the students and he was apprehending that our request would be turned down and in the event of any altercation with the Administrator he would take us into task. Therefore he could not allow us to proceed in our plan. But in utter disregard for his advice, we moved forward.

Although meeting with the Administrator was very cordial, he didn't concede our demand for shifting the examination to November. Nevertheless, he gave us the liberty of suggesting any other proposal except shifting the examination from July to any other date. As we had not thought of any other proposal we simply looked at each other. Taking advantage of the situation Mr Gian Chand reiterated his decision to hold the examination in July and having regard to our request he proposed that the date of commencement of examination would be the last day of July and there would be a gap of three days between dates of examination of two papers. Although it was not a very encouraging proposition, yet before agreeing to it we made a last attempt to request for extending the gap to six days Which was readily accepted. We left his office with a sense of gratitude.

On our return to Cuttack, we heard that the Principal was waiting for us in the office till late evening and went home only after ascertaining the facts about our meeting with Mr Gian Chand. We rushed to his residence and begged for an apology for going to Vani Vihar against his advice.

Today, I consider it a proud privilege to pen few words in memory of a great soul who had taken care of us during the most crucial period of our life and helped us stand in the society. He had trained and inspired generations of scientists in Odisha. He was courageous enough to give a detail account of the disease he was suffering from in an article published in an Odia newspaper which is quite a rarity. His life history will continue to inspire the future teachers and researchers.

I could not meet him before he had left for his heavenly abode but his memory will forever remain in my mind till I follow his mortal path. ■■■

Former Director of Higher Education, Odisha,
Former Chairman of Odisha Public Service Commission,
Former President of the Board of Secondary Education, Odisha &
Former Director of Teacher Education and SCERT, Odisha.

39/40ARC, Shelter Chhak
Tulsipur, Cuttack-753008
Ph. No.-9437277313

A Handful of Memoirs

Dr Akhil Krishna Panigrahi

It was August, 1963. I was fresh to Ravenshaw College from Khalikote College, Berhampur to pursue my M.Sc. in Chemistry. At that time Ravenshaw College was the only epicenter of learning Chemistry at P.G level in Odisha. In the very first class I was late and when I entered, I saw a fair complexioned, normal stature handsome person, with dark curly hair, impeccably dressed in well starched white pant and full shirt and with black shining resounding leather shoes. After the bell, I came to know that the teacher was no other man but famous Prof.M. K. Rout, Head of the Department who was very time bound and never appreciated and even reprimanded the students who are late in attending the class. I was fortunate enough on that day as he permitted me, probably that was being my first class after a lapse of one month of the start of the academic session with a stammering voice he enquired about why I missed the classes for last one month, while I was answering his query, I also started stammering. I do not know what impression he might have taken about me on that day.

His way of taking attendance in the class was very special. He used to call all the students by name and mark them present or absent. It was unique. No one liked to miss even a single class of Prof. Rout. Before he begins his lecture, it was his usual practice to ask questions on the subject matter from the previous class. His was the only class all of us come well prepared to face his questions. After each question, he will ask to raise the hands and particularly he used to ask questions who have not raised the hands. After summerising the topic of the last class, he used to start his lecture in an atmosphere of pin drop silence.

I still vividly remember how clearly and interestingly he taught us the fundamentals of organic reaction mechanison. It is his way of teaching and personality that has inspired me so much that I made Prof. Rout a ‘role model’ and preferred to be a sincere and disciplined teacher in Chemistry.

Apart from chemistry, he taught us how to deal with life as a whole. An ideal teacher is he who has all love, a sympathetic mind and soft heart for his students. He always advised us to do the right thing in right time with right approach without being worried about the outcome. The results will automatically follow as the fruit of the hard work.

As the Department Head, he was awe inspiring. He had a commanding control and influence on staff members, employees and students. He might not be physically present in his room, but the mere opening of the windows of his room was enough to maintain discipline in the department. As the Department Head, he was the sole controller of everyone and everything. All the staff of the department were well disciplined and duty bound and were happy to be controlled by

him as a mutual respect and reciprocation to the chair. Under his headship the Ravenshaw College, Chemistry Department was a centre of academics and research excellence.

At that time it was very interesting to hear the word "useless" from most of the teaching staff. In fact this word was frequently uttered by Prof. Rout. Whatever Prof. Rout does, the very thing the other members of staff also do; whatever standard he sets up, the generality of the staff follow them. As students, we enjoyed a very disciplined and safe academic life under his Headship. He was a desirable model for all of us.

In my first M.Sc., while applying for free studentship, recommendation of a faculty member was essential. I just entered his room and handed over the form for his recommendation and a favourable note. He was sitting on his revolving chair, removed his spectacles, glanced at me and commented, "ତୁମକୁ ଆଉ କିଏ ମିଳିଲାନି, ମୋ ପାଖକୁ ଆସିଛ". My immediate response to him was, "Why should I approach others when my Professor and Head is present in the Department?" Probably my words had some appreciation as I could see a beautiful smile on his face. I elaborated my financial position to him. I was awarded full free studentship because of his strong recommendation and sympathetic note. It was a small incident but had a strong impact on me.

"Kindness, sympathy, patient hearing does not cost anything yet it is a richest gift a teacher can give to his student".

He has helped a many deserving individuals to pursue M.Sc. career in the form of financial assistance, part time assignments or even offering a post of laboratory assistant in the department.

I secured highest marks in theory papers of M.Sc., Part-I which was appreciated by Prof. Rout and made me eligible to take organic chemistry as my thesis in M.Sc. Part-II under his guidance and in association with the then research scholar Prof. P.K. Jesthi. The research paper in Coumarins related to my M.Sc. Thesis won the Cooper Medal for Prof. Rout in the year 1966 in which myself and P.K. Jesthi were co-authors.

At that time most of us after M.Sc. were choosing teaching as the main profession. There was no teachers' training before entering the service. But whatever training and fundamentals we received from the Department was of much help to establish each one of us to be a teacher of eminence. Apart from M.Sc. qualification, many skills need to be acquired and honed in order to acquaint with the basic research in the field of different branches of Chemistry. Our training in the preparation of M.Sc. Thesis helped us in learning the experimental, analytical techniques and acquire the ability for withstanding long hours of sustained hard work in the laboratory. This was found very much instrumental in the development of scientific temperament to do advanced research in the later years.

Celebration of Ganesh Puja and Saraswati Puja was very special in our Department which we often recollect the same even today. We used to have a dinner in which all the students, employees and staff members were participating without fail. It was very heart touching and noble gesture on the part of Prof. Rout, who never forgot to invite Sri Lokanath Mishra (The founder of lending library in the department) and Sri Rama Chandra Tripathy as a mark of respect. The way he used to receive both and treat in the dinner reflected his mark of respect for his teachers.

On every social function, including the celebration of Pujas, it was very nice to see Prof. Rout dressed with spotless white dhoti and Kurta. During winter or on any ceremonial functions he usually preferred to be dressed with coat and tie. Prof. Rout was fond of elegant dresses and good food. No doubt, he was always meticulously dressed but never gaudy and ostentatius.

He used to call each student by their names. Even he was also acquainted with some of the names of their father and guardian. Whenever his students meet one another they never miss to have some discussion about their loving teacher. Each student have a very personal touch i.e. mostly one-to-one relationship with him which they fondly highlight and recollect. They discuss about his affection, loving power that he had wielded, how he was protective, witty and full of love and care. Such was the greatness and influence of his personality over his disciples.

In the department Prof. Rout organized number of Seminars, Guest Lecturers and Interstate Level Summer Institutes helping students and teachers to gain more knowledge and unlease their potential in enhancing the teaching ability. To name one of them, I just recollect the lecture delivered by Prof. D. Nasipuri which had very much impact on me in understanding the basics of Stereo-Chemistry. There are so many deliberations to mention. The participation of students in seminars was very much helpful in eliminating the stage fear and developing confidence to face audience. Prof. Rout has given me an exposure to speak on Gas Liquid Chromatography (GLC) in one of the summer institutes while I was a research scholar.

After M.Sc. (1965), I joined Christ College, Cuttack as a Lecturer. I used to come to the Chemistry Department and Ravenshaw College every evening to continue my contact with him and further my research activities.

Sir, used to take a walk around the college field along with his research associates mostly after 9 pm. Here he was to be found in lighter mood, discussing on various subjects and events. One day while he was on such a stroll asked me "Akhil, have you not received any adhoc appointment from the Government? If you have got, you should join without any further delay". As the appointment was for Government Womens' College, Sambalpur, I was reluctant and preferring to continue at Cuttack so that I can have constant touch with him and do some research work at any leisure. He advised me to join Government Service as it will be helpful in future in fixing inter departmental seniority and moreover, research can be taken up even after taking study leave after two years of service. He also stressed how it will be helpful in getting advanced increments after the award of Ph.D degree. The very next day I resigned from Christ College and left for Sambalpur to join the newly opened chemistry department of Government Womens' College, Sambalpur in 1965.

He was a strong believer that research and teaching should go side by side. In order to become a govt. teacher, one has to be equally good in his research activities.

After completion of nearly two years of service, I took study leave and joined as Junior Research Fellow of C.S.I.R. for his Ph.D. under his guidance in 1967. I was staying at his official quarters as a member of my family. I felt absolutely at home in the company of Madam (Maa), Babu and Baby and it is always gratifying to recall heir warmth and affection which I continue to cherish in my heart. While recalling my association with his family arouses a wave of emotions and feel incapable in expressing my heartfelt gratitude. Sir was a great humanitarian and most affectionate as the Head of the family.

After his morning tea and glance at the news papers, Sir used to be right on his working table to make a list of the proposed and planned work to be done for the day. He was God fearing and very spiritual in nature. After the bath, he never talks with others before worshiping Mother Saraswati in the form of a tiny idol. He was also an ardent devotee of Baba Akhandalamani of Bhadrak. He was a tireless devoted teacher, organizer, administrator and worked with extraordinary dynamism throughout the day and ensured that all the proposed work as

per the list was completed ahead of time i.e. before going to his bed by 10.30 PM.

I got registered for my Ph.D on the topic "Studies on Pharmocologically Active Compounds and Natured Products (Oils)" in 1968. In the very same year Prof. Rout was posted as Principal of Gangadhar Meher College, Sambalpur. Later in 1970, he was deputed as Principal of Khallikote College, Berhampur mainly for the process of taking over of the college by Government from the hands of Private Management. He used to be at Cuttack every week end. As I was new to my research assignment, his absence was felt very much and it was a great blow to the progress of my work. I missed his day to day supervision. In life difficulties came to everyone, but there is something inside you that remain untouched. I felt that yes, my teacher can only show me the path and the journey has to be undertaken by the student himself. I found my own path and guided myself with my own zeal and hard work to reach the goal upto the satisfaction of my professor. In fact, I have completed Part-I of my topic by 1969 and isolated new oils from natural products. The Department of Chemistry of Ravenshaw College was not well equipped to undertake the study of composition and glycenide structure of oils and fats which needed the application of chromatography particularly the Gas liquid Chromotography. Sir arranged my visit for the Regional Research Laboratory (RRL), Hyderabad to complete my studies in collaboration with Dr. K. T. Acharya, the them Deputy Director of RRL, a scientist of repute in the field of oils and fats.

The research ecosystem in the RRL, Hyderabad was highly qualitative and there was no paucity of equipments, chemicals and laboratory and library facilities including analytical assistance from the trained personnel. I stayed there for a period of nearly four months, worked from day to night with the financial assistance from Sir himself. I shared everything with him, who was not only my research guide but also a Father Figure to me as with his blessings completed my work including writing of the manuscript and got it corrected by Dr. K.T. Acharya.

On successful completion of my research work, with his recommendation, I joined as a Lecturer in Chemistry in BJB College, Bhubaneswar in 1970. In 1971, when Sir was the Principal, Khalikote College, I got married. Sir has not only attended my marriage ceremony at Berhampur but had also played a vital role in the marriage negotiation process. I owe him a lot. In the same year, Sir was back to Cuttack as the Principal, Ravenshaw College. One morning while he was in his residential office, asked me to start writing the thesis. In fact, I was waiting for my turn and his call. My living room was next to his office room. I was so much happy and delighted that immediately submitted the Thesis file with the corrected manuscript. It was a surprise to him. On that day, he very much appreciated to my devotion and had a word of praise for my hard work.

It is very unique, that as a teacher of Odisha Higher Education Department, he adorned the positions like the Principal of three premier colleges of the State, G.M. College, Sambalpur; Khalikote College, Berhampur; Ravenshaw College, Cuttack; Director of Public Instructions, Government of Odisha; Vice-Chancellor, Utkal University, Chairman Odisha Pollution Control Board and Chairman of the Banking Service Recruitment Board. Great! Indeed it is unique and great. The quality of his assignments speak volumes for his personality. He had the habit of performing the best and giving justice to the position he has occupied in his successful career. He had his own thinking and carried out his own idea as far as possible in accomplishing the duties with a positive spirit and burning zeal. He never shrunk from responsibilities as he was fully aware of his full potential and possibilities. Any post he occupied, the first thing he was insisting upon was

for its growth and largest expansion of its horizon for better application and opportunities. His contributions to all their institutions will always remembered of course. In his career he faced many interim difficult times, but those were the passing of phases.

While he was the Chairman of Banking Service Recruitment Board, one day. I was with him for the entire day i.e. from 8 AM to 4 PM. The time he spared for me was quite rare and in the entire duration he was only talking and I had only played the role of a silent listener. He discussed many subjects starting from academics to the reality of domestic life. At last he advised me to have sufficient money for old age to meet the basic necessities of life for keeping good health and earning family respect with security. I follow him with great humility and respect.

Though he was strict disciplinarian at the same time, he was kind, helpful, generous, affectionate and forgiving in nature towards his scholars. He has played vital role in shaping their future. In my professional career either as a teacher of chemistry or an administrator as Principal, D.D. College, Keonjhar or as the Dirctor, Odisha State Bureau of Textbook Preparation and Production, I have chosen my 'Sir' as my 'Role Model'. One thing he insisted upon in administration was to entrust and share the responsibilities amongs trustworthy subordinates with occasional supervision of the progress with words of appreciation and encouragement, who in turn, therefore, work still harder to justify the trust. It was indeed a great 'mantra' for me. Let me disclose here, while I was staying in his residence, he entrusted me with the responsibilities for dealing with many confidential assignments which I have discharged well upto his full satisfaction and keeping everything secret to myself.

He was the founder President of Odisha Chemical Society (OCS). In the year 1985, the first meeting of the OCS was held at P.N. College, Khorda under his Presidentship. Professor Durga Prasanna Das of Chemistry was hosting the event as the Principal of the College. Thus he laid the foundation of OCS which in later years became the annual meeting place for the members of 'Chemical Fraternity of the State'. I attended the meeting at P. N. College, Khorda while I was at Khallikote College Berhampur. Getting the inspiration from the meeting, we organized the annual meeting of OCS at Khalikote College with Prof. Rout as the President in the year 1987 which was a grand success. Babu (Prof. S.P. Rout) his son accompanied him. Inspite of his busy schedule, he never forgot to visit my house at Berhampur. He told my daughter, mama, "have I not chosen a good husband for your mother?" She replied with a smile, "my father is equally lucky to have my mother as his wife". He laughed and blessed the child. He was not that dynamic and physically fit by that time.

Sir, left for his heavenly abode on February, 7, 1990. It has been thirty four years since Prof. Rout left all of us. My memory at the age of 80 has gradually faded. He is always in my thought process and whatever I memorised a little, I have presented here before you.

It is just like a drop of memory to the ocean of memories of innumerable individuals who were associated with him. On this day of his birth centenary (January 4, 2024) we all express our heat felt gratitude and seek his blessings. Gurave Namah ! ■■■

Former Head of the Department of Chemistry,
Ravenshaw College, Cuttack;
Principal, D.D. College, Keonjhar &
Director, Odisha Bureau of Textbook Preparation and Production,
Govt. of Odisha
HIG-78, Lumbini Vihar, Near Buddha Park,
Bhubaneswar-751021
Phone : 9437284214 (WhatsApp)

Dr. Mahendra Kumar Rout : A Multi-Faceted Personality

Shreekant Chatterjee (IRS) (Retd.)

The first thing that strikes you of Dr. M.K. Rout is his sartorial elegance. When you talk of Dr. Rout, the image that immediately appears before you is of a man immaculately dressed in western attire. I would, later on, come to know that spotless white dhoti-punjabi (kurta) was his evening favourite. The second thing that would strike you is a list of suffixes to his name: M.Sc., Ph.D, D.Sc, FNI.

The only college I knew was Ravenshaw College, and the only Principal I knew was Dr. M.K. Rout. It was in the 1970's. For my IA, BA (Hons.) and MA. Starting, upon my matriculation in 1972. I thought, and many of my generation would agree, that Dr. Rout had the expertise and the gravitas to don the chair of Principal, Ravenshaw College, Cuttack – as was then known. Kind of natural choice.

Dr. Rout specialised in Chemistry. Other contributors to this volume would throw light on his command over and research in various branches of Chemistry. After college hours, he would guide scholars in their research. This was his life-long passion. He was an administrator – Principal, DPI, Vice-Chancellor. Subsequently, he headed the State Pollution Control Board too. And above all, a committed teacher. He loved the teaching profession. A truly multi-faceted personality.

During my stay in Ravenshaw College, I came to have a reasonably close contact with Dr. Rout. I would share some anecdotes so as to have a peep into his personality.

My earliest contact with Dr. Rout was on the day of admission to IA. I came from Khariar (Dist. Kalahandi, now Nuapada). I stayed at Bombay Hotel. Cuttack was an unknown city to me then. I asked at the hotel counter, where was Ravenshaw College, and how far? I was directed go straight, walk some 3/4 minutes to reach Ravenshaw College. I reached at the college square and chose to enter through the college square gate. I found too much of crowd, all, well almost all, students, I thought, milling around. Where do I go? I chose the gate which would lead me to the Principal's room. And then I saw the name plate: Dr. M.K. Rout, M.Sc, Ph.D, D.Sc, FNI. I thought, 'This is the right person. I must meet him'. At the gate, the peon (I later came to know, Rabi, an affable character) tried to stop me. I brushed him aside and entered the room with Rabi following me still trying to dissuade me. I saw Dr. Rout, a well- dressed fair-complexioned gentleman, sitting upright on a chair with a big table in front. He had black curly hair, I remember. Before anything could happen, I wished him. 'May I come in Sir? Good morning Sir'. He was perplexed. He told Rabi, 'What is this, what is this?' I thought he spoke a little haltingly. I was later to know of his stammer, and how he braved it out. I was not to be outdone. I continued, 'Sir, where is the admission to first year taking place'? He was amused. He asked me with a little smile on his face, 'Kan kahila?' 'Sir, where is the admission to first year taking place', I persisted. 'First year admission kouthi houchhi?' 'Yes, Sir'. 'Tama naa kana?' 'Shreekant Chatterjee'. 'Bapanka naa

kana'? 'Sir, Dr. Shibapada Chatterjee'. 'Ghara kouthi?' 'Khariar'. 'Khariar? Kalahandi?' 'Yes, Sir'. 'Bapa kana karanti'? 'Sir, he is a doctor'. 'O, achha. Rabi, e babunku first year admission room ku nei jaa'. I was dressed in a bluish full pant and a yellowish bush shirt, I remember. Rabi accompanied me to a nearby room where the admission process to first year was taking place. Rabi introduced me to the teacher-in-charge as being sent by the 'Principal Sir'. My admission process was fast-tracked! That is how I first met Dr. Rout.

Our second meeting, equally accidental, was soon to take place. After form fill-up process, intimation etc., we came back to join classes. I put up at the Bombay Hotel all over again. College square used to be the bus stop back then. Bombay Hotel was a walking distance. Joined classes. Day 1. Back to hotel. Day 2. Some new friends. The buzz was around hostel seats. How do I get one? Back to hotel. Day 3. It was straining my purse. I was, one late afternoon, coming from the Commerce Block to go to hotel when I saw Dr. Rout walking in from the opposite direction with Rabi in tow. As we met, I wished him. He smiled at me. He could perhaps place me as the first year boy who had barged into his room the other day. I narrated to him my woes. He asked me for my note book. He scribbled something on one page and asked me to meet the Superintendent, East Hostel. I asked him where and when could I meet the Superintendent. He pointed towards East Hostel and said, 'Aji sandhya bele jai para'. We were standing in that majestic quadrangle near the sundial against the backdrop of the fading sun. I thanked the Principal with all humility and went to the hotel. I came back to the compound in the evening. Went to East Hostel. Asked people where to meet the Superintendent. Mr. Srinibas Mishra of Odia department was the Superintendent and Mr. Rama Chandra Tiadi (Tripathy) of English department was the Assistant Superintendent. Both were sitting when I presented myself with the communication of the Principal. There were some other students present. Mr. Mishra asked about my personal background and as to how did I know the Principal. I was allowed bed immediately pending formal selection. A word from the Principal was enough. It was almost impossible to approach the Principal. There was no question of a first year student interacting with the Principal on such trivial issues. But my experience was that in spite of the halo of the Principal, if you could manage to speak to him, you would find a man with empathy. Yes, empathy. Empathy for a first year student who needed his intervention. He could have chosen to stand on his ego and refused to entertain my request. But Dr. Rout was different.

Fast forward to 1978-79. I was elected as the President of the Students Union (SU) with a thumping majority. I had lost out running for the post of Secretary the previous year. It was during this period that I developed a closer contact with Dr. Rout.

During our fifth year (Academic Year 77-78), there was some agitation in Vani Vihar for postponement of the PG final year exams. That year, semester system was introduced. Because of delay in college and hostel admission process, and delayed result of the 4th year, the first semester date came far too close. Semester exams were scheduled for December whereas hostel admission was still underway in November. Most of the PG students were boarders. We thought, for the transition year, the old and the new systems should continue side by side with option given to the students to choose any system. Once things settled down, semester system could continue. There was no response from the authorities. As a result, dissatisfaction grew among the fifth year students. So, we demanded that our point of view be heard. Similar voice was heard from Vani Vihar. When the semester dates came, we gave a call to students to boycott the exams. We did not compel any student. Some students did try to come and appear in the exams. I had promised Dr. Rout that our boycott would be peaceful and voluntary. We were sure that the boycott call would be successful. As I had promised, I was not present near the college gate. Let alone being inside the campus. Some,

who tried to appear in the exam, found the college empty and upon realisation that there is a voluntary boycott call, they all returned. I met Dr. Rout in the evening. He was quite impressed with the peaceful nature of the 'agitation' and promised to intercede on our behalf with the university authorities.

As days passed, students became restive. Our agitation for some relaxation in the semester system introduced that year got mixed up with the Vani Vihar agitation for postponement of the Examination dates for the PG final year. On one occasion, during the agitation, a meeting was taking place where the VC, Dr. Bidyadhar Mishra, Dr. Rout and other dignitaries were present. We decided to register our protest in front of the gate of the Conference Hall in the first floor of the VC's office. OMP (as was then known) under the leadership of Mr. Mishra, IPS, SP, Bhubaneswar was present in the strength. We shouted slogans but the police prevented us from moving forward. There was a mild lathi charge. The atmosphere was quite surcharged. Dr. Rout was the only person who came out to meet us. In spite of warning by the Police, he crossed the barricade and came to talk to us. That was Dr. Rout.

Dr. Rout was a workaholic. One day, in the morning, I was going towards East Hostel. I found Dr. Rout standing in front of his official residence dressed in dhoti-kurta. I asked him, what the matter is. He said, with a solemn face, 'I am bereaved'. After expressing my condolences, I asked him who had passed away. He said some relative of him had passed away. I went my way. At about 10.30 AM I was going to my class when I saw Dr. Rout, well-dressed in western attire as usual, briskly walking towards college with Rabi holding an umbrella for him. I asked him, out of curiosity, 'Sir, you were in bereavement!' 'Yes, that in the morning. I attended the funeral. Now I am going to office', came the answer, precise and clear.

Dr. Rout had unique ways to solve problems. I will share two instances. In one case, a student got into wrong company. He was a boarder of West Hostel. The Principal, i.e. Dr. Rout had issued notice for his rustication. The student, along with some friends, approached me. Dr. Rout had a weakness for the 'study centre' i.e. the reading library in the ground floor of the new Kanika Library. I asked the boy to go to study centre every day for the next fifteen days in the evening, sit near the gate so that he is visible and not raise his head for at least one hour. We hoped Dr. Rout had seen the boy in the reading room. After about a fortnight, I went with the boy to the Principal's chamber asking him to wait outside as I went in. Dr. Rout welcomed me with a grin, his trademark. Courtesies over, I broached the topic of the boy. Suddenly, his visage changed. He said, 'He is a bad boy. He keeps of the company of so and so person.' I said 'Sir, those things are correct. Please understand, his parents are separated. He has that difficulty. But sir, he is a national scholarship holder. And then sir, he has changed. He wants to mend his ways. He goes every day to read at the reading library'. The face of Dr. Rout changed. He smiled and said, 'Yes, I have seen in the reading library. But is he a national scholarship holder?' I requested to confirm it and pleaded for withdrawal of the rustication proposal with an undertaking from the student not to repeat the mistakes.

Gopal Babu was called in to confirm the boy's national scholarship. Gopal Babu came with a big register and confirmed his national scholarship. Dr. Rout agreed with my request. I asked the boy to come in. Dr. Rout gave him a thorough dressing down. The boy apologized. Dr. Rout asked him to sign an undertaking. A problem was solved.

The other incident goes like this. It appears that by mistake, intimations for admission for one seat went to two students for first year. Both students, with their fathers, turned up. I was called in. Two students, their fathers, me, Mr. B.C. Das, the Administrative Bursar and Gopal Babu, the clerk-in-charge - all were present. Dr. Rout explained to the boys and their parents that there was only one seat; two intimations were sent by mistake;

the boy with higher marks deserved admission; when a vacancy arose, the second boy would be intimated; the President, SU is present and witness to everything etc. etc. The second boy's father protested, 'But sir, we have received an intimation for admission.' At that point, Dr. Rout called in the stenographer and dictated suspension orders of Mr. B.C. Das and Gopal Babu. He told the father of the second boy, 'Look here. I have suspended the teacher and the clerk-in-charge for dereliction duty. Please wait. The President, SU is here. You will get admission as soon as a vacancy arises'. The father of the second boy was taken aback at the sudden turn of events. He relented. He wrote an undertaking that he understood the case, that he would not approach any court for redressal, and that the Principal had promised that his son would get intimation for admission the moment a vacancy arose. It was the end to a difficult problem with both parties satisfied. In the afternoon, I met the Principal. I asked him about the two suspension orders. He took a turn on his revolving chair, had a broad smile and asked Rabi to call in Rahim Babu, a senior clerk. As Rahim Babu came in, Dr. Rout asked him, 'Rahim Babu, can I suspend the Administrative Bursar'? Hamid Babu replied, 'No Sir, you can't. He is a Class-I Officer'. Dr. Rout turned to me and said, 'Dekhila!' 'But what happens to the suspension orders?' Gopal Babu was called in to come with the suspension letters. Dr. Rout tore off those letters and explained to me that, he had to do all these because otherwise there was a possibility of the second person going to a court of law. That was one way to solve the problem'. I saw the point and appreciated how effectively he solved a tricky problem!

On the issue of library, there was a problem with the lending library. Very often pages from books taken by students would vanish. Dr. Rout found a simple solution. Before you take the book, check that all pages are intact. For, while returning, if some pages are found missing, you have to bear the cost of the book. The menace stopped.

During the college elections in the A.Y. 1978-79, Dr. Rout called a meeting of the contestants. He suggested that there be no painting or defacing of the walls. That would be difficult to clear later on. That, posters can be pasted which can be taken out after elections. We all agreed. College walls could be easily cleaned up.

During those days, the 'old boys' of the college would take over the college for two days in the last part of February every year. There would be a cricket match between current XI of the college vs. the old boys' XI. In the evening, there would be a big meeting, generally, on the new open air theatre, adjacent to Kanika Library. Justice Harihar Mohapatra (Retd.) would preside over the meeting and Prof. Sadashiba Mishra (Retd.) would propose a vote of thanks. Both used to be gala events. But before that, there used to take place a meeting of the 'Old Boys' Association' in the Journal Room. The tradition was that, the President of the S.U. would be an invitee. He would not participate in the deliberations unless asked to. The Principal would propose a vote of thanks. In the year 1978-79, I was invited to attend the Old boy's Association meeting. The meeting was scheduled to, and did, in fact, start, sharp at 4 PM. The who's who of the city/state was present. It was a disciplined and solemn affair. The dignified presidential presence of Justice Mohapatra and the galaxy of persons present were to be seen to be believed. Of the ladies, Smt. Padmalaya Das's, who used to write the 'Cuttack Note Book' for Hindustan Standard, was an effective presence. When the turn for thanks giving came, Dr. Rout suggested that he would like to make an exception that year and invited me to propose the vote of thanks. That was a touching gesture by Dr. Rout. I did the honours. Thanks to Dr. Rout.

I have mentioned above the agitation in the previous year. At the end of it all, there was an agreement between the university authorities and students. As per such agreement, the VC, Dr. Mishra came to meet us. We gave our proposals for 6th year examination schedule upon discussion

with all concerned. Vani Vihar students agreed with our proposals and added theirs, i.e. for those departments which were not there in Ravenshaw College. The University agreed with our proposal in toto. The examination schedule was declared well in advance for Annual Examination to start in June. This would smoothen the process of other examinations and the next year's semester examinations would be in time. This would also end the menace of the '7th year' that afflicted our university. Somehow, around June, two truck loads of students arrived from Vani Vihar and approached me for a meeting demanding postponement of examinations. A meeting was held in the old open air theatre. All kinds of speeches were made. My turn came last. I told the whole gathering that I had signed and sent the proposal for examination after proper consultation with all concerned. The University had accepted our proposal without any change. That, the dates were announced much earlier. It would be impossible for me to go back on my words. I would rather resign from Presidentship of Ravenshaw College S.U. than suffer a loss of face in public. For me it was unethical, and appeared to be the handiwork of a handful of students. The meeting collapsed. I firmly believe that there is a silent and a suffering majority. They need a saner voice to represent them. Anyway, examinations were held in time. Dr. Rout, subsequently, spoke to me about my stand in the face of opposition. He later, wrote a glowing Testimonial and gave it to me. I preserve it till date. He has mentioned there this incident along with my Presidential Address at the Ravenshaw College Centenary Stamp Inauguration ceremony in the presence of Late Biju Patnaik, Brij Lal Verma and all.

Dr. Rout was a quintessential teacher and a researcher. I remember one incident. I was going to participate in the Inter-University debate competition at Delhi University. Dr. Rout called me and gave a letter to be handed over the Delhi University VC. After the debate was over, I went to meet Dr. R.C. Mehrotra, the VC and handed over the letter of Dr. Rout. Dr. Mehrotra told me that ever since he and others had branched out into administration, they had given up research. That, Dr. Rout even with the burden at administration continued with his research. That was remarkable, he said. Back to Cuttack, I conveyed Dr. Mehrotra's words to Dr. Rout.

Dr. Rout was a very active person, a workaholic. He was passionate about teaching. He encouraged his son, Dr. Swayam Pr. Rout, Sulu Bhai as I call him, to join the teaching profession rather than to go for banking etc. He had a phenomenal memory. He would remember most of the students by name. That was perhaps a god gifted quality for him. And teaching. Even when he became VC, he continued with his teaching and research. He was affectionate and had the good of the students and Ravenshaw College at his heart. I had the occasion to see him quite closely during my PG days. There are many stories to tell. I have shared some here. I had the occasion to meet him at his Bhubaneswar residence about a month before his passing away. My better half was with me. He was bed-ridden. He could hardly speak and wanted to write down something. Even that was not possible. Here was a man who conquered stammer and spoke confidently in big meetings in full view of public. A busy bee, literally! A towering personality in the academic world. Lying helplessly on a bed. His eyes welled up as I drew close to him. The moist eyes and the quivering lips had many things to say. Many things to share. We were choked with emotion. We expressed our feelings in silence with folded hands and said good bye to him. A few days later, we came to know that Dr. Rout was no more! Perhaps he would set up a laboratory in heavens; teach science, dress sense, punctuality and virtues of hard work to the residents there. Dr. Rout – an extraordinary man by all standards. ■■■

Khariar, Dist. Nuapara.
Mob.8249537343
Email: shrikanta72@gmail.com

Living Longer Living Better

Prof. Dr. Niranjan Tripathy

Since Vedic times the man has prayed for long healthy vibrant vigorous life. The translation of the sloka is "We will live 100 years, will listen 100 years without any aids, will see 100 years without any assistance".

No magic pill or secret potion can deliver a long and healthy life. The certain requirements are -

1. Long Healthy life rests on partly with the genes we have inherited.
2. Mostly it depends on our simple lifestyle like – what we eat, how active we are, whether we drink or smoke. This has enormous impact on our longevity.
3. How can we extend healthy human life –
   (a) Why do our cells age ?
   (b) Can we protect our cells and ourselves from ageing ?
4. Extending our life –
   (a) Smoking, an enemy of longevity
   (b) Diet has an impact on longevity, if we increase our weight and our body mass Index is high (> 40), our life span is reduced significantly.
5. Living well, staying quick witted, staying socially active and socially connected, enhancing sexuality, we can increase our longevity and stay younger for our age.
6. Certain common diseases reduces our longevity
   (a) Heart diseases
   (b) Stroke
   (c) Dementia
   (d) Osteoporosis
   (e) Vision problems
   (f) Hearing loss etc.,
7. For better life and better future we must develop a plan and act accordingly.
8. Our resources are
   (a) finance
   (b) social organization
   (c) books

   We must utilize above three for betterment of our life.
9. Daily assessment of simple things make us live longer and better

The elaborate points will be discussed during the presentation of the talk. ■■■

Director
Institute of Medicine
Jivan Vikash, Nima Sahi
Cuttack – 753001
Mob: 7008472820

In Memorium

Gopal Ghosh

I met revered Late Dr. M.K.Rout in our Hons. Degree class. A short fair handsome gentleman who used to stammer a little. But his immaculate board work and mode of teaching soon won all our heart. He started teaching organic reactions involving movement of electrons. Thus my interest in organic chemistry has developed. Soon he introduced and modified the course in Organic Chemistry. Resonance, hyperconjugation, reaction mechanism, sterio chemistry using models, spectroscopy etc. were introduced. Research pattern in dept. was also improved. Earlier research was mainly confined in synthetic drugs like anti spasmotic, anti allergic compounds and test thereof. New ventures were started in the fields of photosensitizing dyes, polimers, reaction mechanism of various organic reactions. New gadgets were procured and I.R mechine was installed, a liquid air plants was set up to facilitate to work in low temperature kinetic. Absorption spectro metres were already in use. I joined his research team as soon as I was transferred Revenshaw College as a lecturer. I was asked to continue the same project which was given to me in my PG classes. But to my uttermis fortune soon after I joined, Sir was transferred to GM College Sambalpur as a Principal. However he was permitted to come to Cuttack every week to attend his research work. Many of his research team were in verge of finalization of their project and submition of their thesis. Sri B. K. Sabat, Sri P.K.Jesty, Sri P. K Mishra were a few of them. So whenever he used to come he was busy with them and naturally my progress could not be discussed . Misfortune as I had I got transferred to Rourkela and that was the end of my research work. Avoiding my family obligations and other commitments I could not come back to Cuttack for continuing the research work. I met him again when he came to a conference at Rourkela. He told me to come back and complete the work. I express my family liabilities and other problems and that was the last we met.

Dr. Rout had tremendous love for his students. Even as a professor or as a Principal he used to take classes even in the PU stage, only to note the pulse of the students. He had a tremendous memory and remembered the names of his students both good and naughty ones. This quality of him made him more popular and some time this used to restrict the students behaviour. Dr. Rout was a born leader. I had no chance to see him in earlier days, but I have seen him at the later stage, which definitely shows the trate of a man. I have personally witnessed in many an occasion to see him facing an agitating student mass or a group of students fighting with each other and pecifying them, leading from the front.

A gentleman to the core, a brilliant teacher, a great organizer, an excellent research guide and a fine administrator, who successfully completed his tenure without a blaming whatsoever.

Now at this age I express my sorrow that I could not fulfill his request to enhance my research work. He was a touch stone, whosoever has joined his team as a research worker has came out successfully except possibly me. Sorry Sir, Please excuse me. ■■■

1961 Batch, PG in Chemistry
Ravenshaw College, Cuttack
Ph. No.-9437411811

In Memoriam of Professor M. K. Rout

Prof. Alok R. Ray

My association with Professor M. K Rout as a Chemistry honours student was from year 1966 to 1968 at Ravenshaw College and subsequently, as a friend till his demise.

Professor Rout possessed a rare gift—the ability to inspire and lead. He was a scientific research leader of unparalleled vision and unwavering dedication, at the time, when funding for research was meagre and encouragement was rare.

He left behind a legacy that has shaped the landscape of Chemistry research in Odisha.

Prof. Rout believed in the potential of every individual, nurturing talents and nurturing dreams. Countless researchers owe their success to his support, sage guidance, and heartfelt encouragement. ■■■

Consultant Professor at School of International Biodesign,
All India Institute of Medical Sciences, New Delhi, India.

Former Professor and Head of Centre for Biomedical Engineering,
Indian Institute of Technology, Delhi.

Former Professor at All Indian Institute of Medical Sciences,
New Delhi, India.

297 Sector A, Pocket C,
Vasant Kunj New Delhi 110070
Phone: 09560170146,
Email: alokrayiitd@gmail.com

Prof. Mahendra Kumar Rout : A Teacher Extraordinaire

Dr. R V Venkateswaran

It was by sheer chance that I ended up doing my M.Sc in Chemistry in Ravenshaw College.By the time I completed my B.Sc. from Palakkad,Kerala in 1965, my father had transferred from Kolkata to Bhubaneswar. Post graduation was not yet introduced in my college in Palakkad. My father told me of Ravenshaw College as the premier college in Orissa and asked me to come over. I decided to meet with the Head of the Dept. of Chemistry and discuss my interest to pursue a post graduate course in Chemistry. It was thusthat I met Prof Rout for the first time. He very cordially welcomed me and enquired in detail about the syllabus we had followed in Kerala and advised me on the procedure for admission. During the meeting I observed that he stammered occasionally and was wondering how he will be giving lectures in class. I was soon to be pleasantly surprised, when,after joining I began attending his classes,initially in Organic Chemistry. How revealing those lectures were! Words flowed from him smoothly and swiftly like a perennial waterfall and he never hesitated for words. The occasional stammer never became a deterrent in his relentless pursuit of teaching and research.His lectures were so inspirational that we earnestly looked forward to his class. Very often he wouldstop the lecture and engage the class in question and answer session and this prevailed upon the students to always come prepared in his class. With his vast expertise and craving to learn more , he did not confine himself to any one branch of the subject. Thus, he conducted classes on synthesis, reaction mechanism and spectroscopy. The concept of NMR for structural determination was first introduced by him at the post graduate level. He was particular in introducing various modern aspects of organic chemistry, which benefited the students greatly in their further pursuits in teaching and research. He made it a point to involve the students in regular seminars, often choosing the topic by himself. He used to get a recently reported total synthesis paper and give it to a student and ask him to give a seminar talk on it. If the molecule was large involving many steps, he would engage two or three students to share the steps of synthesis in the seminar talk. I still remember three of us were given the synthesis of Chlorophyl by Prof R B Woodward and his group.

These moves by Prof Rout were very inspirational in as much as this persuaded the students to acquaint themselves with the latest trends in the

subject and also indepth study of the topic to answer any questions that may arise in the seminars. His understanding of Chemistry extended far beyond just Organic Chemistry and in fact in our second year he was giving lectures in Physical Chemistry and that too Quantum Chemistry, writing equations with ease which displayed his emphatic grasp of the subject. In the second year of M.Sc there was arrangement of a thesis program where a student could work under a faculty and carry out new experiments and submit the results in the form of a short thesis inlieu of final written examination. This is a very appreciable idea since it boosts the confidence of the student who gets to think differently when carrying out new experiments which is what research is all about. Prof. P. C. Dutta, Head of the Dept. of Organic Chemistry, Indian Association for the Cultivation of Science, Kolkata came to conduct our thesis viva voceand Prof. Rout strongly recommended me for a research fellowship under him which proved to be a turning point in my career and I am ever grateful to him for this consideration. Later I joined the same department as a Faculty and initiated my own researches. Years later it was a great honour to be invited by the Orissa Chemical Society to deliver a Prof. M.K. Rout Memorial Lecture.

The administrative acumen of Prof Rout has been widely acclaimed and I will cite one instance of his ingenious action. One of our teachers used to often come late to the class and we used to have his class the first one in the morning. One day, instead of him, Prof. Rout just walked in and began his lecture. None of us had the courage to tell him this was not his class. After a while, he found that we were not adequately responsive and he asked," isn't this my class?". Then we told him, "no, Sir!". Then he admonished us why we didn't tell him in the beginning and walked out. The regular teacher was just coming in and saw Prof Rout leaving and after that he was never again late! So without hauling up a senior teacher for his laxity, he had proved his point! He also had a phenomenal memory and knew the names of all the students in his class!

We were all in awe of him for his teaching and administrative acuity. Yet, we found that he also had a very humane and friendly side as well. Our class used to organize an annual picnic and all the faculty were also invited. Prof. Rout will join and invariably sit in the midst of students only and passionately enquire about the details of each one and cut jokes to make the tiresome bus journey really pleasant. To sum up, Prof Rout belonged to the rare class of human beings who made a great difference in the lives of all they touched and we should consider ourselves fortunate to have our crucial period in life shaped by him.

It is indeed fitting and proper that Ravenshaw University is celebrating his birth centenary and I would also suggest that the post of a Professor in Chemistry Department be named after him as Prof M K Rout Birth Centenary Professor.

May the perdurable memory of Prof Rout continue to inspire students for years to come. ■■■

Senior Professor (Retd.)
Department of Organic Chemistry
Indian Association for the Cultivation of Science
Jadavpur, Kolkata -700032
Ph. No.- 9831078573
Email: drvenkatesh46@gmail.com

Remembering Sir ...

Suresh Chandra Mohanty, IFS (Retd.).

Dr. Mahendra Kumar Rout, known reverentially by one and all as Dr. Rout, was in a different class in his time, and was a legend in his life time. He had occupied the educational landscape of Odisha like a colossus, and left behind a procession of shining achievements. He was held in the highest regard even by his detractors. For those of us who came in his direct contact as his students he commanded genuine respect, awe and admiration bordering on pure affection.

He inherited the mantle of renowned Professors like Bawa Kartar Singh, Dr. Balabhadra Prasad, Dr. Sarbani Sahay Guha Sarkar (under whom he got his PhD), Dr. Dayanidhi Patnaik, Dr. Sukumar Aditya, and kept up the flame of Research burning bright in the Chemistry Department at Ravenshaw, and ably passed on the legacy to an equally dedicated band of scholars. The Chemistry Department of Ravenshaw owes a lot to his erudition, dynamism, and single minded focus on nurturing fundamental research even within the limited resources at his disposal. He himself got D.Sc. for his work in this laboratory, and mentored a large number of PhDs under his guidance.

He became the Vice-Chancellor of Utkal University, and he was the first Chairman of the State Pollution Control Board, Odisha .He was in a way the foundational spirit behind this Organization.

I fondly remember how affectionate he was behind his stern exterior, possibly because I was a National Science Talent Scholar. This scholarship in those days was not tenable in Ravenshaw College for Post Graduate studies. I met him once in his office and apprised him that I didn't have the wherewithal to go to an outstation institute for studying M.Sc. He dictated a letter in my presence to Director, NCERT; which said that Ravenshaw College was producing PhDs and D.Sc.s when many Universities in the country were not born. NCERT thereafter bent its policy and issued permission in my favour to pursue my M.Sc. in Ravenshaw College, and subsequently included this college in the select list of colleges / Universities where science talent scholars can pursue their M.Sc. course and Ph.D. research.

I am seized with an abiding sadness when I remember the times when he had settled down at Saheed Nagar, Bhubaneswar after retirement, and as chance would have it, I had bought a plot close by, and was occasionally visiting the place to see construction of our house. He would come out of his home and stand for a longish moment with me with one arm resting on my shoulder, and talk like a guardian-angel on whatever crossed his mind on those days. I have had a close peep into the workings of his mind, when he was not exactly dwelling on Chemistry. I can never forget those treasured moments of open, casual, down to earth conversation with the man whom I always used to see on a pedestal. His untimely demise after a few years saddened me no end. ■■■

Former Principal Chief Conservator of Forests (PCCF), Odisha
Former Chairman, Odisha Staff Selection Commission
Former Chairman, State Environment Impact Assessment Authority (SEIAA), Odisha
Phone: 9437060697
Email:scmpm62@gmail.com

Dr. M. K. Rout, To Whom I Concern

Dr. Nivedita Mullick.

I present to you the bright example of our distinguished learned professor Dr. M.K.Rout who, by dint of faithful discharge of duties could win the hearts of all and attain high position in life. By sincere pursuit of high ideals, faithful dedication to duties and the true value of education, he could reach the zenith of reputation and honour in the sphere of education and finally could ascend the pinnacle of power and position. He is an unique and ennobling example which inspires and beacons us all with a clarion call to follow and emulate his example to prove ourselves worthy disciples and citizens of our country.

He looks like a short and thin person but his magnificent and manifold example of service and fraternal sympathy might be compared to that of a banyan tree, stands alone to provide rest, relief and relaxation to all alike with no hope of gain or reward. The huge Banyan tree spreads its branches all around to provide the needed shade and relief to the passer by. It doesnot deny or forbid or takes away the same from anybody who comes there for such relief and grace. It doesnot distinguish between high and low, rich and poor or disabled or able ones. It renders service to all alike irrespective of their rank, position and status. It treats all alike and does its duty in a noble, selfless and righteous manner.

He lived for short period. He passed away at the age of 66 but poet says a Lily of May is far fairer than a mighty oak tree. The Lily blooms for a day or a short period but it can render some good and noble service to the people by means of beauty and fragrance. It makes people happy and gives them joy and happiness by its beauty and grace. In our society there are people like oak tree and persons like lily flowers. Though many people live long like oak tree but they fail to do any good to the society they live in. But, there are certain people in the society who live for a short period but during these short period they succeed to achieve great things or are able to do good to the society. Dr. M.K.Rout when he occupied the high position of power, he never forgot or neglected to do his duties towards the needy and distressed ones who were in the agonies of dismal grief and want and deserved his help and sympathy. In this connection, I would like to put before you what the poet tells us in his poem " The Skylark". The Skylark soars up very high into the sky, when it is poised up in the high sky, it looks down constantly but never looks up at all.

Dr.M.K.Rout was the founder of Orissa Chemical Society. His strenuous work and unremitting care for the cause of improvement of the Chemical Society stands as a landmark in the field of his achievement and wide popularity. His personal

approach to one and all concerned and his regular meetings with various persons associated with the Chemical Society speaks eloquently of his sincerity in service and tenacity of purpose.

I am going to bring to your kind notice, an eulogy of an erudite professor whose splendid work in his related field are epitome of success. You must inherit from his example that learning is not attained by chance, it must be sought with odour and attended to with diligence. In getting such erudite scholar, versatile genius and a bright luminary in the field of teaching and research, we feel proud and well compensated for all what we hoped and expected.

Dr, M.K. Rout very often was upset about the activities of the young generation. They learned only the slogans for the acquisition of rights but forgot the other aspect of duty i.e. the burden of responsibility attached to it. He always said duty and responsibility are two inseparable units. One cannot be separated from the other. So these two inseparable aspect of duty should be clearly and rightly inculcated in the minds to guard against negligence and dereliction. He always bore in mind that he is primarily a teacher. Therefore, he moulded his life and carved out his activities and destiny in such a noble and ideal manner that the effect of his selfless and devoted service shall at last clearly manifest in an ideal stage of reputation and prosperity.

Shall we rest contend by simply attending and expressing our gratitude in the 100th birth anniversary of a great soul Dr. M.K.Rout? If we could endeavor to hold aloft his ideals and make common cause to fulfill his mission and unfinished task, his soul may feel somewhat relieved and rewarded.

We offer to him this bouquet of faith and fidelity as a mark of gratitude which may serve as a symbol of our faith on the task imposed on us. ■■■

Reader in Chemistry (Retd.)
Plot No.-28B
BJB Nagar
Bhubaneswar-751014
Ph No.-6370279830

"The reward of the young scientist is the emotional thrill of being the first person in the history of the world to see something or to understand something. Nothing can compare with that experience."

– Cecilia Payne-Gaposchkin

A Few Words to the Young Generation

Dr. Nivedita Mullick.

I feel a little bit perplexed to spell out something to the young generation. With these few words of consolation to myself, I feel it is my duty to spell a few words to the young generation. These words, I hope will stand them in good stead and help them to steer clear of the storm and stress of life.

Anyway, it would be misappropriate to expect our young generation to be the same as those of the old generation, as each succeeding generation changes with the rapidly changing patterns of society in this world. But, the young generation must retain the fundamentals of conduct in the observance of the rules of society. There is no end to learning if one has the desire and the modesty to learn throughout one's life not merely by reading, but from the experience and examples of others regardless of the position in life.

The 6th September 2004 was a memorable occasion when BJB Junior College felicitated +2 students, who had secured prestigious rank in their annual examination 2004. On that memorable day, we assembled there to congratulate and felicitate them for their spectacular success. But, I was disappointed and astonished to observe some unusual behavior of some prize winners. When they were called to receive the prizes, while a few of them bowed down and sought blessings from the Chief Guest, some others just received the prizes by simply saying "Thank you". These students of new generation had somehow managed to only imitate the British culture "Sorry and Thank you". By facing such a situation, numerous thoughts peeped into my mind. At present, the influence of the so called Western culture has assumed such an alarming proportion that the human values and high ideals of our glorious ancient culture and civilization are threatened to be annihilated. The Britishers devised and formulated such a system to promote and serve their own self interest. By virtue of their skillful diplomacy and ingenious maneuver, they could succeed to mislead us and divert our attention from our ancient culture, high ideals and human values which our wisemen, saints had preached and propagated for our moral upliftment and spiritual growth. Great souls like Swami Vivekananda, Guru Aurobindo, Biswakabi Rabindranath Tagore , Mahatma Gandhi and many others who discovered the canker eating into the system.

My youngsters, never compromise with injustice and wrong. The highest virtue is to battle against inequity no matter, what the cost may be. The greatest crime would therefore be your object surrender to it. Never forsake the path of truth. I call upon you to bear in mind that the path of virtue leads over to glory. You shall never forsake it, however, rough, rugged and rigorous it may appear to you. Everything that we held sacred and sacrosanct for us seems to have undergone a sea change. In the present changed scenario and transitional period of moral crises, you should make an earnest effort to find out by virtue of intellect and introspection what you should do and what should be your utmost concern. Your

happiness and success are clearly linked to the attitude and action of others towards you and these are very largely a reflection of your own attitude to them. A cheerful, considerate and helpful person instantly attracts the attention of others and establishes ready rapport with them. Helping other is not a one way traffic. If you help ten people, you can be assured that atleast one would like to help you in turn. It depends upon your will and power of consideration. If you could harness your will and power of consideration you can bring about a wonderful change in society and country by virtue of your spirit of love, ideal service and sacrifice.

My beloved youngsters, if you simply nourish high hopes in your mind and aspire for laurels and distinction without any prearranged plan and premeditated thoughts for the attainment of success in devised aim and object, you shall not succeed so easily in endeavors how hard you may try and how much time you may devote for it. For the fulfillment of your cherished aim or achievement of success in any undertaking, your preplanning, unflagging zeal, firm determination, undivided attention, single minded devotion and above all steadfast adherence to your cause are necessary precondition and prerequisites. You cannot reach our goal or hit the target you aim at without the help of these sterling qualities.

We are liable to many human weaknesses and thereby prone to commit mistakes and miss our mark or target. So in order to guard against these pitfalls and evils, we have to follow your path as laid out in plan of action . Our plan shall be our beacon to guide us to our destination.

I have placed before you various types of aims and objects cherished by people in their life. These aims relate to our high hopes and aspiration. For the fulfillment and realization of these aims, we have to cultivate and learn the act of concentration of mind. If you could practice to train and discipline your mind by following the principles of steady and unwavering adherence to a fixed and definite cause without any short of diversion or distraction or deviation, you can be able to control your mind from going astray and at last succeed to concentrate it and apply it to do a particular work of your own. So in order to attain your goal in life or achieve anything spectacular, you should cultivate the habit of acquiring such concentration of mind. For the attainment of one's aim in life, how much concentration of mind is needed, can be judged from the following concrete example I cite here for your clear understanding. We can find from Arjuna when he was asked to pierce the eye of a fish hung above his head. When Arjuna was asked what were the things he could see before him when he fixed his gaze at the target. Arjuna answered emphatically with full confidence that he could only see the eye of the fish he had to hit and nothing else. What excellent example of concentration of mind this is? By acquisition of this excellent quality you can boast of such marvelous achievement and glorious success in life as well.

Today, we are called upon to think about some effective remedies for the eradication of its glaring shortcomings and for the protection and promotion of our ancient human values and ideals which are gradually dwindling to perish. This value based education system should be emphasized. It needs introspection, identification of undesirable habits and their consequences, moderation in lifestyle. These ideals must be practiced in the day to day functioning of the institution empowered and inspired by our rich heritage, education will gain in depth and stability. The youth of today is under the influence of western culture, promoted and galvanized by the electronic media with its dramatic account on the quick acquisition of position, power and wealth by any means fair or foul. To these important aspects and needs, I draw your attention and call upon you to do your duty in building prosperous India with a noble sense of pride and nationalism.

Dear youngsters, I would like to add couple of advice. I donot like to multiply and increase its number as they shall weigh upon your mind and become tedious and uninteresting. One is what

should be your duty to your parents and other is what should be your duty to motherland. Your parents helped you in all possible ways to grow and attain the position you are in now. They work hard and sacrificed their comforts and pleasure for your own sake. They educate you to enlighten your mind, widen your outlook and knowledge and make yourself worthy and civilized. In return for these valuable gifts and sacrifices what should you do to them in return. You cannot measure their value. They are immeasurable and invaluable. You should think deeply over this and take a solemn vow and pledge to do as much good as possible and render as much noble service to them as a mark of gratitude and love. Let me close my article of advice with my last one. It is about your sacred duties to your country. The light of education has enlightened your mind and made your mind conversant with its manifold needs and problems. You as a citizen of your country cannot dent the same to your motherland. You should think deeply over these and make your mind to do your bit and contribute your mite for the improvement of the position and situation. A strong will determination and dedicated spirit are the vital and paramount needs of the present time. By virtue of these qualities you can put the great country on the industrial and corporate map of the world. If you could agree upon your destination and resolve to solve your problems by yourselves, you could reach your destination at last. That would be half of the battle won. The other half would be the means to get India's eventual destination, which has been visualized by Mahatma Gandhi as economic salvation of her impoverished millions and moral regeneration of the enlightened. This can only be achieved by power of vision, foresight, political will, consensus building, right education, discipline, sacrifice and fellow feeling. All of these are at a premium today. These are my advice to you with regard to your mother country you should endeavor sincerely and honestly to bring about a healthy change and improvement in the present situation. You are the future hopes and assets of our country. You are now in the budding stage. You shall bloom and blossom into full magnificence and beauty. We teachers, cannot hope to receive by our side students like Ekalavya, Aruni, Upamanyu to name a few only who have immortalized their names for their ideal character and unique devotion to duty to their teachers and Gurus. Similarly, we cannot hope or aspire to make ourselves ideal and learned teachers like Valmiki, Upagupta, Dronacharya and Vishnugupta to mention only a few amongst many others. They not only adorn and sanctified our scriptures but enlightened our minds and elevated our souls too.

Another very important thing which I felt during my service period, I have to mention here. A leader is one who attracts followers. Leadership is neither a matter of inheritance or right nor is an offshoot of power or wealth. Leadership is a function of merit. It lies in the ability to inspire others to put their faith in you. It is only by the strength and force of personality that one becomes a true leader. Today, you have a choice to make. You can either demand respect or command it. A good leader commanded respect through his actions, sence of values and character. Life is an open ended journey, full of possibilities. Learn from your mistakes but donot let them bog you down because in life there is no rewind or fastforward. We have no option but to keep playing till the God presses the **"Stop Button".**

Your sweet smell and fragrance will spread far and wide by strict obedience and adherence to the virtues enunciated in my article with these bright hopes and good wishes to you. My humble prayer to God Almighty for His Blessings.

Before I conclude this article, I should thank for giving me an opportunity to write this. I hope that the omissions and commissions in my article may kindly be condoned. ■■■

Reader in Chemistry (Retd.)
Plot No.-28B , BJB Nagar
Bhubaneswar-751014
Ph No.-6370279830

As I remember Prof. Mahendra Kumar Rout A Doyen of Organic Chemistry

Prof. Prakash Kumar Mohanty

I was a Chemistry (Honours) student at St. Xavier's College, Ranchi and probably from that time I have learnt from many researchers that Prof. Rout was an extraordinary teacher and researcher of repute. When I joined Department of Chemistry, Sambalpur University, Jyotivihar, Burla, I came to know about Prof. Rout from Prof. G.B. Behera (My Teacher). I was highly impressed by the teachings of Prof. G. B. Behera and this type of teaching probably he learnt from Prof. Rout. Since my area of specialization was Inorganic Chemistry, I did not develop much interest in Organic Chemistry.

I saw Prof. Rout for the first time in the interview conducted by Odisha Public Service Commission (O.P.S.C) at Cuttack. He asked me many questions mostly from Inorganic Chemistry. He asked me to explain Resonance and Valence Bond Theory (VBT). I explained to the Interview Board properly but I could not explain the question properly on Quantum Mechanics. However despite my shortcomings, I was selected by O.P.S.C and it was only due to the blessing of God and Prof. Rout. I joined the Department of Chemistry, Utkal University, Bhubaneswar during 1991 and retired during 2011. I did some work in the field of Inorganic Research Mechanism and Bio-Inorganic Chemistry.

I have about 70 research publications in National and International Journals. Sixteen (16) students were awarded Ph.D Degrees working under my guidance. Currently I am also teaching Inorganic Chemistry to P.G. Students of Utkal University. In my teaching career, I cannot forget the contributions of my Professors in building me up.

I pray Lord Jagannath for salvation of the immortal soul of Prof. Rout who left us just a few years after his retirement. ■■■

Department of Chemistry
Utkal University,
Vani Vihar, Bhubaneswar
Mob : 9437631483

Prof. Mahendra Kumar Rout: A Valued Educator

Dr. (Mrs.) Jyotshna Mahapatra

Prof. Mahendra Kumar Rout was a native of Bhadrak same place as my father Prof. Gokulananda Mahapatra. He is remembered as one of the best teachers of Organic Chemistry. There are several types of teachers. The best teacher is the person who not only teaches well but also inspires the students. Dr. Rout adopted this procedure and as such students developed a logical thinking. He was also interested in acquainting the students of recent developments of organic chemistry through seminar and by changing the curriculum, which gave logic to many reactions in chemistry.

Soon after returning from U.S.A, he introduced a course on the reaction mechanism, which gave logic to many reactions. Immediately after Vitamin B12 was synthesized by Prof. Woodward after 12 years of sustained work, a seminar was held and he gave a talk on the molecule.

Similarly, Robinson- Woodward controversy concerning Ajmaline synthesis and many other syntheses were discussed in the seminar. Prof. Rout would invite scientists from different faculties like Agricultural Chemistry, Biochemistry, Pharmaceutical Chemistry, etc. which enabled the students to develop a broader outlook on the subject. He was really a valued educator.

As a principal in the major colleges of Odisha, he never failed to take classes at all levels. Even as the Vice-Chancellor of Utkal University, he continued his teaching at M.Sc. level. He had a very sharp memory and used to remember names of most students for which students were afraid of him.

Prof. Rout was a kind hearted person. Anybody in difficulty was able to receive help from him. Good thing was that any employee of the college could approach him freely seeking help to solve his financial problems. Many times it happened like this when the research scholars were busy in their experiments he would order food for them. He was a strict person and friendly as well. Occasionally he asks his students to see a picture with him and thus an intimate relationship existed between him and his students. His house, his room was open to all students.

He believed that a teacher is not only to educate the students in a classroom but also the educate the society, to think about the country and the society as a whole. He is the only person to have headed three premier colleges of Odisha and has left his indelible footprint everywhere. His research activities were in diverse fields in Organic Chemistry, Physical Chemistry, Polymer Chemistry and Environmental Science etc.

Prof. Rout was a good tennis player. He was fond of playing with his friend Prof. P. K. Das in the tennis courts in front of the college building and also took keen interest in sports. He too was a spiritual person. Without praying Lord Akhandalamani after his bath would not talk to anybody nor eat anything.

Dr. Rout passed away at an early age which was a great loss to the Chemistry fraternity of the country. Even when he was sick, he did not leave his research work and helped his students to submit their theses in time.

This was the man Dr. M. K. Rout. He had written important books (i) The Bhopal Tragedy (ii) My Reminiscences and Experiences of Odisha State Pollution Board.

Finally I would say that Prof. M.K. Rout was a Great Teacher, Researcher, Academic Administrator, Social Reformer and Philanthropist blended into one who will be remembered for ever.

Besides all this, he was a most loving and affectionate person. I was his daughter Anuradha's best friend and have visited his house often and we used to have good leasurely talks. Prof. Rout's son Babu Bhai (Prof. Swoyam Prakash Rout) is as affectionate as his father.

I miss this great man so also the Chemistry Faculty.

Om Shanti ! ■■■

Retd. Senior Faculty
Regional Institute of Education (RIE), NCERT,
Bhubaneswear
e-mail : jyotshnam@yahoo.com
Mobile : 9937500605

"If you know you are on the right track, if you have this inner knowledge, then nobody can turn you off... no matter what they say."

– Barbara McClintock

Dr. M.K. Rout : Reminiscences

Sri Gopabandhu Pattanaik, IAS (Retd.)

Perhaps, before joining my primary school, I had heard about Ravenshaw College. The third generation of my family were in college in the late fifties and early sixties of last century. My grandfather late Buxi Lokenath Pattanaik was the first Graduate of Ravenshaw College (1903) and was followed by my father Late Maheswar Pattanaik. When I joined school in 1957, my eldest brother joined the college followed by my sister and another elder brother subsequently. So at home, when they used to come during vacations, the talk was all about the college, their teachers, the fellow student's, life in the college hostels. I and my other siblings would follow the narrative wide eyed and excitedly and would dream of joining this great Institution one day. So before joining the college in 1968, I was familiarwith P.L.T./C.L.T. and various college buildings. We had heard stories about numerous teachers and Principals of the college. The year I joined Ravenshaw, my elder brother (Late Dr. Harish Pattanaik) had completed his graduation in Chemistry (Honours) and had left for Delhi University to do his post graduation. Since he was a student of Chemistry, Dr. M.K. Rout was a familiar name for us. But I met Prof. Rout almost after a year or more after he became the Principal of the College. I don't remember the exact occasion when I met him for the first time. Perhaps, I got a call to see him in his office. It was a daunting task and I was most apprehensive as well as excited to step in to the hallowed chamber of the Principal. It was like a goat being taken to the sacrificial altar. But when I saw Dr. Rout,my apprehension gave way to a sense of relief. On the Principal's chair, there was a young looking handsome person with a smile on his face, immaculately dressed in white pant and shirt, not a fierce looking person as I had imagined! He smiled broadly and asked me to take a chair in front of him. He enquired about my welfare and about other members of my family. He was all praise for my elder brother and expected that I would continue to keep the good reputation. He asked me about my classes, teachers in various subjects, the food in the Hostel and while I was leaving, told me to come to him if there was any problem. With a great sense of relief, happiness, and joy, I surveyed the world around me. I felt like a victorious hero coming out of a battle field. The world around me looked bright and wonderful. I wished, a few friends should have been there to see my victorious journey stepping out of the Principal's chamber. When I was entering his office, I was all apprehension and wished nobody had seen me entering Principal's chamber. But on return, my status had changed so also my confidence. After that, in different College functions, when he would see me, he would give me a broad smile of recognition and talk to me. Amongst my friends,

such recognition by the Principal was a matter of envy. I remember one incident clearly. In our time going to the Railway Station and drinking a cup of tea on the platform was a great pastime and source of relaxation. Being a 'good boy' I had no occasion to go to the station and sip a cup of tea. During our final year examination, some of my hostel mates had gone to theRailway Station for tea and were apprehended by the Railway Police for not possessing any platform tickets. Some one who escaped quietly and reached the Hostel informed about this miss half. Many students gathered agitatedly and started shouting slogans and decided to march to the Principal's quarters. Some one suggested that few of us, led by me should meet the Principal who being fond of me would definitely intervene. We reached the Principal's Bungalow in few minutes and when we told of our purpose of visit, Dr. Rout came out immediately and listened to my entreaties. He spoke to some senior officer in the Government who assured him of favourable action. He called back within a short time and told that the students would not be sent to jail. They would be fined nominally and would be allowed to go home immediately,to our great relief. All our friends who were taken by the Railway Police were allowed to return in no time. Dr. Rout was a man of action and never disappointed or hesitated to help any student who needed his assistance. There, indeed, were numerous occasions when I had called on him to plead for someone and he had never said no.

In 1972, I sat for my graduation examination in Physics Honours. I had decided to do my post graduation in Economics from Delhi School of Economics. In those days, academic cycle in Utkal University had gone haywire. Normally the final result used to come out by end of September or October. Academic calendar of Delhi University was regular. Classes started by mid of July. So admission had to take place before that. I and some of my friends went to Delhi. My elder brother (Harish) was stayingin Jubilee Hall and I stayed with him. My friends rented a house in Model Town for a princely sum of Rs. 250/- per month. Our daily activity was to come to Delhi School of Economics and go to the admission counter to plead our case. During those days, there was a practice to enroll students on the previous year's performance and allow admission in one of the Campus Colleges. The teaching was in DSE and everyone was allowed to attend classes. Those two months I studied in DSE were a glorious period of my life.

I returned to Odisha on Puja vacation. Till then our results were not declared.I clearly remember that fatal morning when I arrived at Cuttack. A hawker was shouting 'Utkal University B.A./B. Sc. results'. Hurriedly I got a copy of 'Samaj' and searched for my roll number. To my consternation, horror, amazement, embarrassment, I didnot find my roll number. I have failed in the examination!! The mere thought was so strange! I went home. Maa was nonplused. She did not admonish me and was very supportive. After few days, she asked me to go and meet the Principal and find out further course of action. When I met Prof. Rout, he was equally sympathetic and asked me to go to Baripada and Puri to find out whether any vacancy existed in Physics (Honour), since the seats were filled up in Ravenshaw. I requested him to give me admission in Ravenshaw. He saw my earnest desire to continue and did not take much time to take a decision. He took a decision to create an extra seat in Physics (Honour) and admit me conditionally for seeking University approval. And I joined in Ravenshaw College. This decision was like a watershed in my life. Had I not been admitted, the course of my life might have taken a different turn. Who knows?

Next year I qualified as Probationary Officer in State Bank of India. Sir was greatly elated and congratulated me with a reminder. That was not the destination and I should try for the Civil Services. I was successful and qualified for Indian Administrative Service in 1978. Before joining the Academy at Musoorie, I could not meet Sir. But after few months when I returned home, I went to meet him. By then he was D.P.I. When I sent a chit, he called me immediately. He was smiling broadly and with great pride and happiness introduced me to all the Officials who were present there. It was a very emotional moment for me. He had taught thousands of students. And to be happy about the achievement of one of them,was very touching.

I was posted to Bhubaneswar in 1989 on a Government of India deputation. After I settled down, I went to meet him. Alas! to my dismay, I learnt that he was ill and had gone to USA for treatment. Towards the end of 1989 or beginning of 1990, I learnt that Sir had comeback. I went to see him. He was in a wheel chair. But absolutely the same warm smile. In his crew cut hair style, freshly starched and ironed white pant and white bushshirt he did not look like a person who was very ill. He welcomed me with a broad smileand enquired about my welfare. He was extremely pleased to see me. I did not know at that time that he had returned with the knowledge that his days were numbered. There was no self pity, regret or anger in his voice. Calmly he asked me whether I could give some employment to his domestic help 'Natha' after his demise. I was startled. I promised that I would do my best. I had lost my voice.We sat silently for a long time. I did not know how to take leave. Ultimately, when I departed, I could see that twinkle in his eyes and that beatific smile on his face. After few days, he wrote an article which was published, perhaps in 'Samaj' about the disease afflicting him. The article was that of a scientist not that of a dying man. It was precise and very specific in narration. No self glorification, or self pity. It was the utterances of a detached sanyasi, a realized soul who had found harmony within himself and outside world. Where desire had completely extinguished.

The fateful day came. I was in my office, in the afternoon of 7th February 1990.ShibaBhaina (Late Prof. S.P. Rath) came to my office and told that Sir was now more. Though, I knew about the imminent catastrophe, I was not prepared. It hit like a gust of cold wind suddenly rushing in. I broke down with tears, though I was trying to keep myselfcomposed. Almost 24 years have elapsed since then. But the intensity of feeling on his departure from the mortal world is as fresh as if it had taken place yesterday. His memory still glows silently in the hearts of his numerous students and admirers. One cannot say a final good bye ever. ■■■

Former Vice-Chancellor
Lucknow University.
C1/149 Vipul Khand Near Sahara Corporate Office Side of
Avadh Apartments Gomtinagar Lucknow 226010, UP
Ph. No.: 9415019535
E-mail: gpattanaik2013@gmail.com

VOICES FROM OVERSEAS

ମନେ ରହିଛନ୍ତି, ମନେ ରହିବେ

(ପୂଜ୍ୟଗୁରୁ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମ ଶତବାର୍ଷିକୀ ଉପଲକ୍ଷେ)

ଡକ୍ଟର ରାଜେନ୍ଦ୍ର ନାରାୟଣ ଦାସ

କେତେକାଳୁ ଇଂଲଣ୍ଡ କାହିଁକି ସାରା ଇଉରୋପରେ ମଧ୍ୟ କିମ୍ବଦନ୍ତୀରେ ପରିଣତ ହୋଇ ଯାଇଥିବା ଅକ୍ସଫୋର୍ଡ଼କୁ କୁହାଯାଏ, ଅକ୍ସଫୋର୍ଡ଼ କେବଳ ଗୋଟିଏ ବିଶ୍ୱବିଦ୍ୟାଳୟ ନୁହେଁ, ଏହା ଗୋଟିଏ 'ୱେ ଅଫ୍ ଲାଇଫ୍'। ଏହି ପରିପ୍ରେକ୍ଷୀରେ ମୋତେ ଲାଗେ ମୋର ଆଦ୍ୟ ଯୌବନରେ ରୋମାଞ୍ଚ ସୃଷ୍ଟି କରିଥିବା ରେଭେନ୍‌ସା ମଧ୍ୟ ମୋ ପାଇଁ ଏକ 'ୱେ ଅଫ୍ ଲାଇଫ୍', ମୋର ଜୀବନ ଜିଇଁବାର ମାର୍ଗ। ସେଇଥିପାଇଁ ବୋଧହୁଏ ଏହା ଭିତରେ ରେଭେନ୍‌ସାରେ ମୋର ପାଠପଢ଼ା ୬୩ ବର୍ଷ ଟପି ଯାଇଥିଲେ ମଧ୍ୟ ଏଇ ଶିକ୍ଷାର ମନ୍ଦିର ପ୍ରତି ମୋର ଦୁର୍ବଳତା ଅତି ପ୍ରବଳ।

ଏଇ ତେଷଠି ବର୍ଷ ବିଦେଶରେ ରହଣି ଭିତରେ ମୁଁ ଅନେକ ଥର ଭାରତ ଯାଇଛି। ଯେତେବେଳେ ବି କଟକ ଯାଏ, ସେତେବେଳେ ଏକ ଅବର୍ଣ୍ଣନୀୟ ଆକର୍ଷଣର ମୋହରେ ମୁଁ ରେଭେନ୍‌ସା ଆଡ଼େ ବୁଲିଆସେ। ତା'ର ସେଇ ଲାଲ କେଠା, ସାମ୍ନାର ଲମ୍ବା ଲମ୍ବା ଦେବଦାରୁ ଗଛ, ବିସ୍ତୀର୍ଣ୍ଣ କ୍ୱାଡ୍ରାଙ୍ଗେଲର ବଗିଚା, ମଝିରେ ସୂର୍ଯ୍ୟ ଘଡ଼ି, ସାମ୍ନାର କନିକା ଲାଇବ୍ରେରି ମୋତେ ହାତଠାରି ଡାକନ୍ତି ଓ ରେଭେନ୍‌ସା ଏକ ମା'ର ମମତା ଦେଇ ମୋତେ ତା'ର ଅଞ୍ଚଳ ଭିତରକୁ ଟାଣିଆଣେ। ମୋର ଆଖି ଆଗରେ ସିଲହଟ ପରି ମୋତେ ପଢ଼େଇଥିବା ଶିକ୍ଷକମାନେ – ଦୟାନିଧି ପଟ୍ଟନାୟକ, ମହେନ୍ଦ୍ର କୁମାର ରାଉତ, ବ୍ରହ୍ମାନନ୍ଦ ମିଶ୍ର, ଅମୂଲ୍ୟକୃଷ୍ଣ ମିଶ୍ର, ଚୌଧୁରୀ ବିଚିତ୍ରାନନ୍ଦ ନନ୍ଦ, ସୁରେନ୍ଦ୍ର ଚନ୍ଦ୍ର ମହାନ୍ତି, ଏ.ପି. ଓବ୍ରାଏନ୍, ଗୌର କିଶୋର ଦାସ, କୁଞ୍ଜବିହାରୀ ତ୍ରିପାଠୀ, ସତ୍ୟାନନ୍ଦ ଆଚାର୍ଯ୍ୟ, ଜୟନ୍ତ ମହାପାତ୍ରଙ୍କ ପରି ଅନେକ ମହାନ୍ ଶିକ୍ଷା ମନୀଷୀମାନେ ଦେଖାଦିଅନ୍ତି। କି ବିଚିତ୍ର ସେ ଆକର୍ଷଣ। ମୁଁ ଆବିଷ୍ଟ ହେଇପଡ଼େ। ଏଇତ ରେଭେନ୍‌ସାର ଆକର୍ଷଣ, ସେଇଥିପାଇଁ ତ ଆଜି ମଧ୍ୟ ଅପସ୍ରିୟମାନ କାଳର ପୃଷ୍ଠଭୂମିରେ ଏବେ ବି ରେଭେନ୍‌ସା ବହୁଚର୍ଚ୍ଚିତ। କେବଳ ମୋ ପାଇଁ ନୁହେଁ, ସାରା ଦେଶରେ ଓ ବିଶ୍ୱରେ ମଧ୍ୟ ବିଛେଇ ହୋଇ ରହିଥିବା ତା'ର ସଂଖ୍ୟାହୀନ ସନ୍ତାନସନ୍ତତିଙ୍କ ପାଇଁ ମଧ୍ୟ।

ରେଭେନ୍‌ସା ସାରା ଓଡ଼ିଶାର ଉଚ୍ଚଶିକ୍ଷା ପାଇଁ ଆଶା ରଖୁଥିବା ଅନେକ ତରୁଣ ତରୁଣୀଙ୍କ ପାଇଁ ସ୍ୱପ୍ନ ଓ ବିହ୍ୱଳତାର ବନ୍ୟା ସୃଷ୍ଟି କରିଛି। ଆଜି ଏଠାରେ ପଢ଼ିଥିବା ପିଲାମାନେ କେବଳ ଭାରତ ନୁହେଁ, ଭାରତ ବାହାରେ ମଧ୍ୟ ସଫଳତାର ଶୀର୍ଷରେ ପହଞ୍ଚିଛନ୍ତି। ପରିଣତ ବୟସରେ ମଧ୍ୟ ସେମାନେ ଯେଉଁଠାରେ ଥାଆନ୍ତୁ ନା କାହିଁକି ନିଜର 'ଅଲମାମାଟର' କଥା ପଡ଼ିଲେ ରୋମାଞ୍ଚିତ ହୁଅନ୍ତି। ଦେଶ ବିଦେଶର ଯେକୌଣସି ମଞ୍ଚରେ ରେଭେନ୍‌ସାକୁ ନେଇ ପ୍ରଶଂସାରେ ସେମାନେ ପ୍ରଗଲ୍ଭ ହୋଇପଡ଼ନ୍ତି। ସେଇମାନେ ହିଁ ସେହି ସ୍ଥାନରେ ଏହି ମହାନ ଅନୁଷ୍ଠାନର 'ବ୍ରାଣ୍ଡ ଆମ୍ବାସାଡାର' ହୋଇଯାଆନ୍ତି।

ଗୌରଚନ୍ଦ୍ରିକାରେ ରେଭେନ୍ସା ବିଷୟରେ ଏତେ କଥା କହିବାପରେ ବର୍ତ୍ତମାନ ପୂଜ୍ୟଗୁରୁ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କୁ ତାଙ୍କ ଶତବାର୍ଷିକୀ ଉପଲକ୍ଷେ ମନେ ପକାଇବା। ୧୯୫୬ରୁ ୧୯୬୦ ପର୍ଯ୍ୟନ୍ତ ୪ବର୍ଷ କାଳ ସେ ଥିଲେ ମୋର ପୂଜ୍ୟଗୁରୁ। ଏକ ରସାୟନ ବିଜ୍ଞାନ ବିଶାରଦ। ଏକ ବିଚିତ୍ର ବ୍ୟକ୍ତିତ୍ୱ। ଏକ ବିରଳ ବ୍ୟକ୍ତିତ୍ୱ। ନିଶ୍ଚିତ ଭାବରେ ଏକ ବହୁପ୍ରସ୍ଫୁ, ବହୁବର୍ଣ୍ଣ ବ୍ୟକ୍ତିତ୍ୱ। ସେ ଥିଲେ ନବ ନବ ଉନ୍ମେଷ ଶାଳିନୀ ପ୍ରଜ୍ଞାର ଅଧିକାରୀ ଯାହାଙ୍କୁ କି ଆମ ଆଳଙ୍କାରିକମାନେ ଯାହାଙ୍କୁ 'ପ୍ରତିଭା' ବୋଲି ନାମକରଣ କରନ୍ତି। ସେ ଥିଲେ ପ୍ରକୃତରେ ଜିନିଅସ୍। ପାଠପଢୁଥିବା ବେଳେ ରେଭେନ୍‌ସା କଲେଜରେ ୪ବର୍ଷ ଭିତରେ ବହୁବାର ଦେଖିଛି। ସେଥିଲେ ରସାୟନବିଜ୍ଞାନର 'ଜ୍ଞାନର ଗନ୍ତାଘର'। ଦେଖିବାକୁ ଅତି ସୁନ୍ଦର ଥିଲେ ଓ ତାଙ୍କର ଆକର୍ଷଣୀୟ ବ୍ୟକ୍ତିତ୍ୱ ଓ ପ୍ରିୟ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ଭଲପାଇବା କାରଣରୁ ଛାତ୍ରଛାତ୍ରୀଙ୍କଠାରେ ସେ ଅତ୍ୟନ୍ତ 'ଲୋକପ୍ରିୟ' ହୋଇଯାଇଥିଲେ। ଜଣେ ଆଦର୍ଶ ରସାୟନବିଜ୍ଞାନୀ ଭାବରେ ସେ ତାଙ୍କର ବୃତ୍ତିଗତ ଜୀବନର ଆରମ୍ଭରୁ ହିଁ ସୁନାମ ଅର୍ଜନ କରିଥିଲେ।

୧୯୫୬ ମସିହା ଜୁଲାଇମାସ ଦ୍ୱିତୀୟ ସପ୍ତାହରେ ରେଭେନ୍ସା କଲେଜ "ରସାୟନ ବିଜ୍ଞାନ ଲେକ୍‌ଚର ଥିଏଟର୍ (୨)"ରେ ସାର୍‌ଙ୍କ ସହିତ ମୋର ପ୍ରଥମ ପରିଚୟ ହୁଏ। ତାଙ୍କର ତେଜସ୍ୱୀ

ବ୍ୟକ୍ତିତ୍ୱ ମୋ ଭଳି ଅନେକ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ମନରେ କିପରି ଏକ ଶ୍ରଦ୍ଧା ଓ ଆକର୍ଷଣ ଅନୁଭବ ଆଣି ଦେଇଥିଲା ତାହା ବର୍ଣ୍ଣନା କରିବାକୁ ମୋ ନିକଟରେ ଆଜି ଭାଷା ନାହିଁ। ପରେ ପରେ ତାଙ୍କର ପଢ଼ାଇବା ଶୈଳୀ, ଏକାଗ୍ରତା ଓ କର୍ମ ପ୍ରବଣତା ଆମମାନଙ୍କୁ ବହୁପ୍ରକାରେ ପ୍ରଭାବିତ କରିଥିଲା। ସେଇଦିନଠାରୁ ତାଙ୍କର ମଧୁମୟ ମୂର୍ତ୍ତି ମୋ ଭିତରେ ଆଙ୍କି ହୋଇଯାଇଛି। ପ୍ରବୀଣମାନଙ୍କ ମଧ୍ୟରେ ସେ ଯେପରି ଏକ ଅଭିନବ ଆଗ୍ରହ, ତରୁଣମାନଙ୍କ ଭିତରେ ଏକ ଅଦ୍ଭୁତ ଉତ୍ତେଜନା। ଆମାୟିକ ଗୁଣ ଥିଲା ତାଙ୍କର ଭୂଷଣ। କଥାରେ ଆପଣାପଣ ଆଉ ମନଖୋଲା ହସ ସବୁରିମନକୁ କିଣି ନେଉଥିଲା। ସବୁ ମଣିଷ ଥିଲେ ତାଙ୍କର ପ୍ରିୟ।

ତାଙ୍କର ମହାପ୍ରୟାଣ ପରେ ଏହା ଭିତରେ ତେତିଶ୍ ବର୍ଷ ବିତିଗଲାଣି। ତେଣୁ ଆଜି ତାଙ୍କର ଅସୁମାରି ବ୍ୟକ୍ତିଗତବନ୍ଧୁ ଏବଂ ପ୍ରଶଂସକଙ୍କ ତାଲିକା ପାଇବା ଅସମ୍ଭବ। କିନ୍ତୁ ଏକଥା ସତ ଯେ ଏବେମଧ୍ୟ ଓଡ଼ିଶାର କୋଣଅନୁକୋଣରେ ଅନେକ 'ମହେନ୍ଦ୍ର ପ୍ରେମୀ' ଭରି ରହିଛନ୍ତି। ପ୍ରାସଙ୍ଗିକତା ଦୃଷ୍ଟିରୁ ଉଲ୍ଲେଖ କରାଯାଇପାରେ ଯେ ଆଜିର ପିଲାମାନେ ଯେମିତି ଏକ ଭୋଗବାଦୀ ଜଗତର ବାସିନ୍ଦା ହୋଇ ଯନ୍ତ୍ରମନସ୍କ ହୋଇ ପଡୁଛନ୍ତି, ସେଥିରେ ସେମାନଙ୍କୁ ଗଢ଼ିଥିବା ବାପାମାଆ ଓ ସେମାନଙ୍କର ଜ୍ଞାନଦୀପ ଶିକ୍ଷକ ଶିକ୍ଷୟିତ୍ରୀମାନେ ଯେତେବେଳେ ବିସ୍ମୃତିରେ ହଜିଗଲା ଭଳି ଭୟଙ୍କର ବିଘଟନ ଦେଖା ଗଲାଣି। ତେଣୁ ଏହି ରାଜ୍ୟକୁ ଗଢ଼ିଥିବା ମହାତ୍ମାଙ୍କୁ ସ୍ମୃତିରେ ସାଇତି ରଖିବାର କୌଣସି ସମ୍ଭାବନା ଦେଖା ଯାଉନାହିଁ। ଏ ଦିଗରେ ଏବେଠୁଁ ସଚେତନ ନହେଲେ ଭବିଷ୍ୟତରେ ଏକ ସାଂସ୍କୃତିକ ସଂକଟର ସମ୍ମୁଖୀନ ହେବାକୁ ଆମ ଓଡ଼ିଶା ବସ୍ତୁତଃ ବାଧ୍ୟ ହେବ।

ଆମ ମଧ୍ୟମ ପିଢ଼ିମାନଙ୍କର ଦିନକାଳ ତ ସରି ସରି ଆସୁଛି। ଏବେ ଯେଉଁମାନେ ଓଡ଼ିଶାରେ ଉତ୍ତରଦାୟାଦ ଭାବେ ଉଭା ହେଉଛନ୍ତି, ସେଇ ଓଡ଼ିଆ ନବଯୁବକମାନେ ଏହି ପ୍ରଜ୍ଞାବାନ୍ ମନୀଷୀ 'ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ'ଙ୍କୁ ଜାଣନ୍ତୁ। ଏହା ହେଉଛି ଏଇ ପ୍ରବନ୍ଧର ମୂଳ ଲକ୍ଷ୍ୟ।

ମୋ ଜାଣିବାରେ ସାର୍‌ଙ୍କର ଅନେକ ସାମସମୟିକ ସାଥୀ, ସହପାଠୀ ଆମେରିକା ଯାଇ ସେଠାରେ କୃତିତ୍ୱ ଅର୍ଜନ କରିଥିଲା ବେଳେ ସେ ସେଇ ପ୍ରକାର ଆକର୍ଷଣକୁ ଏଡ଼ାଇ କେବଳ ଓଡ଼ିଶାରେ ଶିକ୍ଷାଦାନ ଦେବାପାଇଁ ଆପଣାର ଦେହମନକୁ ମାଟିମନସ୍କ କରି ଦେଇଥିଲେ। ଆଜି ଏଇ କଥା ଏଇ ପ୍ରବନ୍ଧରେ ଲିପିବଦ୍ଧ କଲାବେଳେ ମନକୁ ମନ ମୋର ମୁଣ୍ଡ ତାଙ୍କ ପାଦତଳେ ପଡିଯାଉଛି। ସେସମୟରେ ଗବେଷଣା କରିବାକୁ ଯିବାମାନେ ଏକପ୍ରକାର ନୋବେଲ୍ ପୁରସ୍କାର ପାଇଲା ଭଳି ସମ୍ମାନ। ଶୁଣାଯାଏ ସାର୍‌ଙ୍କୁ ଆମେରିକାରୁ ତିନୋଟି ବିଶ୍ୱପ୍ରସିଦ୍ଧ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ବୃତ୍ତି ମିଳିଥିଲା। ସେ କିନ୍ତୁ ସେଗୁଡିକୁ ଆଡ଼େଇ ଦେଇଥିଲେ। ଏହା ନିଶ୍ଚିତ ଭାବରେ ଏକ 'ବିରଳ ବ୍ୟତିକ୍ରମ'। ପ୍ରକୃତରେ 'ଶିକ୍ଷାଦାନ' ଥିଲା ତାଙ୍କର ଧର୍ମ।

ମୋର ଅନେକ ପୂଜ୍ୟ ଗୁରୁ ବିଶ୍ୱବିଦ୍ୟାଳୟଗୁଡ଼ିକରେ କୁଳପତି ଆସନ ମଣ୍ଡନ କରିଥିଲେ। ସେମାନେ ହେଲେ- ପ୍ରଫେସର ସଦାଶିବ ମିଶ୍ର, ବିଦ୍ୟାଧର ମିଶ୍ର, ମନ୍ମଥ ନାଥ ଦାସ, ମହେନ୍ଦ୍ର କୁମାର ରାଉତ, ତ୍ରିଲୋଚନ ପ୍ରଧାନ, ସତ୍ୟାନନ୍ଦ ଆଚାର୍ଯ୍ୟ, ତ୍ରିନାଥ ରଥ, ପ୍ରସନ୍ନ କୁମାର ଦାସ, ରେବତୀ ଚରଣ ଦାସ, ବିଭୂତିଭୂଷଣ ଦେଓ, ଗୌରକିଶୋର ଦାସ ଓ ମହମ୍ମଦ କମରୁଦ୍ଦିନ୍ ଖାନ୍। ଜର୍ମାନୀରେ ବହୁବର୍ଷ ଧରି ବସବାସ କରୁଥିଲେ ମଧ୍ୟ ଅନେକଙ୍କ ସହିତ ମୋର ବ୍ୟକ୍ତିଗତ ସଂପର୍କ ଥିଲା। ଅନେକଙ୍କ ସହିତ ସେମାନଙ୍କର "କୁଳପତି ଜୀବନ' ବିଷୟରେ ବିସ୍ତୃତ ଆଲୋଚନା କରିଛି। ସେମାନଙ୍କର କରୁଣ କାହାଣୀ ଶୁଣି ମର୍ମାହତ ହୋଇଛି। ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ପଦ ଛାଡ଼ିବା ପରେ ୧୯୮୫ ମସିହାରେ ତାଙ୍କ ଝିଅ ପାଖକୁ ଆମେରିକା ଯାଇଥିଲେ। ଫେରିଲାବେଳେ ମୋ ସହିତ ଦୁଇ ଦିନ ଲଣ୍ଡନରେ ରହିଥିଲେ। ସାର୍ କହିଥିଲେ, "My Vice-Chancellor life was the worst professional hazad of my life. I have heard the filthiest of languages ever, during this time"। ଏକଥା କହିଲା ବେଳକୁ ସାର୍‌ଙ୍କ ଆଖି ଲୁହରେ ଓଦା ହୋଇଯାଇଥିଲା। ଆଜି ସାର୍‌ଙ୍କ ବିଷୟରେ ଏଇ ପ୍ରବନ୍ଧଟି ଲେଖିଲାବେଳକୁ ସାର୍‌ଙ୍କର ସେଦିନର ମୁହଁଟି ମୋ ଆଖି ଆଗରେ ନାଚିଯାଉଛି।

ସାର୍ ଥିଲେ ଅନନ୍ୟ, ଅସାଧାରଣ। ଓଡ଼ିଶାର ଶିକ୍ଷାଜଗତରେ ସେ ଯେଉଁ ପଦବୀରେ ଥାଇ ଖ୍ୟାତି ଅର୍ଜନ କରିଥିଲେ, ସେହି ପଦବୀମାନଙ୍କରେ ତାଙ୍କ ପୂର୍ବରୁ ବହୁ ଲୋକଥିଲେ ଓ ତାଙ୍କ ପରେ ବି ବହୁ ଲୋକ ଆସିଲେଣି। କିନ୍ତୁ ଜନସ୍ମୃତିରେ ସେ ଏପରି ଏକ ପ୍ରବାଦପୁରୁଷ ପାଲଟି ଯାଇଛନ୍ତି, ସେପରି ସୌଭାଗ୍ୟ ବହୁତ କମ୍ ଲୋକଙ୍କ ଭାଗ୍ୟରେ ଆସିଥାଏ। ତାଙ୍କର ମହାପ୍ରୟାଣ ଘଟିଛି। ଇତିହାସ ପୃଷ୍ଠାରେ ଏବେ ସେ ଦେଖାମିଳିପାରନ୍ତି ନ ମିଳି ବି ପାରନ୍ତି। ଓଡ଼ିଶାର ଉତ୍ତର ଦାୟାଦମାନେ ହୁଏତ ତାଙ୍କୁ ଜାଣି ନପାରନ୍ତି। ମାତ୍ର ଆମେ ଯେଉଁମାନେ ତାଙ୍କୁ ଜାଣିଛୁ, ତାଙ୍କର ବ୍ୟକ୍ତିତ୍ୱ, କୃତି ଓ କୃତିତ୍ୱକୁ ସବୁବେଳେ ଭକ୍ତିର ଓ କୃତଜ୍ଞତାର ସହିତ ପରିଖିଛୁ, ତାଙ୍କୁ ବିସ୍ମରଣରେ ହରାଇ ଦେବା ଆମ ପକ୍ଷରେ ଅସମ୍ଭବ। ସେ ମନେ ରହିଛନ୍ତି, ମନେ ରହିବେ ଓ କେବେହେଲେ ଭୁଲିବାର ନୁହେଁ। ତାଙ୍କୁ ଗୁରୁ ବୋଲି ଡାକିବାର ମୋର ପୂର୍ଣ୍ଣ ଅଧିକାର ଥିବାରୁ ମୋ ମୁଣ୍ଡ ଆଜି ତାଙ୍କର ପାଦତଳେ ନଇଁଯାଉଛି। ■■■

ଗିଲ୍‌ବାଖ୍ ଷ୍ଟ୍ରାସେ ୯୫ଇ, ୪୧୪୬୬ ନଏସ୍, ଜର୍ମାନୀ
Ph. No.- +91 9439370527
drrajendradas.germany@gmail.com

Professor Mahendra Kumar Rout : My Loving Father-in-Law

Dr. Deva Narayan Pattanayak

Professor Mahendra Kumar Rout was my father-in-law which in Odia language is known as sasura. The word sasura is a combination of sas and sura, meaning some divine relative.

Prof. Rout had many divine characteristics that helped him start his well-known Chemistry laboratory at Ravenshaw College after joining it as a lecturer in 1944. At that time Prof. Balabhadra Prasad and Prof. Sarbani Sashay Guha Sircar were Professors in the Chemistry department. He got his Ph.D. in Chemistry under the supervision of Prof. Guha Sircar. He was awarded the first ever D.Sc. from the then newly formed Utkal university in Odisha. It was perhaps divine providence that he did not go abroad for higher studies as was customary then. He took up the challenge to establish his own research laboratory in Ravenshaw College, Cuttack, Odisha.

Professor Rout supervised and trained young Chemists very passionately spending lots of time with them in the laboratory. His first three Ph.D. students were Mr. Hrishikesh Pujhari, Mr. Gokulananda Mohapatra and Mr. Birendra Kumar Patnaik. He published his research work in reputable journals like Nature and journal of chemical society. He became a rising star from Ravenshaw. He continued to attract bright students and nourish a in them desire to do basic research and publish papers and obtain Ph.D. degrees one after the other. The unusual thing with him was continuing his research activities while working as the Principal of Ravenshaw College for long nine years. He moved on to become the Director of Public Instruction of Odisha and the Vice Chancellor of Utkal University. He showed his skill in administration as he shaped the first Pollution Control Board in the state. He brought in a scientific approach to academic administration with emphasis on the welfare of students and faculty as well as staff at different levels. He had a photographic memory and loved his students and staff.

I only met with him for few weeks at a time and years apart when we would visit Odisha from USA to which we migrated. For reasons known to all, he decided to visit us at Niskayuna, NY in 1989. He stayed with us for about a month and a half. During that visit, I realized how accomplished and satisfied he was with the life he lived. When he was introduced to his doctors and nurses, he would introduce himself simply that he is a teacher and would like to live for six months more to see the completion of the thesis of two of his students. He was suffering from the terminal ALS disease which was very advanced when he visited us. The doctor told us after the very first meeting that he

can pass away any time. That was not an easy diagnosis to accept. He however was glad that he could spend some time with his daughter, known fondly as Baby by all and grandchildren and his wife and me in the upstate NY area during the Fall season.

Now that he is no more with us, we ask how he found time to accomplish so many things in his life. He would say with hard work and by completing the tasks before time. A busy man has ample time, he used to quip. Two days before his return to India, he will ask his bag to be brought to the family room. He will carefully stack his clothes one by one and the small gifts he purchased for his friends. His mind was very sharp, and he will write many letters. He knew we are a working family with two school going children. He was truly surprised how his darling daughter Baby is managing the family and at the same time thinking about her own career. He could not believe it. Most of the time I will take him to medical appointments and people will ask him about his occupation to which he will reply that he is a teacher. I will be asked if he is my father to which I will reply no and that he is my father-in-law. Later I nodded. He was able to pass all the standard tests like holding a cup and taking a bath the occupational therapy type of questions. He had found a way to do all those occupational things. The test that he failed was the breath test. He could not blow air hard to hold the ball at a height. He accepted the illness, but he was mentally and physically very independent and did his day-to-day work by himself. Winter on its way, we decided it not prudent to keep him longer from his near and dear ones back in India.

Living with him was a great experience. We will have open discussions during our dinner. I remember talking to him about the fate of poor students who must drop from higher education because of lack of money. He told me that he will do something to institute merit-cum-mean scholarship.

I told him that I did not find one of my close friends in the college after high school because he had to help his father in their small family business.

I came to know that Ravenshaw College does not have any way of supporting poor students. Although I do not have much money to donate for this cause, but I am announcing in this write up that I shall set aside some fund for this purpose. I will ask my Ravenshaw Classmates and others who knew him and have benefitted substantially to come forward and make this seed fund substantial. I hope this fund will be used to institute merit-cum-means scholarships to students coming from poor families to pursue higher education. The idea is to pay their tuition fees for the undergraduate studies. I know it is not much, but it is something that can be done, and I am glad to announce that some of my friends have shown willingness to join me in this regard.

I think the best way to remember Professor Mahendra Kumar Rout is his love for hard work and desire to get things done as soon as possible. He loved all his students especially the bright ones whom he helped as much as he could. I loved and respected him from the bottom of my heart. ■■■

15 Ivy Road
Wellesley
MA 02482, USA
Ph.No.- 4082217871
Email: dmgadia@gmail.com

Remembering Prof. M. K. Rout : A Visionary Leader, Champion of Higher Education & A Chemist Extraordinaire

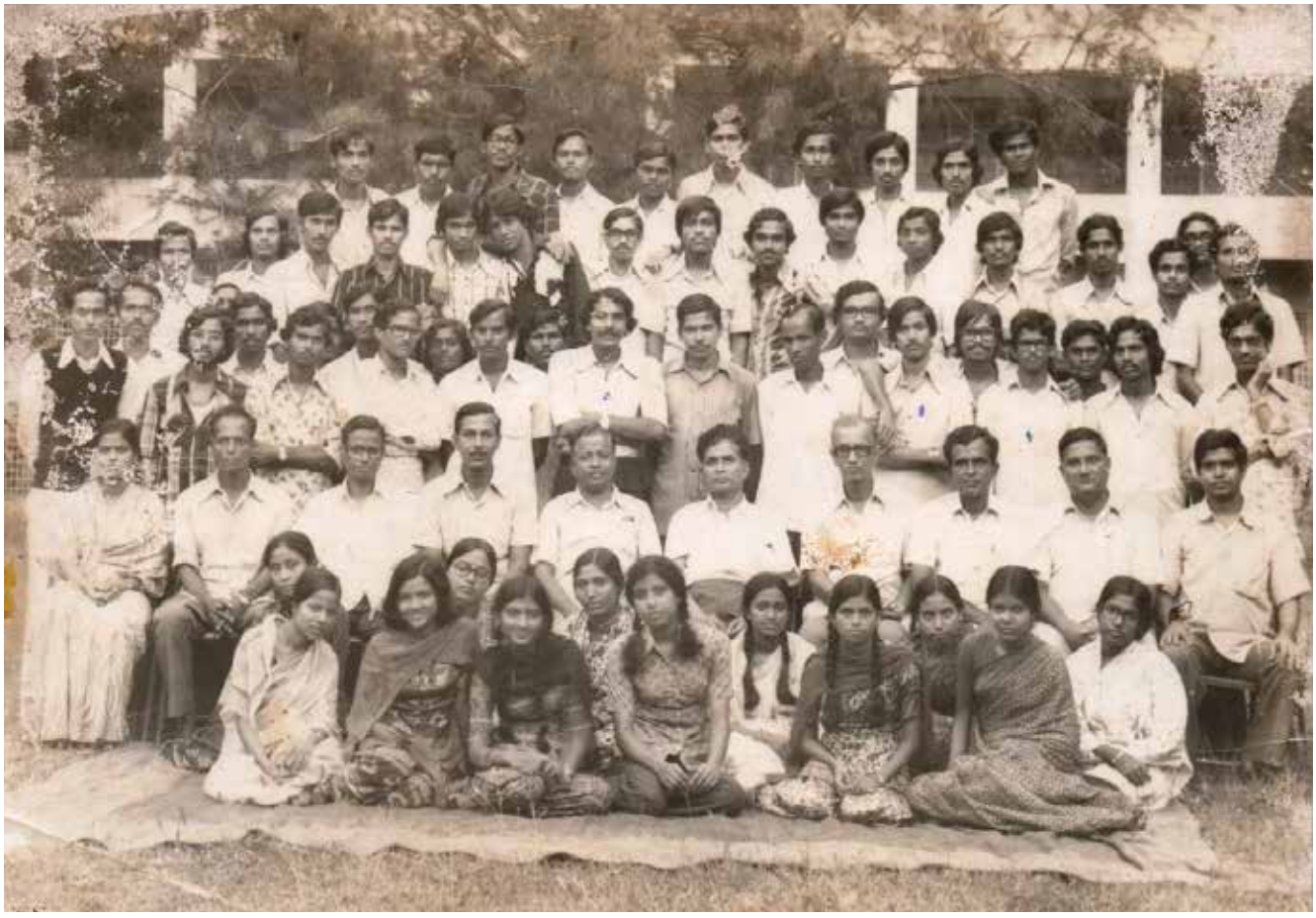
Pradeep K. Dhal, PhD, FRSC

During July/August of 1977, after carefully evaluating several options in front of me to select an institute to pursue my M.Sc. in Chemistry, I decided to attend Ravenshaw College. The key factor influencing my decision was Prof. M. K. Rout – then Principal of Ravenshaw College. After 46 plus years, when I look back on my time as a student of Ravenshaw College, I am still proud of that decision.

To say Prof. Rout was a legendary leader of Odisha's post-independence higher education system is an understatement. On the occasion of his 100th birth anniversary, there is a real pride for all his students and associates to know such an inspiring teacher and caring mentor. Through his focus, perseverance, commitment, and deep humility, Prof. Rout rose from the rank of a lecturer in chemistry to occupy the highest position of the higher education in Odisha. During my two plus years of stint at Ravenshaw, I had the privilege of meeting with Prof. Rout multiple times in many different forums outside our classroom. Prof. Rout was a passionate teacher and hands-on administrator. As the principal, he carried out his duties with brilliance, intense energy, and effectiveness. Being an amazing conversationalist combined with prodigious memory and deep insight of human behavior, during his tenure as the principal, Prof. Rout was able to build the perfect ecosystem for higher education. Because of his stature, Prof. Rout used to meet ministers, politicians, and government officials at the highest level and was able to capture their attention during public events. He never left an opportunity to advocate for investing in higher education in Odisha. His ability to getting to know and connect with senior faculty members, administrative staff, and chemistry laboratory technicians alike was truly remarkable. He was smart enough to know that these talented and committed people make things happen, keep the college campus in harmony, and strive towards fulfilling the common mission of enriching students' experience and creating knowledge. The strategy served him very well to become one of the most admired principals in Ravenshaw's history.

I would like to highlight some my fondest memories of Prof. Rout that I cherish even today. Coming from a middle-class family, the National Merit Scholarship was the life vest in funding my education. Those days, the scholarship money used to come in periodic blocks. Once I ran out of money to pay several months of college dues in advance before registering for my first semester

M.Sc. examination. After unsuccessfully running around the administrative building, I finally ventured to approach Prof. Rout for help. In spite of being a remarkably intense administrator, he was known to be approachable to students. Unsurprisingly, he gave me an appointment to meet him in spite of his exceedingly busy schedule. After carefully listening to my situation, he directed (*sort of working around the policy*!) the finance department to give me an advanced payment of my scholarship without any collateral. Prof. Rout was famous for his natural wit to find the right way to solve students' problems! In my four decades of professional journey, I have not come across many leaders like Prof. Rout, who had genuine concern for people around him. Another advice from Prof. Rout has helped shaping my professional career as a practicing scientist. When polymer chemistry was introduced for the first time as a special paper for our M.Sc. batch, it was limited to only four or so students. The criteria to get that special paper was solely based on the marks one scored in his/her B.Sc. honors examination (*in my opinion it was a wrong criterion* !). Since I did not make the cut and was first on the waiting list, I approached Prof. Rout for help. He politely declined to interfere in the departmental decision. However, he gave me the following two sets of words of wisdom. Firstly, during our student days, since most of my friends and contemporaries were aspiring to join either



Prof. M. K. Rout and faculty members of Chemistry Department with M.Sc. students belonging to graduating batches of 1979 and 1980. (taken during the spring of 1979)

civil service or banking sector, he told me that if I decide to follow that path, any specialization in M.Sc. will have little consequence. On the other hand, if I wish to pursue a career in chemistry, his advice was not to be too specialized during M.Sc. Instead, he recommended me to take organic chemistry as the special paper. That advice changed my career trajectory: it opened the door for me to Indian Institute of Technology, Bombay and eventually took me to California Institute of Technology, where I had the fortune to work in the laboratory of Chemistry Nobel Laureate, Frances Arnold. *Incidentally, for more than a quarter century, I have been practicing polymer chemistry and its interface with biology and medicine to discover and develop novel therapies to address unmet medical needs of patients.*

As the principal, Prof. Rout was a source of inspiration, counsel, and wisdom to the faculty, staff, students, and the greater community around Ravenshaw campus. Prof. Rout had championed many important issues to enhance the quality of students' life and the quality of education. Some of his noteworthy accomplishments as the principal included establishment of a state-of-the-art (that time) reading room to address prohibiting high cost of text books. The reading room allowed students to borrow books and study in a very conducive atmosphere until late evening. Moreover, to alleviate the housing problem faced by post-graduate students, he oversaw the construction of the New PG Hostel. *I had the privilege of being one of the first occupants of that modern student housing building.* He was an unwavering supporter of students and worked tirelessly (sometimes invisibly) to help them succeed. In my opinion, Prof. Rout's legacy occupies a distinct place in the history of Odisha's higher education in general and Ravenshaw College/University in particular.

Prof. Rout belonged to the generation of organic chemists, who experienced the transition of the field of organic chemistry from what a chemical reaction produced to detailed understanding of the mechanism of organic reactions to improve synthesis processes and development of new synthetic methodologies. He compensated the limited research infrastructure of Ravenshaw college with boundless curiosity and untiring enthusiasm to learn about new tools and experimental designs to carry out his research. Prof. Rout had trained and advised several dozens of Ph.D. students and subsequently enabled their careers, who went onto become very successful in academia and industry across India and abroad. However, he is best remembered as a legendary teacher. In spite of his overwhelming responsibilities as the Principal, he continued to teach courses to students from first year I. Sc. to final year M.Sc. With his sense of humor and unique story-telling style, he kept students engaged in his class and never let them feel out of place or uncomfortable. He taught us molecular spectroscopy and advanced physical organic chemistry. Prof. Rout might not have been a pioneer of modern organic chemistry, but he was certainly one of its best teachers. His lessons on NMR spectroscopy and molecular orbital theory in organic chemistry (e.g., pericyclic reactions) were more like philosophy rather than mundane drawing of arrows and movement of electrons across covalent bonds. Those lessons were invaluable in building my basic foundation in organic chemistry and prepared me well for my future career as a synthetic chemist. *I still have the old copies of Robert Silverstein's "Spectrometric Identification of Organic Compounds" and Jerry March's*

"Advanced Organic Chemistry" books in my home library. Thanks to Prof. Rout's help in clarifying my basic understanding of NMR spectroscopy, I have successfully used NMR spectroscopy during my independent research career to elucidate complex stereochemistry of synthetic polymers, assess the mode of binding between ligands and synthetic antibodies (molecularly imprinted polymers), and more recently Magnetic Resonance Imaging (MRI) to understand *in vivo* degradation profiles of biomaterials as carriers for drug delivery systems. Furthermore, few years ago, when my research group set out to explore bioconjugate chemistry as a tool to discover and develop antibody-drug conjugates as targeted cancer therapies, protein-ligand conjugates for tissue specific and intracellular delivery of biotherapeutics, polymer-drug conjugates as long-acting therapies, and engineered nanoparticle based sub-unit vaccines, we surveyed organic reactions that can be used to covalently conjugate different bioactive components. These reactions need be efficient, rapid at ambient temperature, work in aqueous media, and generate no byproducts. Many decades later, the lessons I learnt from Prof. Rout's lecture on pericyclic reactions came very handy to help me in working with my colleagues to design substrates and reagents to perform Diels-Alder reaction and 1,3-dipolar cycloaddition reaction (aka Click Chemistry) to synthesize novel therapeutic bioconjugates. *Incidentally, inventors of both of these versatile and ground breaking reactions went on to win Nobel Prize in Chemistry!*

In spite of being a remarkably intense and occasionally stubborn individual, Prof. Rout was someone, who was almost impossible not to love. He was a person of extraordinary warmth, addicted to new developments in science, devoted to his family, had deep concern for his students, faculty members and staff, and was genuinely protective of the institutions he led. Prof. Rout will continue to be remembered as a brilliant teacher and empathetic administrator, who had an extraordinary impact on the people around him through his love of science, love of education, and generosity for humanity He was truly a treasure of Odisha. ■■■

Senior Director
Sanofi Global R&D
Cambridge, Massachusetts, USA
Email:dhalpradeep@yahoo.com

"The greatest glory in living lies not in never falling, but in rising every time we fall."

– Nelson Mandela

In Memory of Professor Dr. Mahendra Kumar Rout "There is No Substitute To Hard Work"

Dr. Nrusingha Charan Mishra

Dr. M. K. Rout is a perfect example of all the virtues of a Professor, epitomizes brilliant efficient administrative skills required of a Principal, a very dynamic personality heading an eminent University such as Utkal University as a Vice-Chancellor. Simultaneously he was a multi-faceted genius and believed in the ethics of hard work and discipline. He walked the walk guided by the principle of the right to work only (Karmanye Vadhikaraste) principle of the Bhagavad Gita.

He inspired me to give my best efforts in everything I did as a student in Ravenshaw College. He was able to teach chemistry from I. Sc. to M. Sc. every week over and above performing his own duties as a Principal. Students were seriously attending his classes, because one would not know when he would call randomly (4th boy in 7th bench from the left) to answer his question. Students will run to be in his classes on time. The day will not be pleasant if one shows up late or is absent from his class if he knows or unable to answer his question correctly. He had a remarkable ability to know students by face and name. Despite his busy schedule as a Principal, teaching students above his prescribed duties completely on a voluntary basis, he guided many students for Ph.D. degrees and had an active research laboratory guiding early and established research scholars. Under his mentorship, he had a huge publication record and was well-known in the field all over India. His commitment to research was paramount and unparalleled.

In the evening, as a very inquisitive undergraduate student staying in West Hostel, I used to look from a distance in the darkness Prof. Dr. Rout reading journals and discussing with research scholars. Sometimes I had noticed in the late evening he used to walk with scholars around the Ravenshaw College campus. To this day after staying in USA for over 40 years, my memory of seventies, as a Ravenshaw College Student and an inmate of West Hostel, is still vivid of a person dressed in pristine white shirts and pants, every day coming to office on time and trotting the corridors of Ravenshaw college. His presence in Ravenshaw College from 1972-1979 was divine blessings for me and will remain so for all time to come. His legacy as a Professor is ineffaceable.

Many Nobel laureates have emphasized how important their teachers have been to their success. Today. I remember and celebrate all the great teachers that I have had. Dr. Mahendra K. Rout is one of my professors who rank in my heart as the number one ranked Professor in all aspects. His teaching style was such that his writings and drawings were etched in my mind forever. He stood there with a magnificent look in impeccable dress and emphatic delivery in CLT Hall No.2. The image is still vivid in my head. One of the hallmarks of his rich legacy is unconditional love for his students and an open door policy. There was an undercurrent of love, and compassion for his students in his very stern outward appearance. He expected hard work and discipline from his students. In the first year of my Chemistry Hons, he was instrumental in establishing a monthly seminar series named after another great Chemistry scholar Dr. Balavadra Prasad in the year 1975. Late Dr. Lalit Patnaik was assigned as our undergraduate mentor and first topic given was energy crisis. This particular subject is still a hot area in the world today after nearly five decades despite numerous advances. He was a truly a visionary educationist in

Odisha that I know today. He was well ahead in his thinking of setting the bar high to improve the higher education standards. He placed emphasis on constant reading, and appearing internal examinations and assessments to keep the students busy and persevering to excel.

His teachings motivated and instilled in me early on a sense of purpose to do research and be invested in science. To earn money, is not the main purpose. The main purpose is to make discoveries or help make discoveries and gift them to humanity and those discoveries and that knowledge stays with humanity long after I am gone. His research activities spanned a whole array of interests from Organic Chemistry, Physical Chemistry, Physico Organic Chemistry to Quantum Theoretical Chemistry, Polymer Chemistry and finally Environmental Sciences, This shows his versatility and doing research work which is relevant to the society. In 1956 which year I was born Dr. Rout went to USA as Visiting Fellow on an International Exchange Program. He did collaborative research with Professor Harold J. Conroy of Brandeis University under the ge supervision of Professor Robert B. Woodward of Harvard University, Boston, Massachusetts, USA. Subsequently Prof. Woodward received the Nobel Prize in Chemistry. Dr. Rout's research was on the Synthesis and Structure Elucidation of the alkaloid Aspidospermine. He published three research papers in the Journal of American Chemical Society (JACS). At that time he was one of the first few persons in India to have used Nuclear Magnetic Resonance (NMR) spectra and radioactive techniques for structure determination, THE STRUCTURE OF ASPIDOSPERMINE; Harold Conroy, Peter R. Brook, Mahendra K. Rout, and Norman Silverman, J. Am. Chem. Soc. 1957, 79, 7, 1763–1764; Publication Date:April 1, 1957, https://doi.org/10.1021/ja01564a065. Dr. Rout has published more than 250 scientific articles and handed over gifts of discoveries and knowledge that are deeply appreciated by scientists in the world today. May His sweet memories continue to bless all of us. ■■■

Brief Profile of Dr. Nrusingha Mishra:

Dr. Nrusingha Mishra was a direct student of Prof. Dr. M. KRout in I. Sc., B. Sc. and M. Sc from 1972-1979 in Ravenshaw College. Dr. Mishra received his Bachelor's and Master's degree in Chemistry from Ravenshaw College Cuttack in 1976 and in 1979, respectively. Dr. Mishra holds a doctorate degree in Medicinal Chemistry from the University of Minnesota in 1987. He completed his first postdoctoral training in chemoprevention at the Eppley Institute for Research in Cancer and Allied Diseases, Omaha, University of Nebraska Medical Centre, in 1990. He completed his second postdoctoral training in Medicinal Chemistry for the development of antiviral agents at the University of UtahSalt Lake City in 1991. From 1991 to 1997 Dr. Mishra worked as a leader of the Chemistry Division of ONCOR, at a biotechnology company in Maryland and developed DNA diagnostic agents. Since 1997, Dr. Mishra worked in US Federal Government and has managed more than 800 grants in many Congressional Special Interest programs to include the Breast Cancer Research Program, Prostate Cancer Research Program, Ovarian Cancer Research Program, Peer Reviewed Medical Research Program, Neurofibromatosis Research Program, and the National Prion Research Program. Over the years, he worked to improve processes in managing complex federal grants and is known as one of the experts in managing cancer research awards. Last year, in 2022, Dr. Mishra, a scientific officer with the Congressionally Directed Medical Research Programs was inducted into the Order of Military Medical Merit to recognize his greater than 25 years of selfless service and contributions to the betterment of military medicine. He is a member of the American Association for the Advancement of Science, the American Association for Cancer Research, and the American Chemical Society. His previous awards include a Meritorious Service Medal in 2005 and a Commendation Medal from the U.S. Army in 2020.

20606 Summer Sweet Ter,
Germantown, Maryland, USA
Phone: 13012751238,
Email: mishra.nrusingha678@gmail.com

Remembering My Guru Prof. Mahendra Kumar Rout

Dr. Joy Gopal Mohanty

It was October 19, 2023. I got a pleasant and surprise call in WhatsApp from Dr. Sarat Chandra Das with his Indian telephone number. At the time, he was visiting his daughter living at San José, California. I Knew Sarat Babu for the last few years throug

h his younger brother Dr. Naresh Das in Maryland as I was also living in that state for some time (2003-2022). Sarat Babu, a retired Chemistry professor in Odisha, an alumnus of Ravenshaw College(Presently Ravenshaw University), and a member of Odisha Chemical Society (OCS), informed me about the 37th Annual conference of OCS to be held at Ravenshaw University between January 4-6, 2024. He also sent me a copy of the flyer for that event.As per the flyer, OCS is planning to celebratethe birth Centenary of its founder president (Late) Professor Mahendra Kumar Routon January 4th, 2024. In fact, I was studying M.Sc. Chemistry at Ravenshaw College during 1966-1968, when Prof Rout was one of my teachers. Learning this, as a member of the souvenir committee of the 2024 OCS Annual conference, Sarat Babu solicited an article from me in honor of Prof. Rout.

By hearing this, I felt privileged to contribute this article in honor of my teacher (Guru)Prof. Rout. It has been a very long time;but I still remember that he taught us two courses, AtomicTheory with a glimpse of Quantum Chemistryand Chemical Reaction Kinetics as part of the Physical Chemistry curriculum. Prof. Rout was a very disciplined teacher, always on time for his period. His method of teaching was through question and answer with full participation of the students in his class. He always explained the topics clearly and up to the point. At the time, he was also involved in his chemistry research with a big group of students, mainly in synthetic Organic chemistry and reaction kinetics.Being a disciplined teacher, he knew the boundary between a teacher and students, and yet was friendly with them. Because of his sincerity, skillful teaching and administration, everyone in the department was very respectful to him. Yet, he was also very kindhearted and helped many students in their need, even financially. Even today, I felt very lucky to be a M.Sc. student at Ravenshaw College and a student of Prof. Rout. In my time there, Prof. Rout was the head of the Chemistry Department at Ravenshaw College. I also remember some of my other teachers at that

time, namely, Prof. Bichitrananda Nanda, Prof. P.L. Nayak, Prof. Rabindranath Nanda and Prof. Gopabandhu Behera.

After my M.Sc., I joined as a lecturer in Stewart Science College in Cuttack, Odisha along with my classmate and Chemistry Gold Medalist Mr. Ashok Patnaik. Ashok was one of brightest students of our class and was one of the dearest students of Prof. Rout. Ashok could have gotten into Ravenshaw College as a faculty because of his credentials; but he chose to join Indian civil service after a year by resigning from Stewart College. However, in 1971, I moved to Indian Institute of Technology, Kanpur (IITK) to do my Ph.D. in Chemistry, then to Tata Institute of Fundamental Research (TIFR), Bombay for my post-doctoral. Thereafter, I joined newly established central University of Hyderabad as a Chemistry lecturer, from where, I got an opportunity to come to U.S.A. to join National Institute on Aging (NIA), one of the institutes of National Institutes of Health (NIH) in the state of Maryland as a Visiting Fellow. Because of my immigration issues I had to go out of NIA after two years to do research in other institutions. Finally, after nearly twenty years, I got the opportunity to come back to NIA as a Research Chemist. After working there for about nineteen years, I took retirement[1] in 2022.

Since after my Ravenshaw years, and then two years after that I moved out of Odisha to go to IITK, I did not have the opportunity to learn more about Prof. Rout. So,I thought of searching Google for his later accomplishments.Interestingly, I found an article compiled by Dr. S. Samal, the then President of OCSusing earlier writings of Prof. GopabandhuBehera on (Late) Prof. Rout[2]. Amazingly, I noticed that Prof. Behera also mentioned some of my observations of Prof. Rout in that narrative. From this, I learnt that Prof. Rout served as principal of three premier universities of Odisha in his life time. He was also an eminent scientist and researcher, a wonderful teacher, a successful educational administrator,university vice chancellor, and a kindhearted person. Truly, Late Prof. Routwas a very learned person, what is called *Vidwan* in Sanskrit. That reminds me of a Sanskrit sloka:SwadeshePujyate raja, VidwanSarvatraPujyate'. It means that a king is honored only in his own country, but one who is learned is honored everywhere. And truly, Prof. Rout was a very learned person. May his soul rest in peace forever. ■■■

1835 Palmetto Scrub Circle,
Port Orange, FL, 32128.
USA
Email: jgmohanty@wahoo.com

"The only true wisdom is in knowing you know nothing."

– Socrates

A Legacy of Learning: Prof. Mahendra Kumar Rout & My Ravenshaw College Days

Anusuya Choudhury

It is a great pleasure to learn that the Chemistry Department of Ravenshaw University is planning to celebrate the birth centenary of our beloved teacher, Professor Mahendra Kumar Rout, in 2024. A few months ago, I had the opportunity to read a book on his illustrious life (Karmayogi, thanks to Dr. S. Rout), written by many talented people, including his students. In my comments on the book, I shared my personal experiences with him as a teacher, researcher, and administrator. In this note, I would like to describe what I remember of his vision and student-centered activities focused on enhancing the quality of education and making Ravenshaw College a premier institution for research.

I joined Ravenshaw College in 1972 as a first-year I.Sc. student. As a student from rural Odisha, I was intimidated by the sight of such a prestigious college with many talented students and several teachers with unfamiliar teaching styles (to me, at first). Perhaps the most anxiety-inducing experience for me initially was attending the Wednesday 12:10 to 1:00 PM chemistry class in Chemistry Lecture Theatre 2 (CLT 2) with many of the state's most gifted and talented students. The teacher was Dr. Rout, the principal himself. He taught us the basics of chemistry and tried to remember our names. The daunting part, however, was that he would ask questions in the next class on the topics he had covered in the previous lecture. After a few weeks, I started to enjoy his class, and without realizing it, my love of chemistry was instilled in me. Our I.Sc. final results could have been better, with a decline in first-class students. Only two girls from our class passed with first division, and I was fortunate to be one of them. My love for chemistry grew immensely. Many thanks to Dr. Rout, our excellent teacher, for his influential teaching, which shaped my career path in chemistry.

During my BS and MS classes, my interactions with Dr. Rout became increasingly close and friendly. Dr. Rout's teaching style differed in that he focused on explaining basic concepts rather than discussing everything written in the book. By the evening, when a student reviewed his teachings for the day, she or he would find that Dr. Rout had covered an entire chapter of the book in the short duration of his lecture. As a result, students were under pressure to read the book in detail, think, and solve the problems associated with the concepts he taught earlier that day. His overall message was to read more and research to learn more. During my doctoral studies at the Graduate Center, City University of New York, I took many courses on different branches of chemistry from several professors. For one semester, the Graduate Center also hired two renowned professors from Princeton

University to teach organometallic chemistry. I attended those classes with my graduate advisor and other professors. After graduating, I joined the University of Pennsylvania, an Ivy League school, for postdoctoral research. There, I met a world-famous emeritus professor of medicinal chemistry. He allowed me to take an informal course with him, which sparked my interest in pharmaceutical companies.

Additionally, during my employment at DuPont-Merck Pharmaceutical and Johnson & Johnson, I had the opportunity to take many courses offered by the companies, taught by renowned professors and experts hired from various universities or retirees. Everywhere, I encountered a similar teaching pattern: fewer teaching hours, an emphasis on basic scientific concepts, and more pressure on students to read and think independently. Professor Rout's teaching style, similar to that of my teachers in the USA, had a truly international flair. I still remember a simple example he gave in our fifth-year class to illustrate the power of nuclear magnetic resonance (NMR) spectroscopy. He told us that mass spectrometry cannot easily distinguish between propyl and isopropyl groups.

In contrast, NMR spectroscopy can do so easily. Once, in one of our sixth-year classes, he asked himself aloud, "Did I prepare for this class to teach today?" He then answered his question and told us that despite his busy schedule, he read for two hours in the morning to prepare. Without accusing anyone, he said every teacher should read and prepare before entering the classroom.

Professor Rout also possessed a quality that set him apart from many other teachers: he was proficient at teaching multiple branches of chemistry. He taught us MS-level courses in both physical chemistry (dealing with math/physics-type concepts such as quantum theory and the Schrödinger wave equation) and organic chemistry (relatively closer to biology with less math) simultaneously. He also wanted his students to stay focused on learning and avoid unproductive activities. I remember once he told us that during a statewide student strike in the early 1960s, Ravenshaw College, along with other educational institutions, was closed. However, his organic chemistry special class was the only class in the state that ran regularly, demonstrating his fearlessness, courage, and dedication to teaching.

Dr. Rout was constantly engaged in the quest for knowledge, and his early research in India, followed by his postdoctoral training in the USA, made him a great lover of new ideas and innovations. In addition to his research, he also mentored a whole generation of chemists for their master's and doctoral work, who were greatly influenced by his scientific leadership and intellectual independence. During my days, the chemistry department of Ravenshaw College had three professors (including Dr. Rout). There is a historical reason behind it, which was disclosed in an article written by Prof. Rout, which appeared in leading Odia newspapers. After he was awarded the Doctor of Science (D.Sc.) degree, he wrote a letter directly to the chief minister (CM) of Orissa at the time to let him know that he was the first Odia to receive such a scientific research-based degree. He also requested the CM to elevate him to the position of a professor based on that achievement. Within two days, he received an answer from CM's office, followed by the promotion approval letter a week later. That was a merit-based promotion, and he didn't approach any political leader to influence the CM. Therefore, the chemistry department got a second Professorship position, and it didn't get eliminated after Dr. Rout became the principal. This position helped the career progression of other senior readers to become the number two professor in the department.

Apart from his state-level activities, he also knew many chemistry researchers in India personally and had served as a thesis examiner for outside students. Once, we were surprised to see a lady from south India with another elderly person entering our classroom along with Prof. Rout. He taught our class in his usual style in the presence of both the guests. After the class, upon inquiring in the department, we learned that she came for the final oral examination of her Ph.D. thesis since Dr. Rout couldn't find time to visit her university.

As the principal, he was in the stream of the continuous flow of administrative ideas. I can cite one example of his creativity here. In the book "Karmayogi," one distinguished author mentioned that while he was a student of Ravenshaw College, he borrowed a book from Dr. Rout on spectroscopy (authored by foreigners) for a few days. He made a hand-written copy of the text portion of the entire book for his reference. Many course-related books were not readily available in Odisha/India or were very expensive to buy at that time. International books with contemporary topics were necessary to change and modernize the courses. The school could afford to buy one or two copies of such books and place them in the Kanika Library. However, if someone borrows a book and keeps it longer, it won't be available to other students/teachers. To solve that problem, Dr. Rout built a new library (we used to call it a "study center") and ordered the transfer of all the critical books from Kanika Library to the new place. The significant difference was that a student could go to the study center and borrow the desired book only for a few hours while sitting in the library. The new library used to remain open up to 9 p.m. The idea behind building such a library was highly innovative and was very helpful to the students/faculty members.

For any Principal, it is an administrative challenge to control Ravenshaw College because of its location. The college is bordered on nearly all sides by Cuttack's commercial and residential areas. There were many non-student hooligans in the off-campus area trying to intervene in day to day activities of the college. The second challenge was maintaining the vast college and campus, home to many students and faculty members. Despite such challenges, Professor Rout ably addressed all challenges and became one of the most successful administrators in Ravenshaw College's history. On one occasion, during a college union function, a non-student-outsider came near a legendary ex-chief minister/union minister and pushed him from behind while he was addressing the students. The guest was about to fall, but he could somehow managed to control himself. The situation was chaotic, but Dr. Rout took over the stage and appealed to the students to remain calm and also signaled his faculty friends to help him to make the situation normal. As a result, within a few minutes, normalcy returned, the guest started speaking again, and the police silently took care of the culprit. On another occasion, a group of angry students from the west hostel complained to Professor Rout at his residence about a particular student who was regularly making disturbances during study hours. He told us that he solved the problem in just one minute. Professor Rout asked the students to sign a written resolution against the culprit, enabling him to expel the student from the hostel. This is an excellent example of his student-friendly decisions.

Dr. Rout took great care to maintain the picturesque look of the college buildings, particularly the main red building with its colonial British architecture, flanked by two

hostels, the Kanika library, and other structures. The spacious open space with eye-catching landscaping around the sundial area was awe-inspiring to visitors. With his creative and careful planning, he selectively utilized open spaces for new buildings, preserved land at logical locations for future expansion, and maintained symmetry on campus to preserve beauty. Dr. Rout's visionary thinking set an example for future college administrators. Despite occasional hooliganism by outsiders, the campus remained peaceful for students to live and learn during his tenure as principal.

Prof. Rout, who had a sincere love for his students, entered our classroom sometime in 1977 or 1978, looking very happy and cheerful. Prof. Rout typically spent the first five minutes of class telling us about outside things before teaching chemistry. That day, he excitedly informed us that one of his former students had been selected to become a professor and head of the chemistry department at another university in Odisha. He enthusiastically took extra time to tell us about his former student, and I was pleasantly surprised to see him so happy —a rare sight. He was also generous in helping students with financial issues. For example, if a needy student approached him because their merit-based national scholarship funds hadn't arrived from the government on time, he would give them money from the college fund and reimburse it from the scholarship money later. He helped many deserving students afford to stay in the city and pursue their future careers by providing them with temporary employment at the college. He wrote outstanding student recommendation letters and was always on the giving side. Once, he served as a job interviewer. He told us in class that he asked candidates about their preparation the night before so he could focus on those topics. He explained that he wanted to evaluate candidates' strengths rather than judge them on their weaknesses. Very few job interviewers have such idealistic views.

Dr. Rout was deeply attached to Ravenshaw College, both as a student and as a faculty member. I remember when he welcomed an ex-Harvard professor and politician to the college's old big hall in 1977 or 1978. In his opening address, he praised the college, saying, "All the chief ministers of the state are Ravenshawvians." The guest wittily responded, "And the future chief ministers of Orissa." Dr. Rout also shared historical facts about the college with us, such as the old big hall serving as the state legislative assembly for some time and a famous freedom fighter hiding in the west hostel during the Quit India Movement.

In conclusion, Professor Rout was a great teacher, student-loving, and kind-hearted person with a passion for scientific and administrative innovations. He served as the longest-serving principal of Ravenshaw College during our time. In my opinion, he was one of the most incredible Odisha educators of the twentieth century. To ensure that future generations have a forever memory of Prof. Rout and can learn from his contributions, the Odisha state government or people should consider building a memorial to him. ■■■

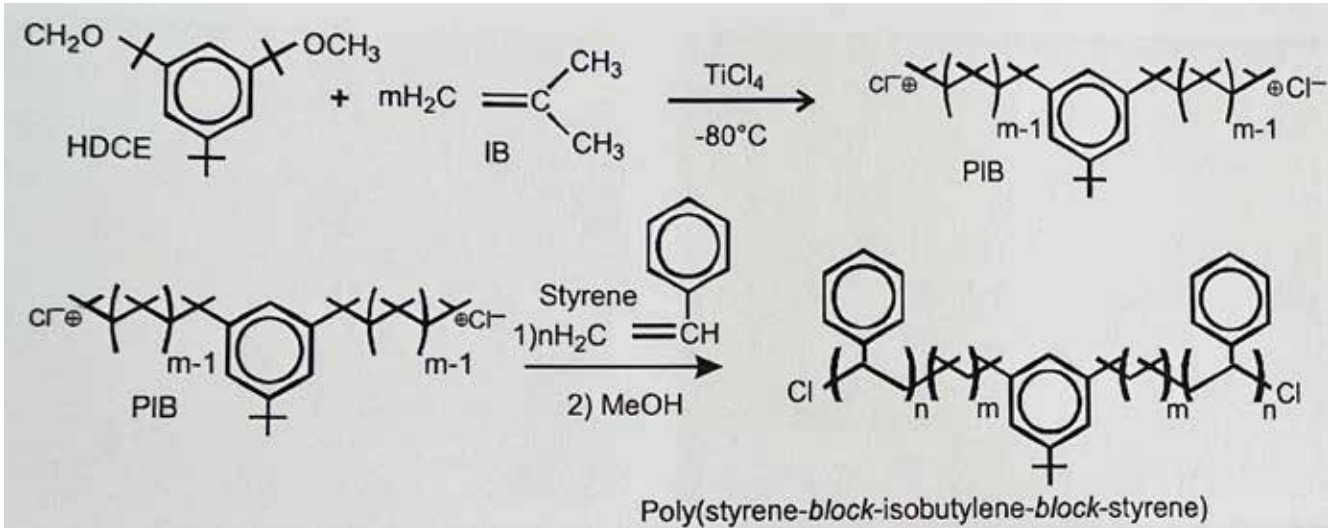
Retired Scientist
Churchville, Pennsylvania (USA)
Email: anucmyname@gmail.com

Reminiscences

Dr. Munmaya Mishra

I am honored to be asked to write something regarding Prof. Mahendra K. Rout who was a revered teacher, a scientist, a fearless leader, and a good human being. Also, I am pleased to extend warm greetings to all participants at the annual conference of Odisha Chemical Society & National Conference on Molecules to Materials (MTM-2024) for Prof. Rout's Birth Centenary celebration.

I am really fortunate to be part of then Ravenshaw College (now Ravenshaw University) during the late 1970's to early 80's when Prof. Rout was there. Although there are many, I would only mention one interesting encounter with him. Truly he was a great organic chemist (numerous noteworthy contributions in the field) with extreme curiosity and tremendous memory power. I came to the USA in early 1982 and after a year returned to see my family in Odisha. I was then returning back to USA in March 1983 and waiting at the Bhubaneswar airport. Interestingly, I met Prof. Rout (he was at the airport to see-off his relatives) and greeted him of course. [Fun Fact: He was wearing his typical WHITE trouser and WHITE shirt - almost all of the times he wears white]. He addressed me by my name and asked about few other things (I was really shocked and surprised). Also, he asked me in Odia (translated here): what kind of research in polymer I was involved with? I had to describe in 5 – 10 minutes as the flight was ready for security check. I vividly remember that he listened intensely and even asked a question then wished me the very best. Eventually the work was very successful and still in clinical applications around the world.



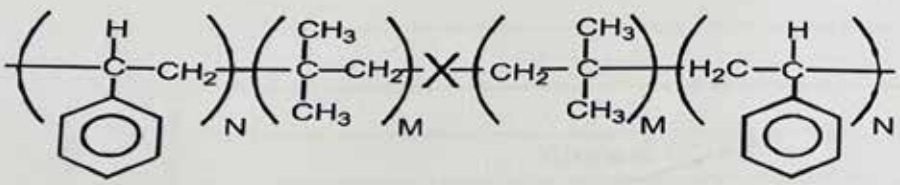


Fig. 4. Schematic of poly(styrene-*block*-isobutylene-*block*-styrene) ("SIBS"), where $N/(M+N)$ for biomedical application is generally 0.05–0.50. X is the residue of the hindered dicumyl ether initiator (see Fig. 6).

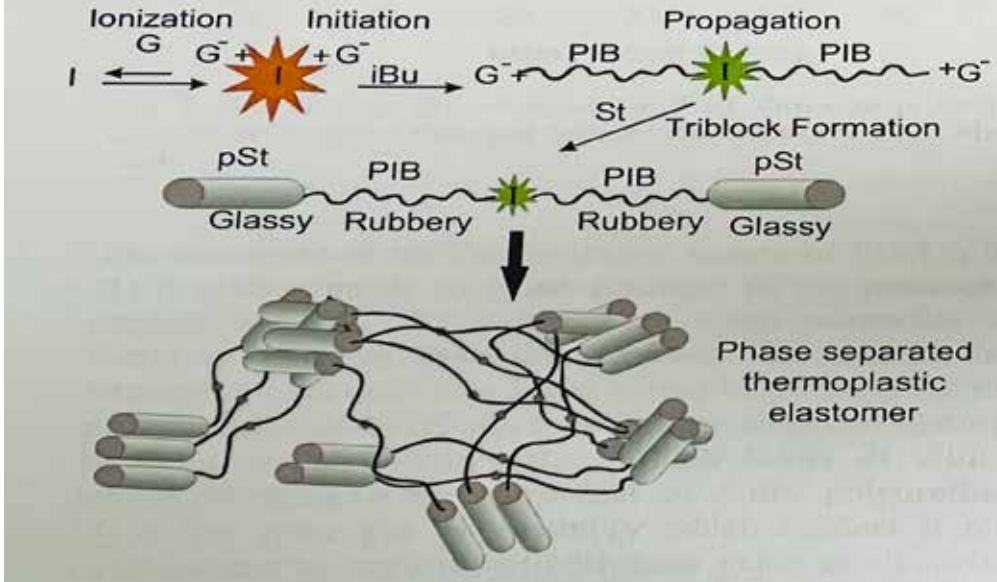


Fig. 5. Cartoon of the synthesis stages of SIBS, showing ionization, initiation, propagation and block formation.

I am taking the opportunity to dedicate this work to Prof. Mahendra K. Rout in this important occasion. Not only we invented the carbocationic living polymerization of olefins but also the innovation (application of the same in drug eluting stent - DES) saving lives every day.

The Discovery of Tertiary Ether / Lewis Acid Initiating Systems – Living Polymerization of Isobutylene, Styrene, etc. and the synthesis of "SIBS" via living cationic polymerization. The application of "SIBS" as stent coatings for drug eluting stent clinical applications (Ref: Kennedy and Mishra: US Patents 4929683A & 5066730A; Mishra: Review - Ind. J. of Technol. 31, 197- 203; Pinchuk et al., Biomaterials 29, 448-460). ■■■

Retired, Altria Center for Research & Technology
601 E Jackson St., Richmond, VA, USA

Editor-in-Chief:
International Journal of Polymeric Materials and Polymeric Biomaterials
Polymer-Plastics Technology and Materials
Designed Monomers and Polymers

Email: munmaya@gmail.com

A Tribute to My Beloved Teacher Prof. M. K. Rout : Reminiscence of the Bygone Days

Prof. Sashi Satpathy

Though I was a student of Physics, Professor M. K. Rout was my role model and perhaps the most inspiring teacher of my career! I did have Chemistry as a Pass subject in B. Sc. and was taught by Sir for the entire three-year period 1972-1975 that I was at Ravenshaw.

I first met Sir in the Principal's office in 1972, introduced by my father Late Dr. Ladukeswar Satpathy, when I joined Ravenshaw College for my B. Sc. Degree. My father knew Sir through Dr. Savitri Rout, his wife, who was a contemporary of my father and a fellow Sanskrit Professor. Though Sir and my father talked for quite a while in his office, I pretty much sat in awkward silence, feeling quite timid in front of the staggering personality. He would know me a bit more only after a year.

Even though Sir taught me Organic Chemistry beginning from the first year, nothing much happened during my first year in Ravenshaw as I was generally a poor student of Chemistry and quite non-remarkable in his class. Fast forward one year, and one day he calls me suddenly as I was passing by his office. I didn't realize at first that he was calling me and I was not even sure if he knew me at that point. It turned out that he recognized my name in the newspaper from the results of the 1st year degree Science exam and remembered me very well from our first meeting a year ago. He wanted to congratulate me on securing a top-ten rank and was very happy.

I stayed at the West Hostel during my Ravenshaw days. From the West Hostel, you could see his office in the Chemistry department very clearly. It would be quite late in the night and the light from his office would be visible amidst the eerie darkness of the Ravenshaw quadrangle. I would sometimes walk by his office secretly just to see what's happening inside and I would see a man sitting on his desk and discussing something or other with someone who appeared to be his research student. It was very inspiring, to say the least: A man, after teaching classes and after his taxing administrative duties as a Principal, toiling hard in the night on his research, though he didn't really need to do it! He seemed to enjoy everything he was doing, and he suddenly became my role model that propelled me towards a career in Science.

I mentioned already that I was not so great a student of Chemistry. I dreaded Sir's Organic Chemistry class. He would ask students to study a chapter prior to the class and basically would teach through asking questions. He would ask questions to students selected randomly. "You! you, the second student from the third row in the back, stand up," he would say. You could not hide from him by sitting in the back benches, and if you couldn't answer, you would remain standing until someone else did to his satisfaction. Sometimes a large part of the class would be standing, and it would be embarrassing when my fellow Physics Honors classmate Sarmistha Sahu, who was

also known to be very good at Chemistry, would answer the question correctly. After making some thirty male students stand up for not being able to answer his question, he would turn to Sarmistha, just to shame the male students. I was so afraid of his class that I started bunking his class.

After about a month, he catches me again walking in front of his office and summons me inside. I could not believe that he noticed that I have been absent in his class. The exchange that followed is forever etched in my memory.

"So, why were you absent in my class," he asks in his usual stammering voice.

"Sir, I have been sick from cold and fever," was my non-convincing lie.

"You have been sick for the last five classes? From cold and fever?"

My jaw dropped. He has been marking that I have been absent in his class not just once, but for five weeks in a row!! It was exactly five weekly classes that I had missed! And, incidentally, it was a class of some 250 students, both Pass and Honors combined. I was speechless.

There was no escape from him. From then on, I attended his classes religiously (I had no choice) and tried to study the subject. It was very difficult at first as Chemistry has never been my cup of tea. But, Sir had somehow confidence in me that I could learn the stuff and he genuinely wanted to help me. It was very difficult at first, and Sir would hammer me with questions every single class just to make sure that I studied and came prepared. There was not a single class in which he would spare me, and I dared not remain absent from his classes anymore. Initially, I was totally lost, and slowly as time passed, I gained traction and began to be able to answer his questions. He genuinely cared for me and had confidence that I could learn that stuff. He would often enquire from my Physics professors how I was doing. Thanks to him, I became reasonably good at Organic Chemistry under his watchful eyes.

I was good already in Physical Chemistry and now became quite fine in Organic Chemistry as well. It was the Inorganic Chemistry that remained my nemesis. I could never remember all the stuff I was supposed to remember, for example, at what temperature and under what catalyst, a reaction would go. For a time, I used Platinum as the catalyst in all my answers, and I would be right half of the time. For my B.Sc. final exam, I decided to study only Physical and Organic Chemistry, ignoring Inorganic Chemistry all together. In each theory paper, there would be eight questions out of which you would need to answer five. I reasoned that, without Inorganic Chemistry, out of the two theory papers combined, I would miss just one question out of ten. I was a Physics Hons. student and marks in Pass subjects did not matter in determining the ranks, just that you need to secure the minimum pass marks, which was just 30%.

The funny thing is that one of the Inorganic Chemistry questions in the final exam asked the student to write down the Periodic Table!! What a senseless question. The student is expected to remember all the elements starting with Hydrogen, Helium, Lithium, etc. all the way up to Uranium! Anyway, I realized that the log tables I was carrying with me had the Periodic Table in it as well. We were allowed to carry our own log tables those days, and I carried one to all exams, which simplified mathematical calculations.

With revengeful delight, I quickly copied down the Periodic Table on my answer book, before one of the invigilators Professor Baishnab Charan Singh realized it and took away the log tables, replacing them with the official ones supplied by the College. It did not matter to me anymore, as my job was already done. Thus, I got my five questions in that paper as well, all four questions from Organic and the Periodic Table question from the Inorganic. I ended up becoming the University Best Graduate that year.

After my absenteeism episode and the deliberate badgering with questions in his class that followed, Sir became my well-wisher and guide for my career. I already had been his ardent admirer. Every year, the top student from Physics in Ravenshaw was going to IIT Kanpur from my previous batches including Lalit Kumar Panda (who tragically passed away in a road accident after his PhD from Stanford University) and Gokul Chandra Pati (who retired as a Chief Secretary in the Odisha Government). So, Sir suggested I go there as well and I followed his suggestion. In IIT, Kanpur, they give you provisional admission, but you have to produce the B.Sc. certificate within a certain period of time. Utkal University was notoriously late in publishing their results and I was becoming nervous. I wrote a letter to Sir wanting to know when he thinks the results might be published, as he was quite involved in the affairs of the Utkal University as well. In response, he sent a telegram to the Head of the Physics Department, Prof. R. Srinivasan, vouching for me and asking him not to give me trouble.

I never saw Sir after I left Ravenshaw, although I did visit the College several times with the intention of seeing him. Every single time he was busy with some function or other, and I did not feel appropriate to disturb him. I heard about his terminal illness from my father, who would frequently visit him while he was sick. It was my father who broke the sad news of his demise to me over the telephone. I was devastated. My only repentance is that I never expressed to Sir how much I loved him and admired him and tell him how his work ethics has been copied with ardent admiration by someone who would secretly pass by his office in the Chemistry Building many times late in the night.

On the occasion of his birth centenary celebration, my deepest obeisance to my beloved teacher, well-wisher, and role model, and to a stalwart academician in the academic landscape of Odisha, one who would be difficult to replace in a long time to come! ■■■

Curators' Distinguished Professor
Department of Physics University of Missouri Columbia,
MO 65211, USA
Phone: +1 573 268 6016,
Email: satpathys@missouri.edu

A Brief Profile of the Author:

Professor Sashi Satpathy is a Curators' Distinguished Professor of Physics and a former Physics Department Chair at the University of Missouri, USA. He obtained the B.Sc. (Physics) degree from Ravenshaw College in 1975, being the University Best Graduate, M.Sc. degree from IIT, Kanpur, and the Ph.D. degree from the University of Illinois in 1982. After post-doctoral work at the Max Planck Institute, Stuttgart and Xerox Palo Alto Research Center, California, he joined the University of Missouri in 1987. He has over 150 published papers and has mentored some twenty Ph.D. students and post-docs. He is a Fellow of the American Physical Society, the American Association for the Advancement of Science, and the Institute of Physics, London, and he is a Patron of the Odisha Physical Society. He has strong collaboration with many scientific institutions around the world including a Mercator Professorship in the past at the University of Saarbruecken, Germany. For the last several years, he is deeply involved in collaborative work at IIT Madras under the Fulbright-Nehru Fellowship and the VAJRA Fellowship of the Government of India.

My Revered Teacher: Prof. Mahendra Kumar Rout

Surendra Mahapatro

First, I am grateful for this opportunity to reflect on my two years at Ravenshaw College (1966-68) for the 100-year birth centenary celebrations of Late Professor Mahendra Kumar Rout (M. K. R.) and his distinguished and remarkable tenure at Ravenshaw College. Professor Rout was a visionary and pioneer of chemical education in the state of Odisha. His stellar leadership and vision brought national and international visibility to Ravenshaw College Chemistry department. On a personal level, at his core, he had a deep sense of empathy and concern for his students.

My story is an average story, but it has been possible first due to my parents and their sacrifice and also my friends, teachers, mentors, and colleagues in the past 50 years of my journey since my graduation from Ravenshaw College. My first interest was to study history. My interest in chemistry was mainly due to my Khallikote Higher Secondary school teacher (P.S. N. Patra) who demonstrated in the class room, oxygen synthesis from the thermal decomposition of potassium chlorate catalyzed by MnO_2.

After completing my Chemistry Honors at Khallikote College (then affiliated to Utkal University), I had the option to study M.Sc. at Khallikote College (it was a newly started program, under the headship of Professor P. S. Radhakrishnamurti) or move to Ravenshaw College. My brother's class mate Akhil Krishna Panigrahi (A. K. P.; I call him affectionately Akhil Bhaina), had already completed his M. Sc. at Ravenshaw College in 1965, and he convinced my parents to send me to Ravenshaw. At Khallikote College, I had caring and knowledgeable Teachers-P. V. Jagannath Rao, Ms. Padmavati, Ganesh Panigrahy and V. S. R. Gupta among others. My first year at Ravenshaw college was uneventful except that I was in a class of 32 students. I was lucky to get a room at the New Hostel which I shared with three undergraduate students. In addition to getting New Hostel class mates (Ashok Patnaik, Ramakanta Mishra, Lokanath Panda and Nrusingha Khandwal), I became friends with Bijaya Panda, Krushna Samantaray, Banka Bihari Das, Basanta Parida, Digambar Satapathy, Ramesh Parida, Mrutunjaya Satapathy, Jay Gopal Mohanty, Nirod Mohany and Rama Chandra Patnaik among others. I found myself among very bright classmates; Ashok Patnaik and Bijaya Panda were sharp on their feet and because of their excellent calculus background had deeper understanding of physical chemistry principles including quantum mechanics; Nirod was superb in experimental skills. I do not recall ever exchanging many words with any one of my female class mates; in later years, during the 1999's, I had the opportunity to invite Subashini Lenka to Regis University for a short visit.

As Professor and Head of the Department, Professor Rout was in absolute command of the Department. The Chemistry Department stood out for its discipline, faculty engagement in scholarship with students and on-time classes without any cancellation. I recall that Professor Rout was a very handsome middle aged person; elegantly dressed with a white dress shirt and a tie. Without using class notes, he could lecture the entire hour on modern organic chemistry -resonance, hybridization, carbocations, molecular rearrangements to S_N1/E1 and S_N2/E2 reactions. Professor Rout used to take the first class period on Mondays starting at 10:30 am. The few times he pointed his hand toward me (sitting on the back benches) with a question, I could not answer to his satisfaction. I dreaded Mondays.

At Ravenshaw, we had outstanding professors including (M. K. R.),- Drs. Rabi Nanda (senior), Gopabandhu Behera, Pranabandhu Tripathy, Gokulananda Mahapatra, Padmalochan Nayak and

Anadi Charan Dash. I do not recall having one-on-one meetings with any one of my 5th year professors in their individual office space; there was no personal interaction. I realize that it was perhaps not the same with my other classmates. The 5th year laboratory (practical) experience was less than exciting; the labs were a bunch of canned-cook book recipes with no evident connection to what was happening at the intimate molecular level and without any relevance to society. My best recollection is that we had no access to text books. I performed poorly and missed 60 % of total marks (less than first class). In my sixth year, we had physical chemistry (thermodynamics, kinetics and electrochemistry). In addition, in lieu of a special paper we could opt for participation in a M. Sc. thesis by research (200 points). I was fortunate to be selected as one of four students for a research project under Professor Rout; it could have been due to my rank in the Utkal University (second class Honors with distinction and fourth rank in Utkal University) and Akhil Bhaina (who returned to the Ravenshaw College for his Ph. D. under M. K. R.) may have advocated for me. For my 6th year research project, I worked under the day-to-day supervision of Prakash Kumar Mahapatro (P. K. M.) who was a PhD scholar under M. K. R. As a person, P. K. M. was a fine, gentle and caring individual who took personal interest in me and in my learning. My project was the kinetics of bromination of a series of substituted *chalkones* that are readily synthesized from the aldol condensation of benzaldehyde with substituted acetophenones. It was exciting to look at fine needle-like crystals of chalkones. For the first time, I read a chemistry journal; P. K. M. rolled up his sleeves and showed me how to perform a synthesis which rekindled my interest in chemistry. In addition, one 6th year experience that I cherish was the privilege to drink tea in the afternoon prepared by Giridhari; it was superb; in later years during my sabbatical visits to Oxford (known for their afternoon tea tradition), I was nostalgic about Giridhari's tea (strong and fresh smell of tea with a touch of milk).

At the end of the sixth year, all M. Sc. Thesis students were required to do an oral presentation of their scholarly work before peer students and faculty. I was fortunate that my presentation was appreciated and noticed by M. K. R. and other professors. It was a turning point for me. It certainly helped me to secure a first division (my rank was the lowest among those who passed with first class out of 22 students). In retrospect, I think that I was at the border-line of a first class and that Professor Rout gave enough marks for my Thesis which pushed me over the border line to secure a first class. On Professor Rout's recommendation, I attended two interviews for a lectureship- first at Science College, Bhadrak and then at Nimapada College; I was unsuccessful at both places.

Since leaving Ravenshaw in 1968, in the past 55 years, my life has taken several twists and turns. Three years at SKCG College (Parlakhemundi) as lecturer, my marriage to Swarna (Bijaya's younger sister), a brief unsuccessful stay in Northern Ireland (less than a month at Queens University of Belfast to study textile/industrial chemistry). As strange as it may sound, I had to return to Berhampur University to study for my Ph. D. under Professor P. S. Radhakrishnamurti; who generously accepted me despite the fact that I had left Khallikote College for Ravenshaw for my M. Sc. My childhood friend Prafula Mishra helped me to approach Professor Radhakrisnamurti. After completing my Ph. D. and a brief period of lectureship at Berhampur University, I spent postdoctoral years at University of Illinois at Chicago, Hope College; (Holland, Michigan), Trinity University (San Antonio), Texas and University of Texas Health Science center San Antonio, I joined Regis University faculty in 1989. Teaching undergraduate chemistry especially in a liberal-arts catholic -Jesuit university was both challenging and rewarding. The Regis University core mission "How ought we to live?" has guided my teaching- seeking relevance of chemistry to society and our immediate environment.

Looking back, my life's trajectory changed during my 6th year because of the opportunity for a research project under the guidance of professor Rout. In my past 33 years of teaching, at the end of each semester, when it was my call to submit final grades for my students, I have always struggled as to where to draw a line between letter grades (in the American system) not influenced by bias and prejudice and to apply the same basic standard of fairness to all of my students. I always have a sense that Professor Rout is watching me from above reminding me that I should be true to myself. ■■■

Professor Emeritus,
Regis University,
3333 Regis Blvd.,
Denver, Colorado 80221, USA
Email: smahapat@regis.edu
Ph. No.: 1-303-458-4046

ଡଃ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ:
ସାତ ଦରିଆପାରିରୁ ଏକ ସ୍ମୃତି ତର୍ପଣ

ଶଶଧର ମହାପାତ୍ର

ତୁମେ ଥିଲ ସୀମାହୀନ ଆକାଶରେ ତୋଫା ଜହ୍ନଟିଏ
ତୁମ ଛାତ୍ରଛାତ୍ରୀ ଅଗଣିତ ତାରା
ତୁମେ ଥିଲ ଅଥଳ ମହୋଦଧିଟିଏ
ସେମାନେ ସାଜିଥିଲେ ଢ଼େଉ ଦେହସାରା
ଖୋଜନ୍ତି ତୁମରି ସାହାରା
ତୁମେ ଆଜି ଏ କବିର କବିତା
ସେମାନେ ଶବ୍ଦର ପସରା
ସବୁବେଳେ ତୁମର ସେ ହସହସ ମୁହଁ
ଦିଶେ ସଦା ତୋରା ତୋରା

"ମହେନ୍ଦ୍ର" ନାମଟି ତୁମ
ଥିଲ ଉଚ୍ଚ ମହେନ୍ଦ୍ରଗିରି ସମ
ସ୍ୱପ୍ନ ଦେଖୁଥିବା ଛାତ୍ରଛାତ୍ରୀ ପାଇଁ
ତୁମେ ଥିଲ ତାଙ୍କ ପିତା, ଗୁରୁ ଭାବେ ଥିଲ ହିଁ ଉତ୍ତମ
ଖଣ୍ଡ ମଣ୍ଡଳରେ ଜଣା ଥିଲା
ତୁମର ସେ' ନାମ
ତୁମ ଠୁଁ ଶିକ୍ଷା ଓ ଆଶୀଷ ପାଇ
ଜଗତରେ ପରିଚିତ ଆଜି ତୁମ ଛାତ୍ରଛାତ୍ରୀ,
ଗବେଷକ କେତେ, ଗବେଷିକା
ତୁମ ଜନ୍ମ ଶତବାର୍ଷିକୀରେ
ଝୁରୁଛନ୍ତି ତୁମକୁ ହିଁ ଏକା ଏକା।

ହେ କର୍ମଯୋଗୀ !
କୂଟ, କପଟକୁ ତୁମେ କରିଲ ଆକଟ
ଛଳ, କଉଶଳ ସବୁ ଭୂଲିଗଲେ ବାଟ
ଶିକ୍ଷକତା ଥିଲା ପେଶା
ଗବେଷଣା ଥିଲା ନିଶା
ଇତିହାସ ରଚିଗଲ ବିଜ୍ଞାନ କ୍ଷେତ୍ରରେ
ତୋଷକଲ ସମସ୍ତଙ୍କୁ
ଭଲପାଇବାରେ, ତୁମ ଆଚାର ବ୍ୟବହାରରେ
ବାନ୍ଧିଥିଲ ସମସ୍ତଙ୍କୁ
ମମତାର ଡୋରୀରେ
ହେ ଛାତ୍ର ବତ୍ସଳ ମହେନ୍ଦ୍ର !
ତୁମର ଜନ୍ମ କି ମାହେନ୍ଦ୍ର ବେଳାରେ ?
ସିଦ୍ଧହସ୍ତ ଥିଲ ତୁମେ
ସାଧନା ଓ ସିଦ୍ଧିରେ
ଆଜି ଲିପିବଦ୍ଧ ତୁମ ନା'
ରେଭେନ୍ସା କଲେଜର କାନ୍ଥରେ ବାଡ଼ରେ।

ତୁମେ ଥିଲା ବେଳେ
ସ୍ମୃତି ସବୁ ଥିଲା କେତେଯେ ମଧୁର
ତୁମେ ଗଲା ପରେ
ଅସଜଡ଼ା ହେଲା ତୁମ ଲାବୋରାଟୋରୀ ଘର
ସ୍ୱପ୍ନ ସବୁ ହେଲା ଚୂରମାର
ନୀତି ଭ୍ରଷ୍ଟ ହେଲେ ସର୍ବେ
ନିଜ ସ୍ୱାର୍ଥେ ହେଲେ ଜରଜର

ହେ ଅମୃତ ସନ୍ତାନ !
ଆମକୁ ଦିଅ ଦିବ୍ୟଜ୍ଞାନ
ସୁଧୁରି ଯାଆନ୍ତୁ ଲୋକେ
ତୁମ ପାଇଁ ପରିଚୟ ପାଇଥିବା ରେଭେନ୍ସା କଲେଜ
ହେଉ ପୁଣି ମହାନ। ହେଉ ପୁଣି ମହୀୟାନ।

ହେ ମହାତ୍ମା !
ଜନମିଥିଲ ଏ' ପବିତ୍ର ଓଡ଼ିଶା ଭୂଇଁରେ
ତୁମେ ନାହଁ ଆଜି ଏହା ଚିରନ୍ତନ ସତ୍ୟ
ଚାଲିଗଲ ଏକ ଅଫେରା ରାଇଜକୁ
ଆଉ କେବେ ଫେରିଲନି,
ଚାଲିଗଲ ଯେଉଁଠିକୁ
ଡାକିଲେ ତୁମକୁ କିଛି ଶୁଭେନି,
ରହିଗଲ କେବଳ ସମସ୍ତଙ୍କ ସ୍ମୃତି ପଟଳରେ,
ତୁମେ କେବଳ ସ୍ୱପ୍ନରେ
କେବେ କେବେ ଆସ
ପାଖରେ ବସ, ହସ
ତୁମକୁ ମନେ ପକାଇବୁ ଆମେ
ସବୁଦିନ, ମାସ, ବର୍ଷ
ଆଉ ଏ' ଜନ୍ମ ଶତବାର୍ଷିକୀରେ
ତୁମ ପାଇଁ ଆଜି ଏ' ଲୋତକ ଭରା ଶ୍ରଦ୍ଧାଞ୍ଜଳି
ଦେଉଅଛୁ, ଦେଉଥିବୁ ଆଖିକୁ ପଖାଳି
ଈଶ୍ୱରଙ୍କ ନିକଟରେ ଆମର ଏ' ଅଳି।

ହେ ମହାନୁଭବ !
ବଗିଚାର ମାଳିଭଳି ତୁମେ ଦିନେ ନିଜ ହାତରେ
ଯେଉଁ ବୃକ୍ଷ ସବୁ ଲଗେଇଥିଲ,
ପାଣି ଦେଇଥିଲ, ଯତ୍ନ ନେଇଥିଲ
ଏବେ ସେ ଗଛରେ ନାନା ଫଳ ଫଳିଲାଣି,
ହେଲେ ତୁମେ ନାହଁ ଦେଖି ଖୁସି ହେବାକୁ।
କେହି ତୁମର ମହିମା ମଣ୍ଡନ କରିବାର ଶୁଣିବାକୁ,
ତୁମର କରୁଣା ଓ ଆଶୀର୍ବାଦ ପାଇ
ତୁମ ଛାତ୍ରଛାତ୍ରୀ ପିନ୍ଧିଛନ୍ତି, ସୁନାର ମୁକୁଟ
ପାଇଛନ୍ତି ମାନ ସନମାନ, ଉଚ୍ଚାସନ
ଗଳାରେ ଗଜରାର ହାର
ପାଇଛନ୍ତି ନାନା ପୁରସ୍କାର
ହେ କାଳଜୟୀ, ହେ ଯୋଗଜନ୍ମା ମହାପୁରୁଷ !
ତୁମେ ବଂଚିଅଛ, ବଂଚିଥିବ
କାଳରୁ କାଳାନ୍ତର
ତୁମେ ମଣିଷରୂପ ଧାରଣ କରି ଜନ୍ମିଥିବା ଈଶ୍ୱର।

ହେ ବିଶ୍ୱଗୁରୁ !
ତୁମ ଛବି ଦିଶିଯାଏ
ତୁମ ନାମ ଧରୁଧରୁ
ତୁମକୁ କୋଟିଏ ଜୁହାର
ତୁମେ ନଥିଲ କେବଳ ଗୁରୁ
ତୁମେ ଥିଲ ସମସ୍ତଙ୍କ ପାଇଁ ପ୍ରଭୁ ପରମେଶ୍ୱର
ଭଜୁଅଛି, ଜପୁଅଛି ମୁଁ ତୁମ ଯଶ କୀର୍ତ୍ତି
କରି ଗଳା ମାଳି
ପାରୁ ନାହିଁ କଳି
ଯେତେ ଭାବିଲେ ବି ମିଳୁନାହିଁ ତୁମପାଇଁ
ଭାବପୂର୍ଣ୍ଣ ଶବ୍ଦ
ସେଥିପାଇଁ ମୁଁ ଦୁଃଖିତ ଓ ସ୍ତବ୍ଧ
ନିଅଣ୍ଟ ପଡୁଛି ଶବ୍ଦ
ଆଙ୍କିବାକୁ ସେ' ବିଶାଳ ଚରିତ୍ର ତୁମର
ପାଉନାହିଁ କୂଳ କି କିନାରା
ହେ ମହାତ୍ମା !
ମୋତେ କ୍ଷମା କର।

■■■

୨୧୦୫ ହିଡେନ୍‌ଭ୍ୟାଲି ଲେନ୍, ସିଲଭର ସ୍ପ୍ରିଙ୍ଗ୍,
ମ୍ୟାରିଲାଣ୍ଡ-୨୦୯୦୪, ଯୁକ୍ତରାଷ୍ଟ୍ର ଆମେରିକା
ଫୋନ୍-୩୦୧୮୮୭୭୦୦୨
Email: smohapatra318@yahoo.com

BIRTH PLACE TO WORK PLACE

Ancestral House & Birth Place of Prof. M.K. Rout at Kacheri Bazar, Naripur, Bhadrak

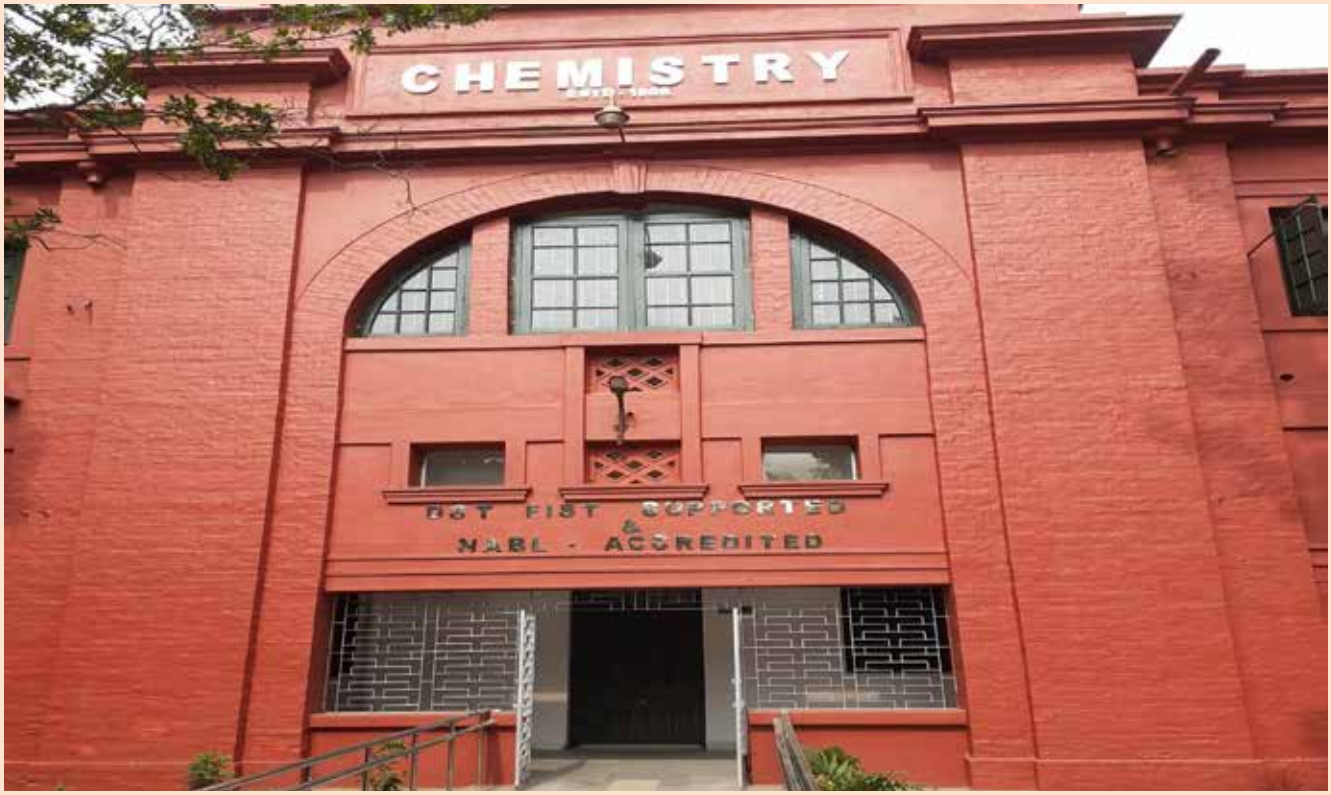
Zilla School, Bhadrak where Prof. M.K. Rout had his Schooling

Ravenshaw College, Cuttack where Prof. M.K. Rout had his Under Graduate Studies in Chemistry

Ravenshaw Convention Centere, Seven Pillars of Wishdom Venue of Prof. M.K. Rout Birth Centenary Celebration-2023

Patna University where Prof. M.K. Rout had his Post-Graduate Studies in Chemistry

Brandeis University, USA where Prof. M.K. Rout carried out Advanced Research in Chemistry



Department of Chemistry, Ravenshaw University, Cuttack (Front View)
Work Place of Prof. M.K. Rout

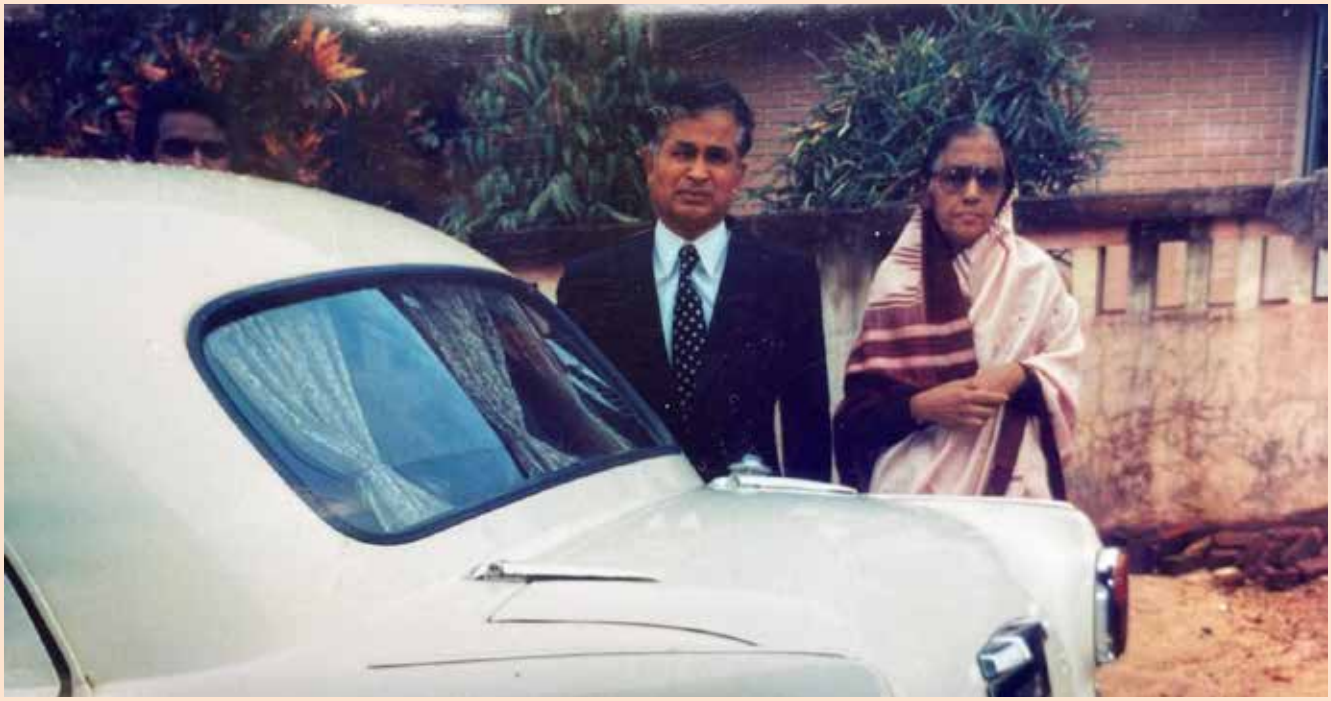
Department of Chemistry, Ravenshaw University, Cuttack (Rear View)
Work Place of Prof. M.K. Rout

Official Residence of Prof. M.K. Rout inside the campus of Ravenshaw University, Cuttack

Official Residence of Prof. M.K. Rout inside the campus of Ravenshaw University, Cuttack (Now converted into University Dispensary)

FAMILY ALBUM

Sahid Nagar Residence of Prof. M.K. Rout in Diwali Night



Prof. M.K. Rout with his wife Dr. (Mrs.) Savitri Rout in front of 468 Sahid Nagar in 1980 while he was Vice Chancellor, Utkal University

Prof. M.K. Rout with Close Family Members

Prof. M.K. Rout with his daughter Dr.(Mrs.) Anuradha Rout in New York

Prof. S.P. Rout & Dr. (Mrs.) Dipika Patnaik (Son & Daughter-in-Law of Prof. M.K. Rout)

Mr. Amit Prakash Rout, Son of Prof. S.P. Rout & Dr. (Mrs.) Dipika Patnaik & Grandson of Prof. M.K. Rout & Dr. (Mrs.) Savitri Rout

Dr. Dipika Patanaik with her Son Amit Prakash Rout

**From Left to Right: Prof. M.K. Rout's Grand Daughter-in-Law Carrie,
Great Grandson Sam & Grandson Siddhartha**

From Left to Right: Dr.(Mrs.) Savitri Rout, Mrs. Navanita Patnaik (Wife of Dr. Birendra Kumar Patnaik. She is MSc Chemistry-1966 from Ravenshaw College. IT Consultant in Pharmaceutical Industries. She is Niece of Prof. M.K. Rout), Mr. Nick Patanaik (Standing close to her mother Mrs. Navanita Patnaik. He is Attorney & Chief Compliance Officer, Schroders-Fordham University School of Law at New York, USA), Dr. Birendra Kumar Patnaik, USA (Awarded PhD in Chemistry from Utkal University with Prof. M.K. Rout as Guide) and Prof. M.K. Rout

Dr. (Mrs) Savitri Rout with Prof. M.K. Rout

Prof. M.K. Rout with his Grand Sons in front of his house in Sahidnagar. Mrs. Rout is seen partially coming out of the door, a rare picture.

Dr. Deva Narayan Pattanayak & Dr. (Mrs.) Anuradha Rout
Son-in-Law & Daughter of Prof. M.K. Rout

Dr. Anuradha Rout & Dr. Deva Narayan Pattanayak with their Sons Vikram & Siddhartha

Dr. Deva Narayan Pattanayak
Son-in-Law of Prof. M.K. Rout

Dr. Anuradha Rout
Daughter of Prof. M.K. Rout in front of White House in Washington, D.C. , USA

Dr. Deva Narayan Pattanayak, Son-in-Law of Prof. M.K. Rout, with his Family Members
From Left to Right: Sons Vikram , Siddhartha, Wife Anuradha(Baby) and Dr. Deva Narayan Pattanayak

From Left to Right: Siddhartha, his wife Carrie, Vikram and his wife Casey, Anuradha (Baby) and Dr. Deva Narayan Pattanayak

Prof. M.K. Rout with his daughter, Dr. Anuradha Rout & others (Anuradha is partially visible in the left)

Prof. M.K. Rout with his very close family members

From Right to Left: Prof. M.K. Rout's Grandson Vikram, Grand Daughter-in-Law Casey & Great Grand Children Mendel & Ilina

DOWN THE MEMORY LANE

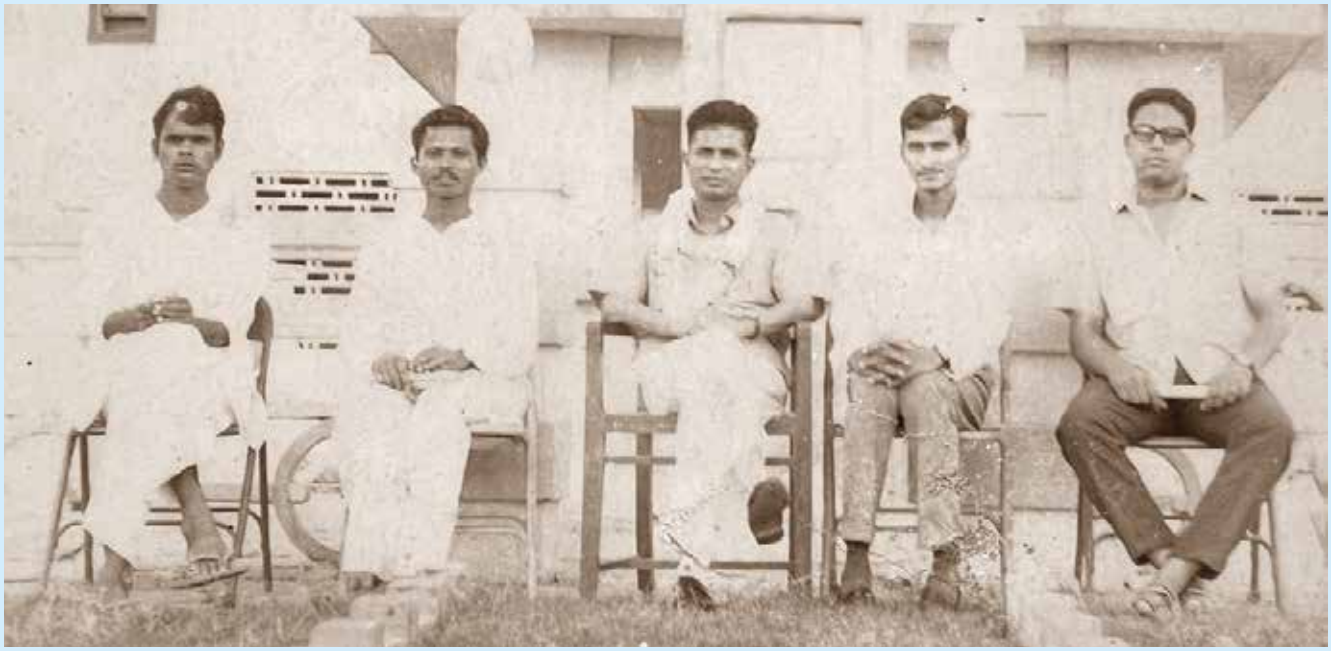
Down The Memory Lane
(Contents)

(A) Gangadhar Meher College, Sambalpur

G. M. College Silver Jubilee 1969

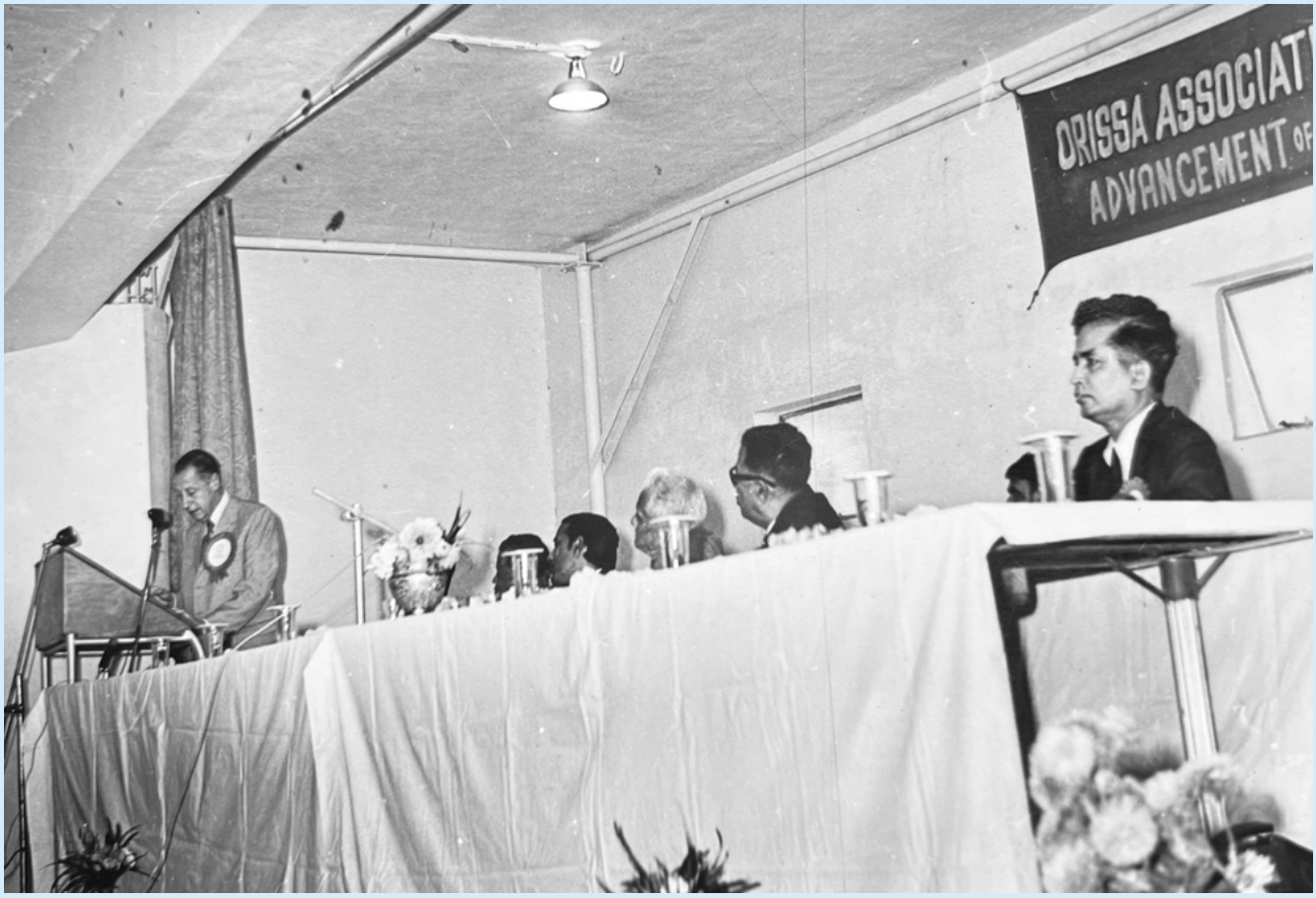
G. M. College Silver Jubilee 1969:
Standing left to right Prof. B. D. Nagchoudhury, Director, Saha Institute of Nuclear Physics, Kolkata, Prof. Santi Ranjan Palit, Calcutta University & Prof. M. K. Rout.

G. M. College Picnic

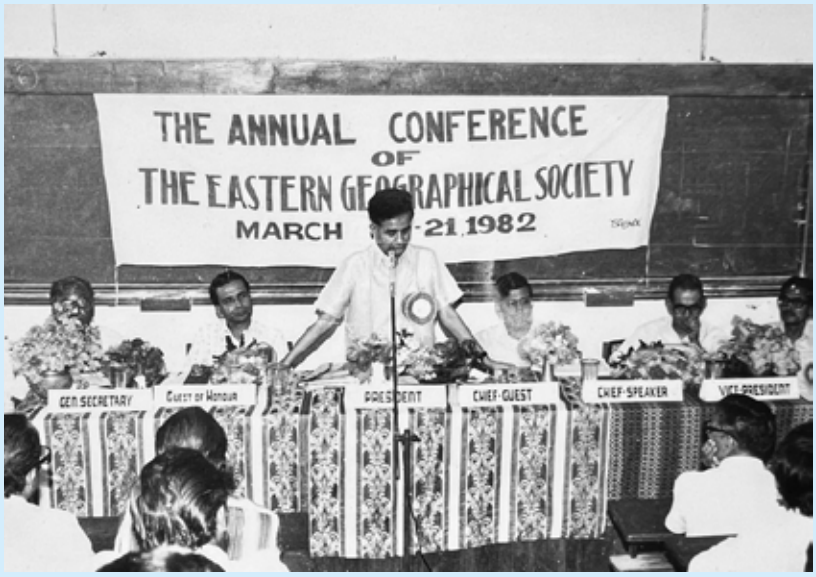


Farewell from G. M. College, 07.07.1970

(B) Glimpses of Diverse Academic Pursuits



Orissa Association of Advancement of Science Meeting



Prof. Rout addressing in the Annual Conference of the Eastern Geographical Society

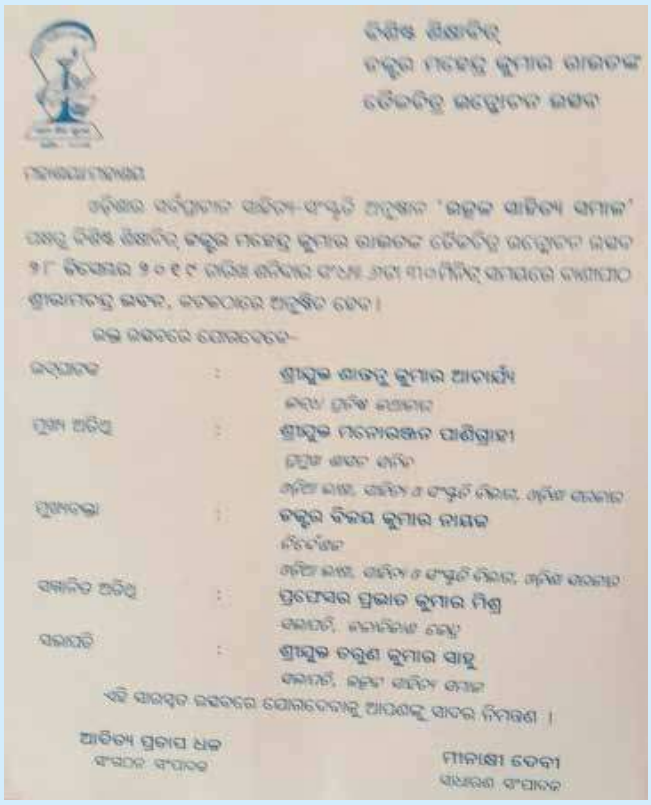
Prof. Rout addressing a UGC Symposium on "Man and Forest Ecosystem", Jan 18-20, 1981.

(C) Government Evening College

With the Staff and Students, Government Evening College

With the Staff and Students, Government Evening College,
Department of Odia (Final Year Degree 1970-71)

(D) Unveiling of Oil-Painting of Prof. M. K. Rout in Banipitha Sriramchandra Bhawan, Cuttack



Invitation Letter for the
Oil-Painting Unveiling Ceremony

An Oil Painting of Prof. Mahendra Kumar Rout was unveiled in the Oldest Cultural Organization of Odisha The Utkal Sahitya Samaj, Cuttack on 28th December 2019

Dignitaries lighting the lamp on the occasion of unveiling the Oil Painting of Prof. M.K. Rout

Unveiling the oil painting of Dr. M. K. Rout in the Utkal Sahitya Samaj at Shri Ramchandra Bhavan, Cuttack.

Seen in the picture are: Prof. Santanu Kumar Acharya, a Renowned Litterateur of Odisha: Prof. Prabhat Kumar Misra, President, Kala Vikash Kendra: Shri Manoranjan Panigrahi. Principal Secretary, and Dr. Bijay Kumar Nayak, Director, Odia Language, Literature and Culture Department of Government of Odisha.

(E) Visit to P. N. College, Khurda

Prof. M.K. Rout Garlanding the statue of Prana Nath Patnaik, Founder of P.N. College, Khurda

In P. N. College, Khurda
Seen in the picture is Shri Prasanna Patsani, Second from Left

(F) Prof. Rout as a Member of the Indian University Administrators Project

1977 Indian University Administrators Project, April 10 – June 11, 1977.
The picture is of the June 8, 1977, Final Session, New England Center for Continuing Education, Durham, New Hampshire.

From Left to Right: Mr. N. M. Kothari, Principal, Government College, Ajmer; Dr. S. M. Luthra, Principal, Lady Shri Ram College for Women, New Delhi: Dr. M. K. Rout, Principal, Ravenshaw College, Cuttack: Dr. B. V. Sitakumari, Principal, Maharajah's College for Women, Vizianagaram, A.P.: Mrs. Virginia Beaty, Project Consultant, Council on International Exchange of Scholars: Dr. Vasisht Malhotra, Coordinator of Experiential Seminar at University of Southern California and California State University at Northridge: Mr. J. Ramachandran, Principal, Presidency College, Madras: Miss Dorothy Slak, Program Officer, Office of Near Eastern and South Asian Programs, Bureau of Educational and Cultural Affairs, Department of State.

(G) Khalikote College, Berhampur

With First-Year Science (Section B) Students of Khallikote College, Berhampur (Ganjam), 1970-71

With First Year Degree Group VI (Optional Odia Batch), Government Evening College, Berhampur (Ganjam)

In a Function of Khallikote College

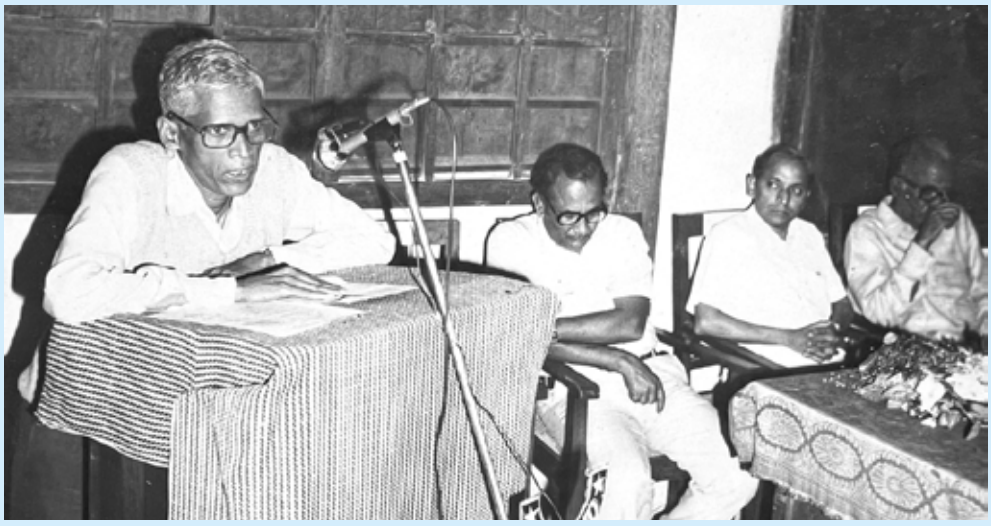
A Memoriable Moment in History when Khallikote College was taken over by the Government of Odisha

(H) Prof. Rout's 60th Birthday Celebration

60th Birthday Celebration in Ravenshaw College on 17 February 1984

60th Birthday Celebration Audience

60th Birthday Celebration Address by Dr. Devendra Chandra Misra



60th Birthday Celebration Address by Prof. Balaram Sahoo

60th Birthday Celebration Address by Prof. G. B. Behera

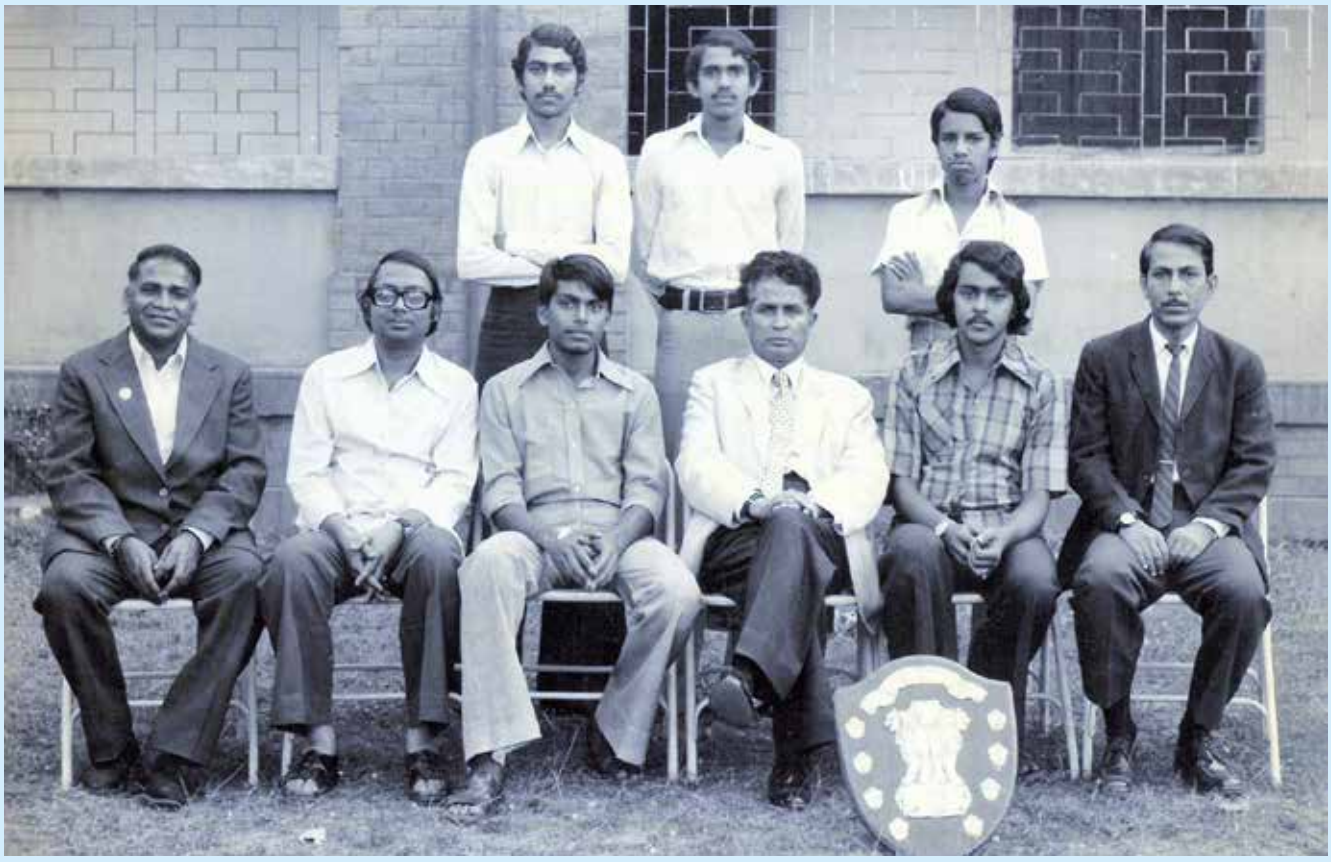
(I) Ravenshaw College Athletic Association

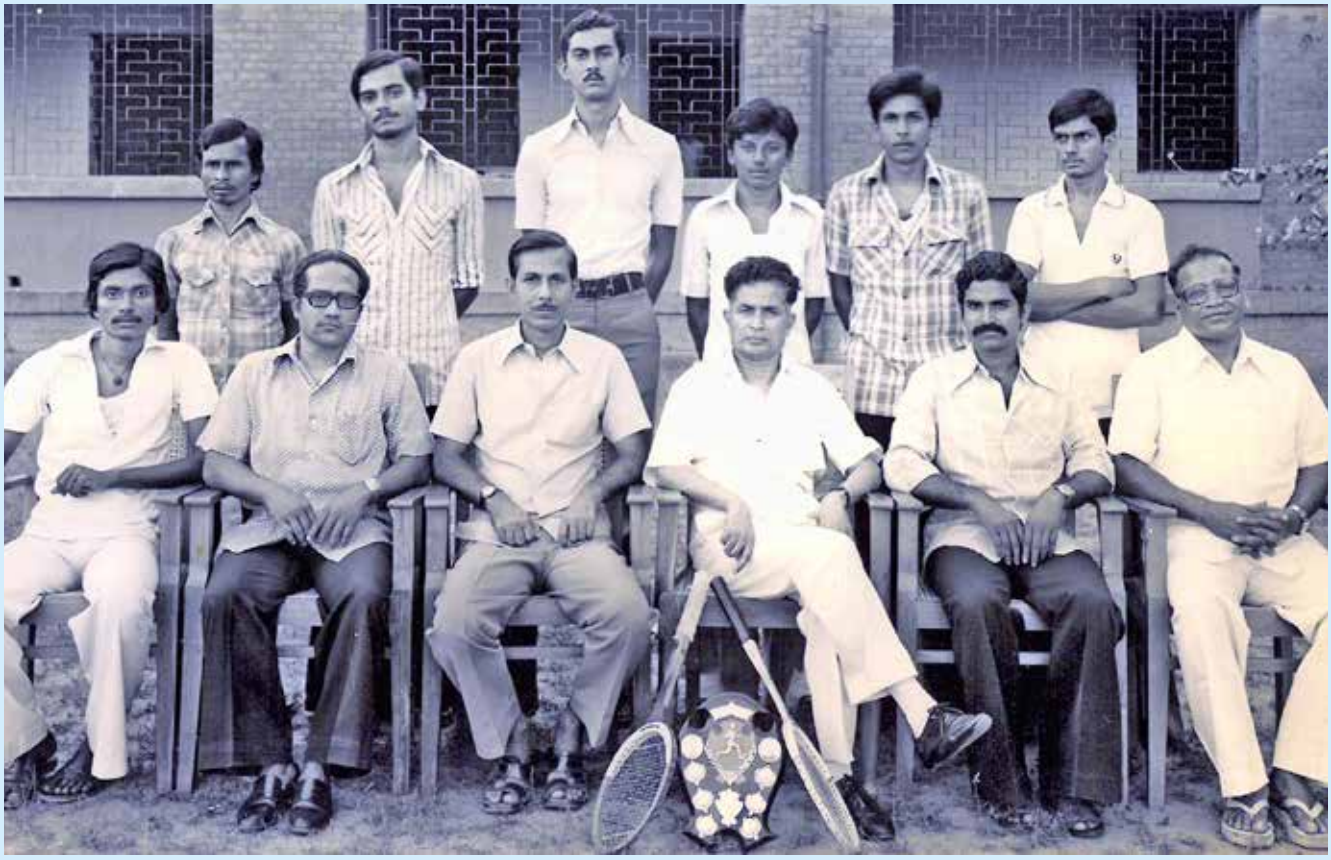
Hon'ble Governor Akbar Ali Khan in the College Annual Sports

Ravenshaw College Athletic Association
Standing L to R: Prof. N. K. Sen, Prof. P. N. Roy, Shri Sarbesh Kumar Das, Shri Jagadananda Dash
Sitting L to R: Prof. N. N. Swamy, Prof. A. K. Mitra, Prof. P. K. Misra, Prof. M. K. Rout,
Prof. M. Q. Khan, Prof. A. M. Hussain, Prof. J. N. Pattanaik

Prof. M.K. Rout with the winners of the Shield. Also seen are Prof. P.K. Misra and PET Shri Jagadananda Dash

Prof. M. K. Rout with dignitaries and players of Exhibition Cricket Match -
Old Boys vs. New Boys on Commemoration Day 1976





(J) Ravenshaw College, Chemistry Department Picnic

Ravenshaw College
Chemistry Department Picnic
at Nandankanan,
January 13, 1963

Ravenshaw College
Chemistry Department Picnic
1968 Batch

Ravenshaw College
Chemistry Department Picnic
1975 Batch.
In a rare combination of
three Distinguished
Professors of Chemistry,
(L to R)
Prof. Gokulananada Mohapatra,
Prof. M. K. Rout, and
Prof. Ashok Sankar Mitra
at Balukhand Seabeach.

Source: Prof. S. Samal

(K) Ravenshaw College Union Function

Ravenshaw College Union Function.
Sri Biju Patnaik in the audience.

Sri Biju Patnaik Addressing the audience

Prof. Rout with
College Union President (Sri Subrata Chatterjee)
and Secretary (Sri Rudra Pani)
on the day of Stamp Inauguration

Shri Brijlal Verma, Union Minister Inaugurating
Subscribers Trunk Dialling (STD) Facility in
Ravenshaw College (1978)

Prof. Rout Addressing the College Union Function.
Seen on the dais among other dignitaries
Hon'ble Justice Harihar Mohapatra

Shri Brijlal Verma, Union Minister
Addressing the College Union Function

(L) Visit of Dignitaries to Ravenshaw College

Visit of Smt. Nandini Satpathy,
Hon'ble Chief Minister of Orissa

Inauguration of Ravenshaw College
Centenary Library by Smt. Nandini Satpathy,
Hon'ble Chief Minister of Orissa

Inauguration of Ravenshaw College
Text Book Library by Smt. Nandini Satpathy,
Hon'ble Chief Minister of Orissa

Smt. Nandini Satpathy,
Hon'ble Chief Minister of Orissa
addressing the audienc

Governor Shri B. D. Jatti and other Dignitaries in
Ravenshaw College

Shri Gian Chand, Chief Secretary of Orissa, and other Dignitaries in Ravenshaw College

(M) Visit of the UGC Committee to Ravenshaw College

The UGC Committee visited Ravenshaw College with Sayed Muzaffar Hussain Burney, Governor of Tripura, Nagaland, Haryana, and Himachal Pradesh, and Chairman of the National Minorities Commission.

The UGC Team in Ravenshaw College Principal's Office

(N) Post-Doctoral Work in Bradeis University, USA

Prof. Rout worked with Prof. Harold Conroy, under the general supervision of Prof. R. B. Woodward at Brandeis University, Waltham, Massachusetts, United States

Prof. Harold Conroy with his Son in Boston in 1957

A File Photo of Prof. R. B. Woodward, Nobel Laureate in Chemistry

Courtesy: Prof. P. K. Misra

(O) Utkal University

Utkal University
Foundation Day
Inaugural Ceremony.
Seen in the picture is
Hon'ble Governor of
Orissa
Shri C. M. Poonacha

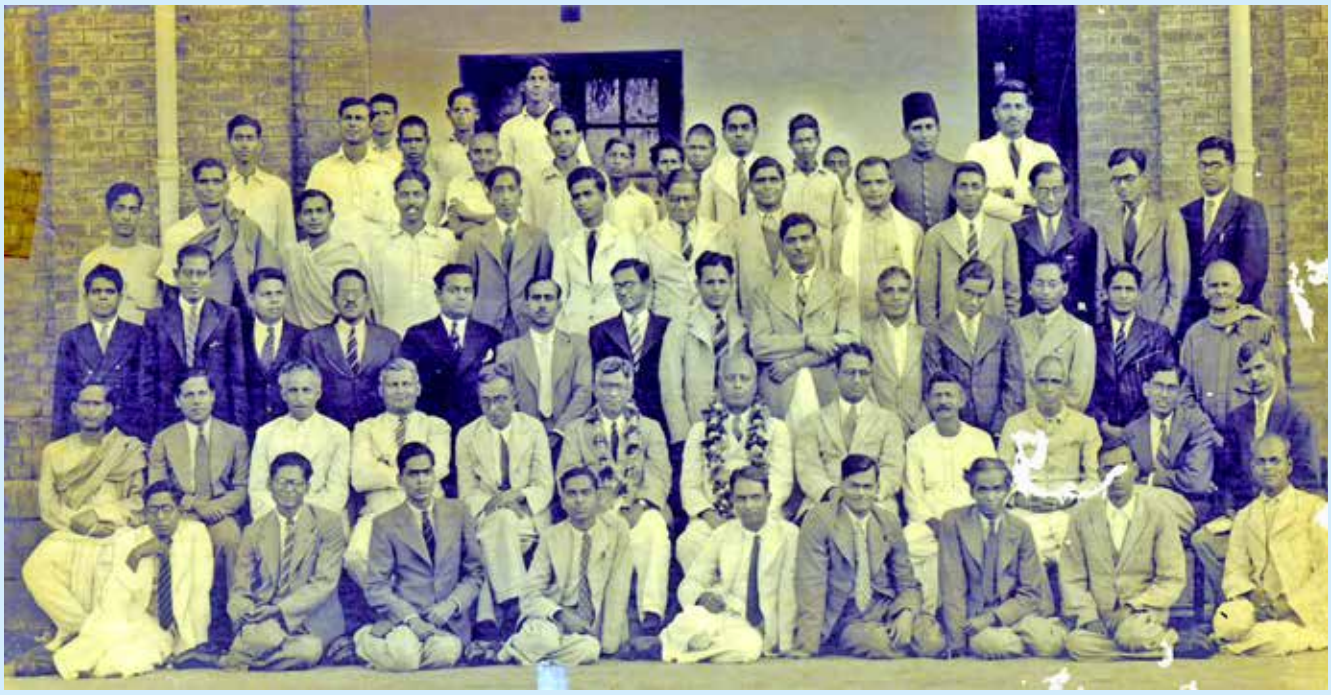
Utkal University
Student's Union.
Seen with
Eminent Scholar of
Political Science
Prof. Shriram Ch. Dash

Inter-State N.S.S. Camp,
Vani Vihar,
Oct 3 - 12, 1981.
Seen with the N.S.S.
Programme Officer and
Volunteers,
University College
of Pharmaceutical
Sciences, Kakatiya
University, Warangal

Utkal University N.S.S. Camp Plantation

Prof. M. K. Rout, Vice-Chancellor, Utkal University is received by Shri B. C. Roy, Principal, and Shri J. K. Patnaik, Reader in Physics, Camp Coordinator at the Rourkela Airport, to visit the Eco-Development Camp in Durgapur Hills, Rourkela (June 1981).

(P) A Young and Dynamic Prof. Rout



PROF. M.K. ROUT

BIRTH CENTENARY CELEBRATIONS

by

ORISSA CHEMICAL SOCIETY

A) **Ravenshaw University, Cuttack**
4th January 2023

B) **VSSUT, Burla**
11th & 12th April 2023

C) **Dhenkanal Autonomous College, Dhenkanal**
13th April 2023

D) **MSCB University, Baripada**
27th May 2023

E) **Khariar College, Khariar**
15th October 2023

F) **Mohan Subudhi College, Badamba**
11th November 2023

G) **Dhenkanal Autonomous College, Dhenkanal**
18th & 19th November 2023

H) **Utkal University, Vani Vihar, Bhubaneswar**
2nd December 2023

I) **KIIT Deemed to be University, Bhubaneswar**
4th December 2023

J) **Odisha University of Technology and Research, Bhubaneswar**
15th December 2023

(A)
Ravenshaw University
4th January 2023

ORISSA CHEMICAL SOCIETY
Regd. No. 18990/28-87/XXVII-22/87 of 1987 – 1988
Website: https://www.ocs.org.in & https://www.orchemsoc.in
Email: info@ocs.org.in

Prof. M. K. Rout Birth Centenary Celebration

Celebration of Birth Centenary Year starting from the 99th Birthday on 4th January 2023 and ending with 100th Birthday on 4th January 2024 (Tentative Dates)

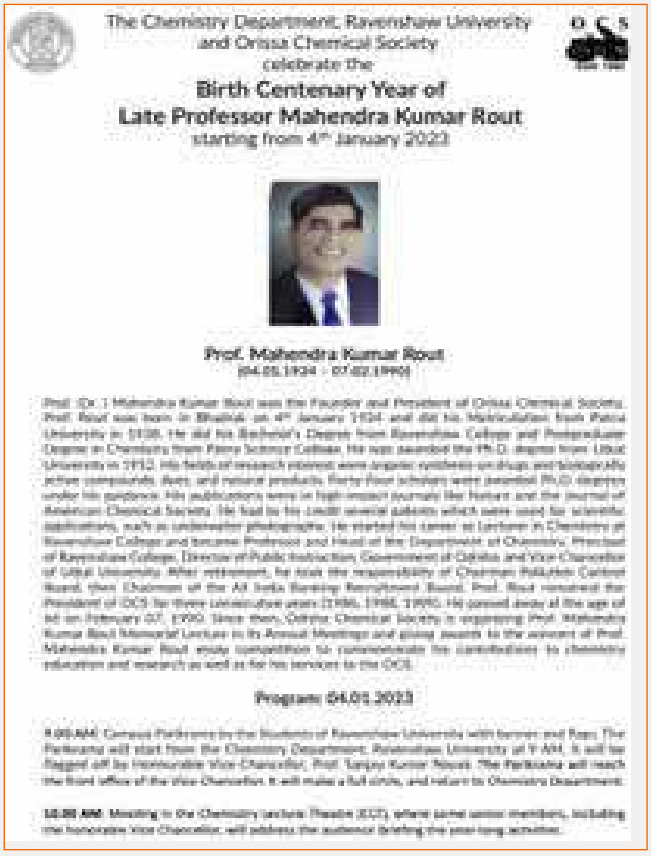
CENTENARY YEAR CELEBRATIONS

Centenary Year Celebration on the 99th Birthday at Ravenshaw University on 4th January 2023

The Orissa Chemical Society celebrated the 99th Birthday of Prof. Mahendra Kumar Rout on 4th January 2023. The Department of Chemistry, Ravenshaw University organized the function. On the cold January morning, over two hundred students commanded by NCC cadets in ceremonial dress lined up on the road in front of the commerce block for the Campus Parikrama. Members of the Staff of Chemistry Department, Ravenshaw University and OCS members gathered on the road. At the outset, a handout on Prof. Rout was distributed to all present. Hon'ble Vice-Chancellor of the University Prof. S. K. Nayak, Chairman of Prof. M. K. Rout Birth Centenary Celebration Committee Prof. P. K. Misra, and others addressed the students, briefing on Prof. Rout's lifetime contributions. At 9 AM the Campus Partikrama was flagged off by Prof. Misra. The marchpast with banners and flags was thrilling and captivating and was a majestic sight to see when it moved past the iconic Ravenshaw main building. It took a full circle and returned to Chemistry Department for the meeting in CLT1.

The meeting started at 10 AM. The President of Orissa Chemical Society, Prof. Rupasree Ragini Das, the honorable Vice-Chancellor, Prof. Nayak, the Chairman of MKRCC Committee Prof. Misra, the Head of the Department of Chemistry Dr. S. K. Bharadwaj, and the Secretary, Orissa Chemical Society, Dr. Debasis Mohanty were on the dais. The dignitaries garlanded the picture of Prof. Mahendra Kumar Rout and lighted the lamp with the 'Guru Brahma Guru Bishnu …' bandana recitation by the students. The President, OCS, presides over the meeting. The Head of the Department welcomed all. The dignitaries on the dais, Prof. Nayak, Prof. Misra, Dr. Das, Dr. Mohanty, and some from the audience like Dr. Subasini Lenka, Prof. Swoyam Prakash Rout, Dr. Chitta Ranjan Mishra spoke on Prof. Mahendra Kumar Rout, and his contribution to society as a teacher, researcher and academic administrator. He will be remembered forever as he touched and transformed so many lives. The meeting was concluded with a Vote of Thanks by the Secretary, OCS. The meeting ended with the Birthday Cake-cutting Event. The cake was decorated on the top with the famous quantum mechanics equation Hy = Ey. The Department of Chemistry nicely organized the meeting that inspired others to celebrate the Centenary Year with seminars and conferences.

Glimpses of the 99th Birthday Celebration of Prof. Mahendra Kumar Rout on 4th January 2023 at Ravenshaw University



The Chemistry Department, Ravenshaw University
and Orissa Chemical Society
celebrate the
Birth Centenary Year of
Late Professor Mahendra Kumar Rout
starting from 4th January 2023

Prof. Mahendra Kumar Rout
(04.01.1924 - 07.02.1990)

Prof. (Dr.) Mahendra Kumar Rout was the Founder and President of Orissa Chemical Society. Prof. Rout was born in Bhadrak on 4th January 1924 and did his Matriculation from Patna University in 1938. He did his Bachelor's Degree from Ravenshaw College and Postgraduate Degree in Chemistry from Patna Science College. He was awarded the Ph.D. degree from Utkal University in 1952. His fields of research interest were organic synthesis on drugs and biologically active compounds, dyes, and natural products. Forty-four scholars were awarded Ph.D degrees under his guidance. His publications were in high impact journals like Nature and the Journal of American Chemical Society. He had to his credit several patents which were used for scientific applications, such as underwater photography. He started his career as Lecturer in Chemistry at Ravenshaw College and became Professor and Head of the Department of Chemistry, Principal of Ravenshaw College, Director of Public Instruction, Government of Odisha and Vice-Chancellor of Utkal University. After retirement, he took the responsibility of Chairman Railway Control Board, then Chairman of the All India Banking Recruitment Board. Prof. Rout remained the President of OCS for three consecutive years (1986, 1988, 1989). He passed away at the age of 66 on February 07, 1990. Since then, Orissa Chemical Society is organizing Prof. Mahendra Kumar Rout Memorial Lecture in its Annual Meetings and giving awards to the winners of Prof. Mahendra Kumar Rout essay competition to commemorate his contributions to chemistry education and research as well as for his services to the OCS.

Program: 04.01.2023

9.00 AM: Campus Parikrama by the Students of Ravenshaw University with banner and flags. The Parikrama will start from the Chemistry Department, Ravenshaw University at 9 AM. It will be flagged off by Honourable Vice-Chancellor, Prof. Sanjay Kumar Nayak. The Parikrama will reach the front office of the Vice-Chancellor. It will make a full circle, and return to Chemistry Department.

10.30 AM: Meeting in the Chemistry Lecture Theatre (CLT), where some senior members, including the honorable Vice-Chancellor, will address the audience briefing the year-long activities.

Prof. M. K. Rout Birth Centenary Celebration
Celebration of Birth Centenary Year starting from the 99th Birthday on 4th January 2023 and ending with 100th Birthday on 4th January 2024 (Tentative Dates) in the Department of Chemistry, Ravenshaw University, Cuttack

4th January 2023 Meeting

Venue: Chemistry Lecture Theatre 1 (CLT 1)
Time: 10.00 AM to 11.30 AM

AGENDA

1. The President of Orissa Chemical Society, Prof. Rupasree Ragini Das, the honourable Vice-Chancellor, Prof. Sanjay Kumar Nayak, the Chairman of Prof. Mahendra Kumar Rout Birth Centenary Celebration Committee, the Head of the Department of Chemistry Prof. S. K. Bharadwaj, and the Secretary-cum-Treasurer, Orissa Chemical Society, Prof. Debasis Mohanty are invited to the dais.
2. The dignitaries on the dais are requested to garland the picture of Prof. Mahendra Kumar Rout, and light with 'Guru Brahma Guru Bishnu ...' Bandana song by the students.
3. The President, OCS, presides over the meeting and requests the Head of the Department to give the welcome address and introduce the dignitaries on the dais.
4. She then invites the honourable Vice-Chancellor to address the audience.
5. She then invites senior members of the audience (including Prof. Swayam Prakash Rout) to give their valued suggestions and opinions on how to celebrate the Birth Centenary Year.
6. Finally, she requests Prof. Pravat Kumar Mishra to address the audience with his thoughtful opinion on the suggestions made.
7. Finally, Prof. Das addresses the audience seeking the participation of one and all. There will be an Executive Committee meeting of the OCS in the third/fourth week of January, followed by the MMRCC Committee meeting with the Advisory Body most probably in the first week of February to come up with a complete plan and a budget.
8. The meeting is concluded with a Vote of Thanks by the Secretary, OCS (or, in his absence by Prof. Smrutiprava Das, Vice-President, OCS)


Birth Centenary Year of
Professor Mahendra Kumar Rout
4th January 2023 to 4th January 2024

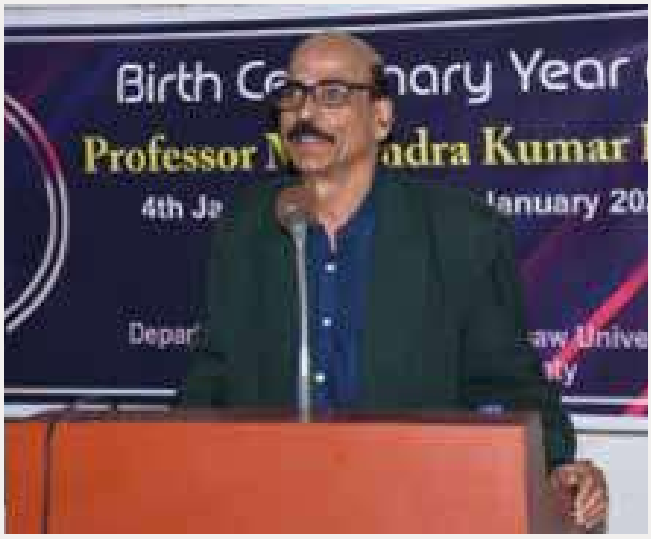

Birth Centenary Year of
Professor Mahendra Kumar Rout


Birth Centenary Year of
Professor Mahendra Kumar Roun
4th January 2023 to 4th January 2024


Birth Centenary Year of
Professor Mahendra Kumar Roun


th Centenary Year of
Mahendra Kumar Rout


Birth Centenary
Professor M
ra Kumar
4th January
th January 202


Birth Ce
nary Year
Professor M
adra Kumar

MEDIA COVERAGE

ବୈଜ୍ଞାନିକ ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମ ଶତବାର୍ଷିକୀ ପାଳନ ଉଦଘାଟିତ

ଓଡ଼ିଶା ସମ୍ବାଦ

କଟକ : ବିଶିଷ୍ଟ ବୈଜ୍ଞାନିକ ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମ ଶତବାର୍ଷିକୀ ଉତ୍ସବ ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟ ପରିସରରେ ଉଦଘାଟିତ ହୋଇଯାଇଛି। ବିଭିନ୍ନ କାର୍ଯ୍ୟକ୍ରମ ସହ ଏହି ଉତ୍ସବ ବର୍ଷବ୍ୟାପି ପାଳନ କରାଯିବ ବୋଲି ସୂଚନା ଦିଆଯାଇଛି ।

ଏହି କାର୍ଯ୍ୟକ୍ରମରେ କୁଳପତି ସଞ୍ଜୟ କୁମାର ନାୟକ, ପ୍ରଭାତ କୁମାର ମିଶ୍ର, ସୂର୍ଯ୍ୟପ୍ରକାଶ ରାଉତ ଅତିଥି ଭାବରେ ଯୋଗଦେଇ ଥିଲେ। ଏହି ଅବସରରେ ଅତିଥିମାନେ ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ କର୍ମମୟ ଜୀବନ, ଛାତ୍ର ବତ୍ସଳତା ଓ ବିଜ୍ଞାନ କ୍ଷେତ୍ରରେ ଅବଦାନ ବିଷୟରେ ଆଲୋକପାତ କରିବା ସହ ତାଙ୍କର ଶୃଙ୍ଖଳିତ ଜୀବନ ପ୍ରତ୍ୟେକ ସଫଳ ବ୍ୟକ୍ତି ପାଇଁ ଏକ ଉଦାହରଣ ବୋଲି ମତବ୍ୟକ୍ତ କରିଥିଲେ। ତାଙ୍କ ସହ ଏହି ଜନ୍ମବାର୍ଷିକୀ ସମାରୋହରେ ଚିତ୍ତରଞ୍ଜନ ମିଶ୍ର, ସୁହାସିନୀ ଲେଙ୍କା, ନିବେଦିତା ପତି, ଶଶଧର ସାମଲ, ଦେବାଶିଷ ମହାନ୍ତି ପ୍ରମୁଖ ଯୋଗଦେଇ ନିଜର ବକ୍ତବ୍ୟ ରଖିଥିଲେ।

ବିହର୍ଷ ଭରଦ୍ୱାଜଙ୍କ ସ୍ୱାଗତ ଭାଷଣରେ ଆରମ୍ଭ ହୋଇଥିବା ଏହି କାର୍ଯ୍ୟକ୍ରମକୁ ରୂପଶ୍ରୀ ଭଗିନୀ ଦାସ ପରିଚାଳନା କରିଥିଲେ ଏବଂ ପରିଶେଷରେ ପ୍ରତିପ୍ରଭା ଦାସ ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ। ଏହି କାର୍ଯ୍ୟକ୍ରମରେ ବହୁ ବିଶିଷ୍ଟ ବ୍ୟକ୍ତି, ବୁଦ୍ଧିଜୀବୀ, ଛାତ୍ରଛାତ୍ରୀ ଏବଂ ବିଶ୍ୱବିଦ୍ୟାଳୟର କର୍ମଚାରୀମାନେ ଯୋଗ ଦେଇଥିଲେ।

Link: http://m.sambadepaper.com/imageview_26411_185393_4_71_04-01-2023_12_i_1_sf.html

ପ୍ରଫେସର ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ଜନ୍ମ ଶତବାର୍ଷିକୀ ଆଜି

ଏକାଧାରରେ ଥିଲେ ଶିକ୍ଷକ, ବୈଜ୍ଞାନିକ, ପ୍ରଶାସକ, ପରିବେଶବିତ୍

ବିଶିଷ୍ଟ ଶିକ୍ଷାବିତ୍, ବୈଜ୍ଞାନିକ, ଶିକ୍ଷା ପ୍ରଶାସକ, ପରିବେଶବିତ୍ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କର ବୁଧବାରଦିନ ହେଉଛି ଜନ୍ମ ଶତବାର୍ଷିକୀ। ବହୁମୁଖୀ ପ୍ରତିଭା ପ୍ରଫେସର ରାଉତ ୧୯୨୪, ଜାନୁଆରି ୪ ତାରିଖରେ ଭଦ୍ରକର ଏକ ଜମିଦାର ପରିବାରରେ ଜନ୍ମଗ୍ରହଣ କରିଥିଲେ। ଆଇନଜୀବୀ ଲକ୍ଷ୍ମୀଧର ରାଉତ ଓ ସୂର୍ଯ୍ୟମଣି ଦେବୀଙ୍କ ସାନପୁଅ ମହେନ୍ଦ୍ର ୧୯୩୮ରେ ପାଟନା ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ମାଟ୍ରିକ୍ୟୁଲେସନ ପରୀକ୍ଷାରେ ପ୍ରଥମ ଶ୍ରେଣୀରେ ଉତ୍ତୀର୍ଣ୍ଣ ହୋଇଥିଲେ। ପରେ ରେଭେନ୍ସା କଲେଜରୁ ଆଇଏସ୍‌ସି ଓ ବିଏସ୍‌ସି ପଢିବା ପରେ ପାଟନା ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ଏମ୍‌ଏସ୍‌ସିରେ ଉତ୍ତୀର୍ଣ୍ଣ ହୋଇଥିଲେ। ଏମ୍‌ଏସ୍‌ସି ପାସ୍ କରିବା ପରେ ସେ ରେଭେନ୍ସା କଲେଜରୁ ଅଧ୍ୟାପନା ବୃତ୍ତି ଆରମ୍ଭ କରିଥିଲେ। ୧୯୫୨ରେ ସେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ପିଏଚ୍‌ଡି କରିଥିଲେ। ଡକ୍ଟର ରାଉତ ତାଙ୍କର ନିଆରା ପାଠପଢା ଶୈଳୀ ପାଇଁ ପ୍ରସିଦ୍ଧ ଥିଲେ। ସେ ସମ୍ବଲପୁର ଜି.ଏମ୍ କଲେଜ, ବ୍ରହ୍ମପୁରର ଖଲ୍ଲିକୋଟ କଲେଜ ଏବଂ ରେଭେନ୍ସା କଲେଜର ଅଧ୍ୟକ୍ଷ ଭାବେ କାର୍ଯ୍ୟ କରିବା ପରେ ଉଚ୍ଚଶିକ୍ଷା ବିଭାଗର ଡିପିଆଇ ଭାବେ କାର୍ଯ୍ୟ କରିଥିଲେ। ସେହି ସମୟରେ ସେ ପ୍ରଥମଥର ପାଇଁ ଅଧ୍ୟାପକ ନିଯୁକ୍ତି ପାଇଁ ଓପିଏସ୍‌ସି ଦ୍ୱାରା ଲିଖିତ ପରୀକ୍ଷା ବ୍ୟବସ୍ଥାର ଆରମ୍ଭ କରିଥିଲେ। ସେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ଭାବେ କାର୍ଯ୍ୟ କରିବା ସମୟରେ ଶ୍ରେଣୀଗୃହରେ ଶିକ୍ଷାଦାନ କରୁଥିଲେ। ତାଙ୍କୁ ରାଜ୍ୟ ସରକାର ପ୍ରଦୂଷଣ ନିୟନ୍ତ୍ରଣ ବୋର୍ଡର ଅଧ୍ୟକ୍ଷ ଭାବେ ନିଯୁକ୍ତ କରିଥିଲେ ଏବଂ ଏହି ସଂସ୍ଥାର ରୂପରେଖ ତାଙ୍କ ନେତୃତ୍ୱରେ ହିଁ ପ୍ରସ୍ତୁତ ହୋଇଥିଲା। ପରେ ସରକାର ତାଙ୍କୁ ବ୍ୟାଙ୍କିଙ୍ଗ୍ ସିଲେକ୍ସନ ବୋର୍ଡ ଅଧ୍ୟକ୍ଷ ଭାବେ ମଧ୍ୟ ନିଯୁକ୍ତ କରିଥିଲେ। ଡକ୍ଟର ରାଉତ ୧୯୭୭ରେ ଦେଶର ୬ ଜଣ ଶିକ୍ଷାବିତଙ୍କୁ ନେଇ ଗଠିତ ୟୁଜିସି ଟିମ୍‌ର ସଦସ୍ୟ ଭାବେ ଯୁକ୍ତରାଷ୍ଟ୍ର ଆମେରିକାର ୧୦୦ଟି ପ୍ରମୁଖ ଶିକ୍ଷାନୁଷ୍ଠାନ ପରିଦର୍ଶନ କରି ଶିକ୍ଷା ବ୍ୟବସ୍ଥାର ଅନୁଧ୍ୟାନ କରିଥିଲେ। ଡକ୍ଟର ରାଉତ ଓଡ଼ିଶା କେମିକାଲ୍ ସୋସାଇଟିର ପ୍ରତିଷ୍ଠାତା ସଭାପତି ଥିଲେ। ଡକ୍ଟର ରାଉତ ୧୯୯୦, ଫେବ୍ରୁଆରି ୭ ତାରିଖରେ ମାତ୍ର ୬୬ ବର୍ଷରେ ଶେଷ ନିଶ୍ୱାସ ତ୍ୟାଗ କରିଥିଲେ। ଏହି ମହାନ ପ୍ରତିଭାଙ୍କର ଜନ୍ମଶତବାର୍ଷିକୀ କାର୍ଯ୍ୟକ୍ରମ ୨୦୨୩, ଜାନୁଆରି ୪ରୁ ୨୦୨୫, ଜାନୁଆରି ୪ ତାରିଖ ପର୍ଯ୍ୟନ୍ତ ଆୟୋଜନ ହେବାକୁ ଯାଉଛି।

ଏହି ବହୁମୁଖୀ ପ୍ରତିଭାଙ୍କ ସ୍ମୃତିଚାରଣ କରି ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟ ରସାୟନ ବିଭାଗର ଭିଜିଟିଂ ପ୍ରଫେସର ତଥା ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟିର ସଭାପତି ଡକ୍ଟର ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାସ ଉଲ୍ଲେଖ କରିଛନ୍ତି ଯେ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ହେଉଛନ୍ତି ଏପରି ଏକ ଅଗ୍ନି, ଯାହାଙ୍କର ଆଲୋକ ଓ ଉତ୍ତାପ ବିଗତ ଅଶୀ ବର୍ଷ ଧରି ଓଡ଼ିଶାର କେବଳ ଜ୍ଞାନୀ, ଗୁଣି ନୁହନ୍ତି, ଜ୍ଞାନ ପାଇଁ ଉତ୍ସୁକ ବ୍ୟକ୍ତିଙ୍କୁ ସାଧନା ପାଇଁ ଉତ୍ସାହିତ କରି ଆସିଛି। ତାଙ୍କର ଗବେଷଣା ଲବ୍ଧ ତଥ୍ୟ ଓ ସିଦ୍ଧାନ୍ତ ଜର୍ଣ୍ଣାଲ୍ ଅଫ୍ ଆମେରିକାନ କେମିକାଲ ସୋସାଇଟି ଓ ନେଚରରେ ପ୍ରକାଶ ପାଇଥିଲା। ସେ ଥିଲେ ଉତ୍କଳ ବିଶ୍ୱ ବିଦ୍ୟାଳୟର ପ୍ରଥମ ଡିଏସ୍‌ସି ଡିଗ୍ରି ହାସଲ କରିଥିବା ବ୍ୟକ୍ତି। ଡକ୍ଟର ରାଉତଙ୍କ ତତ୍ତ୍ୱାବଧାନରେ ଗବେଷଣା କରି ୫୫ ଜଣ ପିଏଚ୍. ଡି ହାସଲ କରିଛନ୍ତି। ଡକ୍ଟର ରାଉତ ଅଦମ୍ୟ ଉତ୍ସାହ ଓ ଉଦ୍ଦୀପନାର ପ୍ରତୀକ ଥିଲେ। ଜୀବନରେ ସଫଳତା ଓ କାର୍ଯ୍ୟଦକ୍ଷତାର ସେ ଏକ ଜ୍ୱଳନ୍ତ ଉଦାହରଣ ଥିଲେ ବୋଲି ଡକ୍ଟର ଦାସ ଉଲ୍ଲେଖ କରିଛନ୍ତି।

Link: https://odishasambad.in/birth-centurary-celebration-of-scientist-mahendra-kumar-raut-inagurated/

An article in the Newspaper on the day of the 99th Birthday Celebration by the President, OCS

ଜଣେ ବୈଜ୍ଞାନିକଙ୍କ ସ୍ମୃତିରେ

ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାସ

କର୍ମ ଏକ ମହତ ଓ ଗଭୀର ତତ୍ତ୍ୱ। ମନୁଷ୍ୟର ଗୋଚର କର୍ମଶକ୍ତିକୁ ମାପ କରିପାରିବ ନାହିଁ। ମନୁଷ୍ୟ କରୁଥିବା କର୍ମ କୌଣସି ପ୍ରକାରେ ଯୋଗରେ ପରିଣତ ହୁଏ। ଏହି କର୍ମଯୋଗ କାଳକ୍ରମେ ଜ୍ଞାନଯୋଗରେ ପରିଣତହୁଏ। ଜ୍ଞାନଯୋଗରୁ ଉଦିତ ଆଲୋକ ନିଜକୁ ଉଦ୍ଭାସିତ କରିବା ସଙ୍ଗେ ସଙ୍ଗେ ସଚରାଚର ବ୍ୟାପୀ ପରବର୍ତ୍ତୀ ପୁରୁଷକୁ ଉଦବୁଦ୍ଧ କରାଏ। ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ହେଉଛନ୍ତି ଏହିପରି ଏକ ଅଗ୍ନି ଯାହାଙ୍କର ଆଲୋକ ଓ ଉତ୍ତାପ ବିଗତ ଅଶୀବର୍ଷ ଧରି ଓଡ଼ିଶାର କେବଳ ଜ୍ଞାନୀ, ଗୁଣି ନୁହନ୍ତି ଜ୍ଞାନ ପାଇଁ ଉତ୍ସୁକ ବ୍ୟକ୍ତିଙ୍କୁ ସାଧନା ପାଇଁ ଉତ୍ସାହିତ କରିଛି।

ପ୍ରଫେସର ରାଉତଙ୍କର ଜୀବନ ଏକ ବୈଜ୍ଞାନିକ, ଶିକ୍ଷକ ଓ ପ୍ରଶିକ୍ଷକଙ୍କର ସମ୍ମିଶ୍ରଣ ଥିଲା। ସେ ୧୯୨୪ ମସିହା ଜାନୁଆରୀ ୪ ତାରିଖରେ ଉଦ୍‌ରକରେ ଏକ ସମ୍ଭ୍ରାନ୍ତ ଜମିଦାର ପରିବାରରେ ଜନ୍ମଗ୍ରହଣ କରିଥିଲେ। ତାଙ୍କ ପିତାଙ୍କ ନାମ ଲକ୍ଷ୍ମୀଧର ରାଉତ ଓ ମାତାଙ୍କ ନାମ ସୂର୍ଯ୍ୟମଣୀ ଦେବୀ। ପ୍ରଫେସର ରାଉତ ସଂସ୍କୃତ ବିଶାରଦ ସାବିତ୍ରୀ ଦେବୀଙ୍କୁ ବିବାହ କରିଥିଲେ। ୧୯୩୮ ମସିହାରେ ଉଚ୍ଚ ପ୍ରଥମ ଶ୍ରେଣୀରେ ପାଟନା ୟୁନିଭରସିଟିରୁ ମାଟ୍ରିକ ପରୀକ୍ଷାରେ ଉତ୍ତୀର୍ଣ୍ଣ ହୋଇ ୧୯୪୨ ମସିହାରେ ରେଭେନ୍ସା କଲେଜରୁ ରସାୟନ ଶାସ୍ତ୍ରରେ ଅନର୍ସ ସହ ସ୍ନାତକ ଡିଗ୍ରୀ ପ୍ରାପ୍ତ ହୋଇଥିଲେ। ସେ ୧୯୪୪ ମସିହାରେ ପାଟଣା ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ରସାୟନ ଶାସ୍ତ୍ରରେ ସ୍ନାତକୋତ୍ତର ପରୀକ୍ଷାରେ ଉତ୍ତୀର୍ଣ୍ଣ ହୋଇ ରେଭେନ୍ସା କଲେଜରେ ରସାୟନ ଶାସ୍ତ୍ର ଅଧ୍ୟାପକ ଭାବେ ଯୋଗ ଦେଲେ।

୧୯୫୬ ମସିହାରେ ପ୍ରଫେସର ରାଉତ ଭିଜିଟିଂ ପ୍ରଫେସର ଭାବେ ଆମେରିକା ଯାତ୍ରା କରି ହାର୍ଭାର୍ଡ ବିଶ୍ୱବିଦ୍ୟାଳୟର ପ୍ରଫେସର ଉଡୱାର୍ଡଙ୍କ ସହ ଗବେଷଣା କରିଥିଲେ। ତାଙ୍କର ଗବେଷଣା ଲବ୍ଧ ଓ ସିଦ୍ଧାନ୍ତ ଜର୍ଣ୍ଣାଲ ଅଫ ଆମେରିକାନ କେମିକାଲ ସୋସାଇଟି ଓ ନେଚର ଜର୍ଣ୍ଣାଲରେ ପ୍ରକାଶିତ ହୋଇଛି। ହାର୍ଭାର୍ଡ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଅଧ୍ୟାପନା ଓ ଗବେଷଣା ପଦ୍ଧତି ତାଙ୍କ ମନରେ ଗଭୀର ପ୍ରଭାବ ପକାଇଥିଲା। ସେ ଜୈବ ରସାୟନ ବିଜ୍ଞାନର ନୂତନ ସଂକଳ୍ପନା ଏବଂ ପ୍ରତିକ୍ରିୟା ପଥ ଉପରେ ଗୁରୁତ୍ୱ ଦେଇ ପାଠ୍ୟକ୍ରମ ପ୍ରସ୍ତୁତ କରିଥିଲେ। ପ୍ରଫେସର ରାଉତ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର ପ୍ରଥମ ଡିଏସସି ଉପାଧିଧାରୀ ଅଟନ୍ତି। ସେ ସଦାସର୍ବଦା ବିଭିନ୍ନ ଶୈକ୍ଷଣିକ କାର୍ଯ୍ୟକ୍ରମରେ ଦେଶର ଭିନ୍ନ ଭିନ୍ନ ଅଞ୍ଚଳକୁ ଗସ୍ତ କରୁଥିଲେ।

ପ୍ରଫେସର ରାଉତଙ୍କର ଗବେଷଣାରେ ଉନ୍ନତି ପାଇଁ ଉଦବିଘ୍ନତା ଓ ଛାତ୍ର କୈନ୍ଦ୍ରିକ ଭବିଷ୍ୟତ ଚିନ୍ତାଧାରା ନିରୀକ୍ଷଣ କରି ଭାରତ ସରକାର ତାଙ୍କୁ ୧୯୬୬ ମସିହାରେ ଯୁକ୍ତରାଷ୍ଟ୍ର ଆମେରିକାର ଏକଶତ ବିଶ୍ୱବିଦ୍ୟାଳୟ ଓ ମହାବିଦ୍ୟାଳୟ ପରିଭ୍ରମଣ କରି ସେମାନଙ୍କର ପରିଚାଳନା ଓ ଗବେଷଣାର ନୀତି ନିର୍ଦ୍ଧାରଣକୁ ବିଶ୍ଳେଷଣ କରି ବିବରଣୀ ପ୍ରଦାନ ନିମନ୍ତେ ଦାୟିତ୍ୱ ପ୍ରଦାନ କରିଥିଲେ। ଯୁକ୍ତରାଷ୍ଟ୍ର ଆମେରିକାର ବିଶ୍ୱବିଦ୍ୟାଳୟ ଓ ମହାବିଦ୍ୟାଳୟ ପରିଦର୍ଶନ କରି ପ୍ରଫେସର ରାଉତ, ଆମ ଦେଶରେ ଗବେଷଣା ଓ ଶିକ୍ଷାର ଉନ୍ନତି ବିଧାନକୁ ଦୃଷ୍ଟିରେ ରଖି ଏକ ସାରଗର୍ଭକ ବିବରଣୀ ପ୍ରଦାନ କରିଥିଲେ। ଏହି ବିବରଣୀକୁ ଭାରତରେ ଆମେରିକା ଶିକ୍ଷା ବିଷୟକ ପ୍ରତିଷ୍ଠାନରେ ଉଚ୍ଚ ପ୍ରଶଂସା କରାଯାଇଥିଲା ଓ ଏହାର ସାଧନ ପାଇଁ ନିର୍ଦ୍ଦେଶିକା ପ୍ରସ୍ତୁତ କରାଯାଇଥିଲା। ୧୯୮୦ ସେପ୍ଟେମ୍ବର ୧୪ ତାରିଖରେ ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତିଦାୟିତ୍ୱ ଗ୍ରହଣ କରିଥିଲେ।

୧୯୮୯ ମେ ମାସରେ ଅବସର ଗ୍ରହଣ କରିବାର କିଛିଦିନ ଉତ୍ତାରୁ ସେ ହଠାତ ଅସୁସ୍ଥ ହୋଇପଡିଲେ। ୧୯୯୦ ମେ ୭ ତାରିଖରେ ସେ ଇହଧାମ ତ୍ୟାଗ କଲେ। ଓଡ଼ିଶାକୁ ଦେଶର ଏକ ଶ୍ରେଷ୍ଠ ରାଜ୍ୟରେ ପରିଣତ କରିବାପାଇଁ ଶିକ୍ଷକ ଓ ଛାତ୍ରସମାଜକୁ ଅବିରତ ଆହ୍ୱାନ ଦେଉଥିବା ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କର ଐଶ୍ୱରୀୟ ଅସ୍ତିତ୍ୱ ରସାୟନ ଶାସ୍ତ୍ରର ଛାତ୍ରଛାତ୍ରୀଙ୍କ ସମେତ ସାରଙ୍କ ସହିତ ସଂଶ୍ଳିଷ୍ଟ ବ୍ୟକ୍ତି ବିଶେଷଗଣ ଅନୁଭବ କରୁଛନ୍ତି।

ମୋ: ୯୧-୭୯୭୮୮୧୩୯୪୪

Link: https://pragativadi.com/epaper/epaper_news_clip/1672780782_2314.jpg

(B)

VSSUT, Burla

11th & 12th April 2023

Department of Chemistry
VSSUT, Burla Celebrates
Prof. Mahendra Kumar Rout Birth Centenary Year
on 11th and 12th April 2023

The Department of Chemistry, VSSUT, Burla celebrated Prof. Mahendra Kumar Rout Birth Centenary Year on the 11th and 12th of April 2023 with much grandeur. The Annual Chemistry Department Seminar is held on this occasion along with a National Seminar on 'Recent Advances in Chemical Sciences'. The meeting was well organized by the Faculty Members and Students befitting the image of this institute of national importance. The seminar was inaugurated by Prof. B. D. Majhi, honorable Vice-Chancellor of VSSUT.

At the outset, a write-up on Prof. Mahendra Kumar Rout was circulated among the audience. Prof. Majhi, in his speech, said that there are five generations of students and teachers in the meeting, a reflection of the rich academic and cultural heritage of higher education in the state. He emphasized the importance of keeping up the tradition such that the dedication and passion of teaching and research percolate through generations. Prof. Rout is an embodiment of a complete human being, a great teacher who intensely loved his students, did pioneering research, and worked relentlessly for the institutions he served.

On the occasion of Prof. Mahendra Kumar Rout Birth Centenary Celebration Year, Prof. Gopabandhu Behera, retired Professor of Chemistry, Sambalpur University, Jyoti Vihar, Burla, a very dear student of Prof. Rout, was felicitated with the '**Life-Time Dedication Honour**' in recognition of his dedication and enthusiasm in preserving and protecting the rich heritage of premier institutions of our state, and for always guiding his students to walk on the right path. The felicitation message was read by Prof. Sarat K. Swain and was presented by the honorable VC, Prof. Majhi.

Prof. Behera narrated his deep association with Prof. Rout, and how Prof. Rout worked hard throughout his life and dedicated himself to the well-being of his students. He helped his Ph.D. scholars to complete their theses even when he was in the last days of his life. Prof. Rout did pioneering research in several fields publishing papers in highly respected journals such as Nature and JACS and introduced advanced subjects in the chemistry curriculum, such as quantum mechanics, spectroscopy, and reaction mechanism at the PG level way back in the 1950s.

Prof. Priya Ranjan Mohapatra, Head of the Department of Chemistry, presented a detailed picture of teaching and research programs in the Department. Particularly, the involvement of the M.S. students in research is a step forward and is being aggressively pursued now. As a demonstration of the same, an entire poster session of the seminar was presented by the students.

On the first day, there were several carefully crafted invited lectures in the seminar. The speakers were from different institutes of the state and they presented research in front-line areas. Prof. Sarat K. Swain, Prof. S. Dash, Dr. T. Biswal, Dr. A. K. Panda, Dr. Bigyan Ranjan Jali, and Dr. A. K. Barik, among others, conducted the technical sessions with precision.

OCS
Estd 1985

Orissa Chemical Society Celebrates Prof. Mahendra Kumar Rout Birth Centenary Year From 4th January 2023 to 4th January 2024. On this occasion, the Department of Chemistry, VSSUT, Burla is organizing a National Seminar on 'Recent Advances in Chemical Sciences' from 11.04.2023 to 12.04.2023 as per the following program. Your participation in the seminar is solicited.

INAUGURAL SESSION			
9:00 AM-9.30 AM	Inaugurated by Prof. B. D. Majhi, Hon'ble Vice-Chancellor, VSSUT Burla Chief Guest: Prof. G. B. Behera Retd. Professor, Sambalpur University, Burla		
TECHNICAL SESSION- 01			
Chairman: Prof. S. K. Swain, Professor of Chemistry, VSSUT Co-chairman: Dr. T. Biswal, Associate Professor of Chemistry, VSSUT			
9:30 AM-10.15 AM	KL-01	Prof. S. Samal	Retd. Principal S. B. Rath Women's College, (Auto) Berhampur
10.15 AM-10.45 PM	IL-01	Dr. B. K. Jena	Chief Scientist IMMT Bhubaneswar
TEA BREAK 10.45 AM – 11.00 AM			
TECHNICAL SESSION- 02			
Chairman: Prof. S. Dash, Professor of Chemistry, VSSUT Co-chairman: Dr. A. K. Panda, Associate Professor of Chemistry, VSSUT			
11.00AM-11.30 PM	IL-02	Dr. A. Doddi	Dept. of Chemistry IISER Berhampur
11.30 PM-12:00 PM	IL-03	Dr. G. Sahoo	Dept. of Chemistry NIT Rourkela
12.00 PM-12:30 PM	IL-04	Dr. M. Ramakrishnan	Dept. of Chemistry IISER Berhampur

LUNCH BREAK (1.00 PM- 2.30 PM)
Coordinator: Dr. Ramkrishna DS, Assistant Professor of Chemistry, VSSUT

POSTER PRESENTATION (2.30 PM-4.30 PM)
Coordinators: Prof. P. Mohapatra, Dr. A. K. Barick & Dr. Bigyan Jali
PP 01- PP 45
[In front of Dept. of Chemistry]

With Regards
Prof. P. Mohapatra
HOD, Chemistry

Glimpses of the Celebration


SEMINAR ON PROF M.K. ROUT BIRTH CENTENARY CELEBRATION
(MKRCC)
&
ANNUAL ACADEMIC FUNCTION OF DEPARTMENT OF CHEMISTRY
(RASAYAN-2023) APRILL 11-12, 2023
OCS
Estd 1985


BIJU PA
CENTRE
OCS
Estd 1985


VSSUT CHEMICAL SOCIETY (RASAYAN-
APRIL 11-12,2023
ORGANISED
BY


VSSUT CHEMICAL SOCIETY (RASAYAN
APRIL 11-12,2023
ORGANISED
BY


APRIL 11-12,2023
ORGANISED
BY

Professor Mahendra Kumar Rout Birth Centenary Celebration Year
4th January 2023 – 4th January 2024,
Observed by the Orissa Chemical Society
Department of Chemistry
Veer Surendra Sai University of Technology, Burla

Prof. (Dr.) Gopabandhu Behera

Former Professor and Head, Chemistry Department, Sambalpur University, Jyoti Vihar, Burla,
Former President of Orissa Chemical Society,
Distinguished Scientist and Prolific Teacher, Academic Leader and Social Activist

Life-Time Dedication Honour

Dear Sir,

On the occasion of Prof. Mahendra Kumar Rout Birth Centenary Celebration Year, in recognition of your long-standing association with Sambalpur University in general and the Department of Chemistry of the University in particular, for your allegiance and enthusiasm in preserving and protecting the rich heritage of premier institutions of our state, and for relentlessly guiding us to walk on the right path, we, the Members of the Staff and Students of the Department of Chemistry, VSSUT, Burla, on behalf of your myriad of students and colleagues across generations, deem it a rare privilege to bestow on you with great humility the **'Life-Time Dedication Honour'.** We strive to preserve your ideals and pledge to uphold the history, culture and tradition of our academic institutions, and pledge to dedicate ourselves to teaching and research in Chemistry.

We pray almighty for your long and healthy life.

For Members of Staff and Students
Department of Chemistry, VSSUT, Burla


O C S
Estd 1985
National Seminar On
Recent Advances in Chemical Science
(RAICS 23)
11th - 12th April 2023
PV = nRT
Jointly Organised by
Orissa Chemial Society & Department of Chemistry, VSSUT
On the eve of the birth Centenary year of
Prof. Mahendra Kumar Rout
RASAYAN 2K23

A Nonlinear Approach to Chemical Science Research – with Illustrative Examples

Prof. Shashadhar Samal

Retired Principal

S.B.R. Govt. Women's College, Berhampur, Odisha

Phone: 09938854038, Email: samal_s@live.com

Abstract:

Research in Science, specifically in Chemical Sciences, is challenging as most approaches are governed by some generally accepted principles and protocols. Each reaction scheme is designed for a specific product based on previous information available in the literature. This linear approach is based on accepting what has been said before about the behavior of a molecule under a set of reaction conditions. While a majority of the reactions happen the way these are thought to be, often the desired product is formed along with a number of by-products and impurities. Some reactions, the way they behave, do not have a satisfactory explanation. If a counter-intrusive explanation is offered, it is ignored or sometimes rejected. While the molecules present in the reaction mixture are manifesting their natural properties, our linear thought accrued through previous information does not give us the freedom to think non-linearly, that there could be something else happening. In Nature, most things happen in a nonlinear fashion, including how a bodily function of the living works. Imposing a linear thought on a nonlinear system simply leads to a conclusion that does not fittingly unravel the truth. In this lecture, an attempt will be made with specific examples of how nonlinear thought gave insight into the discovery of actual reaction paths. The presentation will be devoid of technical details and will be suitable for a graduate-level audience.

Organic Chemistry: Methodologies to Natural Product Synthesis and Vice Versa

Dr. Gokarneswar Sahoo

Associate Professor

Organocatalysis and Synthesis Laboratory, Department of Chemistry

National Institute of Technology Rourkela

Sundergarh 769008, Odisha

Abstract:

Being in the 21st century, when science and technology have jointly reached a great height hand in hand, some diseases like hypertension, diabetes, depression, cardiovascular events such as stroke, heart attack, heart failure, the very recent COVID-19 etc. remain a big concern for the human being. The search for new drugs, their mimetics are in up rise. The contribution of organic chemistry is enormous in amalgamating/bridging different frontiers towards achieving a healthy world. This presentation would include the effort in this direction by our laboratory. Synthesizing natural products, developing new transformations based on chiral pool approach, Organocatalysis are many ways an organic chemist usually contributes towards a healthy society. This presentation would also highlight the current research activities in developing organocatalytic transformations.

Filamentous Fungi, Chemistry and Genetics: From Beadle and Tatum to Fungal Secondary Metabolites

Dr. Mukund Ramakrishnan

Assistant Professor

Department of Biological Sciences

Indian Institutes of Science Education and Research

Berhampur, Odisha

Abstract:

The fact that fungi are perhaps the largest group of organisms in terms of species diversity. Further analysis of this fact warrants investigations on many fronts, one of them being a better understanding of their biology. The dawn of biochemical genetics happened with the experiments of Beadle and Tatum which were performed with a ubiquitous filamentous fungus *Neurospora crassa*. As a model system, *Neurospora* made several important contributions to the fields of circadian rhythms as well as gene regulation through chromatin. My aim in this particular presentation would be to give you a historical perspective of how filamentous fungi as well as yeasts (to a lesser extent) have contributed to our understanding of various facets of science. I will be also touching on some of the exciting work at the interface of epigenetics as well as the manufacture of fungal secondary metabolites. In the final part of my presentation I will be presenting some of the work from my laboratory centering around linking phenomena associated with nutritional sensing and regulating stress responses. We will also be touching on some of the insights gained with regards to another class of mutants, regulating sensitivity to 2 deoxyglucose, a potent anti-metabolite.

Pyridyl Functionalized Pincer Ligand Systems; Design, Isolation and CatalyticApplications of their Earth Abundant Copper(I) Complexes

Dr. Adinarayana Doddi

Assistant Professor

Department of Chemical Sciences,

Indian Institute of Science Education and Research

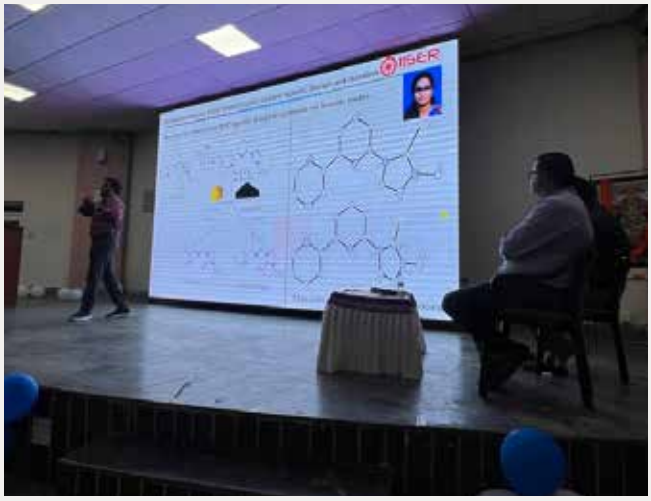
Berhampur 760010, Odisha

Abstract:

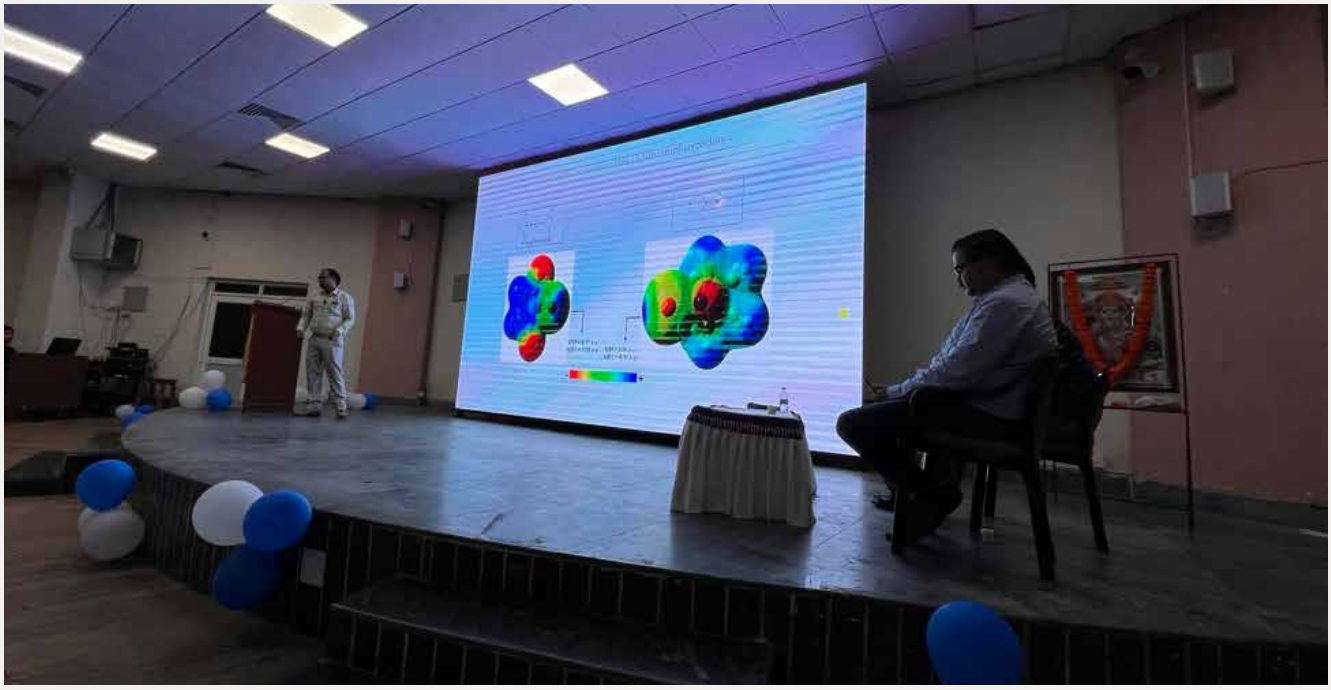
Since the discovery of persistent NHCs by Arduengo, and co-workers in the early 1990s[1], NHC ligands gained enormous attention, and expanded their use in diverse fields. Especially,NHCs occupy unique position as powerful species as stabilizing tools, and also served as excellent ancillary ligands in organometallics and homogeneous catalysis.[2,3] NHC adducts ofG-16 elements can be linked back to Ansell first observation in 1970, as this group reported the first isolation of 1,3-dimethylimidazolin-2-thione (IMe)S.[4] Hybrid ligands, especially consisting of *NNS*-type species bearing NHC moiety as part of the ligand frame-work may serve as novel multidentate ligands. We have recently isolated a series of bipyridyl functionalized imidazolin-2-thiones and selones of the type (NNC)E (E = S (**1**), Se (**2**)), and subsequent reactions with MeX furnished cationic [(NNC)EMe]X (E = S (**3**), Se (**4**); X = I or OTf) derivatives. The coordinating ability of these derivatives **3** and **4** were studied towards coinage metals and isolated a series of cationic copper(I) complexes. [5]

Furthermore, our group prepared a series of redox-active NHC ligands and their coinage metal complexes. In addition, (BPPP)E2 species, silylated electron rich phosphine (hemilabile & hybrid) ligands were first time introduced as ancillary species in the preparation of earth abundant, and cheap metals such as copper(I) chemistry, and the catalytic activity of their metal complexes were studied in the synthesis of simple to complex oxazoles, and various triazole derivatives (Scheme). In order to establish best possible yields, and mild condition, aseries of optimization reactions were performed. The transformations, and logical formation ofthe products were corroborated by mechanistic investigations. [5, 6] In this presentation, the details of preparative methods, catalysts designs and their molecular structures will be discussed.


A Nonlinear Approach to Chemical Science Research – with Illustrative Examples

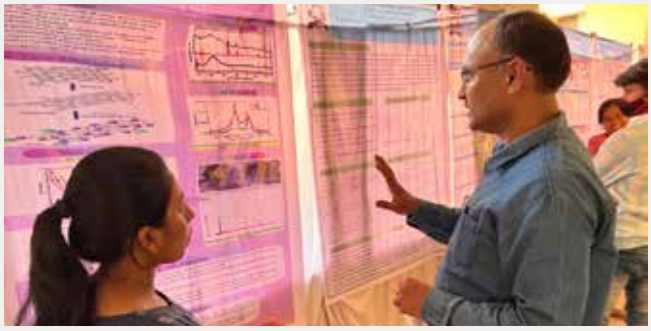

IISER


An Introduction to Neurosp




An Introduction to Neurospora


The Genetics of Secondary Metabolite Clusters




DINING

MEDIA COVERAGE

(C)

Dhenkanal Autonomous College

13th April 2023

Post Graduate Department of Chemistry
Dhenkanal Autonomous College Celebrates Prof. Mahendra Kumar Rout Birth Centenary Year
On 13th April 2023

The P. G. Department of Chemistry, Dhenkanal Autonomous College, Dhenkanal, celebrated Prof. Mahendra Kumar Rout Birth Centenary Year on 13th April 2023 dedicating its Annual Seminar to Prof. Rout. Several distinguished personalities attended the meeting and students of the department celebrated the day with great enthusiasm. At the outset, a hand-out on Prof. Rout was circulated among the students to make the audience aware of the great teacher, researcher, and academic administrator Prof. Rout was. In welcoming the guests, Prof. Ranjit Kumar Pradhan, Principal of the College, emphasized the importance of scientific research. A pursuit of truth to serve society makes a career in science so rewarding. Praising the students of the department, and more specifically, Dr. Debasis Mohanty, he said that Dr. Mohanty is a dedicated teacher and a highly efficient organizer, and through such seminars, he has brought laurels to the college.

The main attraction of the seminar meeting was the felicitation of Prof. Gopabandhu Behera, retired Professor of Chemistry, Sambalpur University, a doyen of chemistry teaching and research, and a very dear student of Prof. M. K. Rout. In his reply speech, Prof. Behera recalled his deep association with his teacher, and how Prof. Rout used his little salary to purchase a gold crucible to conduct experiments. He said that advanced subjects like quantum mechanics, spectrometric identification of organic compounds, and organic reaction mechanisms were introduced in the chemistry curriculum by Prof. Rout way back in the 1950s. Apart from teaching and research, he was an administrator par excellence and a very affectionate teacher who loved his students all through his life.

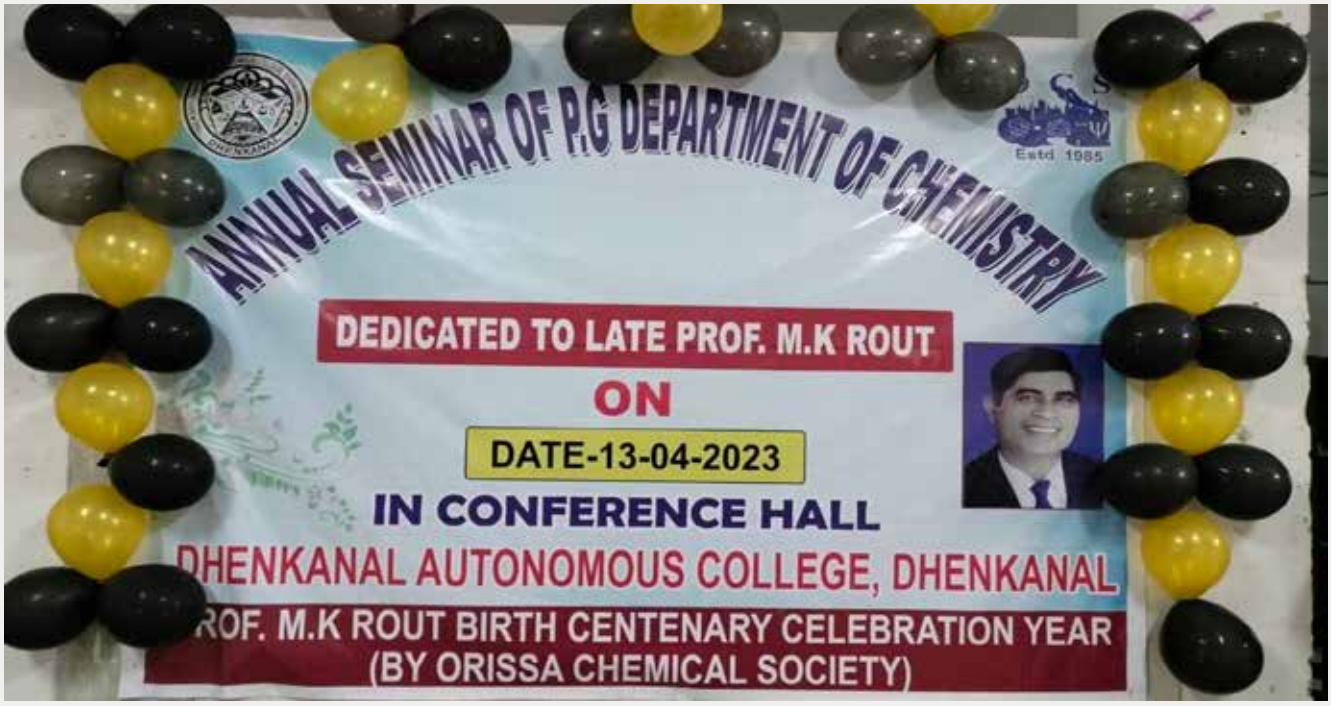
The Guest of Honour, Dr. Rupasree Ragini Das, President of Orissa Chemical Society, in her address, said that it is important to recall the memory of the teachers and honor them, as they are a guiding force for us. Just as we remember our forefathers, we should enliven the memory of our celebrated teachers and emulate them in conducting ourselves. The Chief Speaker of the meeting, Prof. K.S.K. Bharadwaj, Head of the Department of Chemistry, Ravenshaw University re-iterated the importance of developing a quest for scientific research at an early age by looking intently at the happenings in nature.

In her speech, the honored Guest, Dr. Surekha Baliarsingh, Head of the Department of Mathematics, emphasized the importance of research in life and the role mathematics plays in all branches of scientific research. She also expressed her deep admiration to the Principal of the College and the Department of Chemistry for organizing such a meeting inviting persons of high academic caliber to address the students. Such endeavors greatly influence the students and also build the image of the college. Unveiling the seminar magazine 'The Catalyst', the guests praised the students and encouraged them to remain proactive by practicing the art of presentations in seminars.

In the end, a lecture was presented by Dr. Shashadhar Samal, Secretary, Prof. Mahendra Kumar Rout Birth Centenary Committee, on 'Impact of Environment on Our Well-being: From a Chemistry Perspective', how the environment changes influence our health and well-being and how one should overcome stress through positive thoughts.

Overall, the meeting was a grand success, and the institution looks forward to organizing more such meetings in the centenary celebration year.

Glimpses of the Celebration




Environmental
Physical
Organic
DEPT. OF CHEMISTRY


DEDICATED TO LATE PROF. M.K RDUT
ON
DATE-13-04-2023
IN CONFERENCE HALL


ANNUAL SEMINAR OF PG DEPARTMENT OF CHEMISTRY


DEDICATED TO LATE PROF.
ROUT


DEDICATED TO LATE PROF. M.K ROUT
ON
DATE-13-04-2023
IN CONFERENCE HALL
WELCOME TO DEPARTMENT OF CHEMISTRY


DEDICATED TO LATE
IN CONFEREN

MEDIA COVERAGE

ପ୍ରମେୟ
THE PRAMEYA
ANGUL 15 Apr, 2023

ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ବାର୍ଷିକ ଉତ୍ସବ

ଢେଙ୍କାନାଳ,୧୪।୪(ଆପ୍ର): ଢେଙ୍କାନାଳ ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ବାର୍ଷିକ ଉତ୍ସବ ଗୁରୁବାର ମହାବିଦ୍ୟାଳୟ ସଙ୍ଗିଳନୀ କକ୍ଷରେ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି । ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ରଞ୍ଜିତ କୁମାର ପ୍ରଧାନ ଏଥିରେ ସଭାପତିତ୍ୱ କରି ରସାୟନ ବିଜ୍ଞାନର ଯୁଗପୁରୁଷ ପ୍ରଫେସର ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ଜୀବନୀ ଯୁବ ବିଜ୍ଞାନୀଙ୍କୁ ସୃଜନଶୀଳ କରିବା ପାଇଁ ପ୍ରେରଣା ଯୋଗାଇବ ବୋଲି କହିଛନ୍ତି । ମୁଖ୍ୟଅତିଥି ଭାବେ ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟର ଅବସରପ୍ରାପ୍ତ ପ୍ରଫେସର ଡ. ଗୋପବନ୍ଧୁ ବେହେରା ଯୋଗଦେଇ ପ୍ରଫେସର ରାଉତଙ୍କ ଗବେଷଣା ଜୀବନୀ ସମ୍ବନ୍ଧରେ ଆଲୋକପାତ କରିଥିଲେ । ଅନ୍ୟତମ ଅତିଥି ଭାବେ ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟି ସଭାପତି ପ୍ରଫେସର ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାସ ଯୋଗଦେଇ ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କୁ ରସାୟନ ବିଜ୍ଞାନରେ ଗବେଷଣା କରିବା ପାଇଁ ଆହ୍ୱାନ ଦେଇଥିଲେ । ରେଭେନ୍‌ସା ବିଶ୍ୱବିଦ୍ୟାଳୟର ରସାୟନ ବିଜ୍ଞାନର ମୁଖ୍ୟ ଡ. ସିଦ୍ଧାର୍ଥ ଭରଦ୍ୱାଜ, ଗଣିତ ବିଭାଗର ମୁଖ୍ୟ ଡ. ସୁରେଖା ବଳିୟାରସିଂ ରସାୟନ ବିଜ୍ଞାନର ବିବର୍ତ୍ତନ ସମ୍ବନ୍ଧରେ ଆଲୋଚନା କରିଥିଲେ । ପ୍ରଫେସର ଶଶଧର ସାମଲ ଆମର ଜୀବନଧାରା ଉପରେ ପରିବେଶର ପ୍ରଭାବ ଏକ ରସାୟନ ବିଜ୍ଞାନୀର ଦୃଷ୍ଟିଭଙ୍ଗୀ ଉପରେ ଆଲୋଚନା କରିଥିଲେ । ଏହି ଅବସରରେ ରସାୟନ ବିଜ୍ଞାନର ମୁଖପତ୍ର 'ଦି ଜ୍ୟାଗଲିଷ୍ଟ୍' ଅତିଥିମାନଙ୍କ ଦ୍ୱାରା ଉନ୍ମୋଚିତ ହୋଇଥିଲା । ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଶ୍ରେଷ୍ଠ ଛାତ୍ରୀ ରାମେଶ୍ୱରୀ ଗୁଇଁକୁ ସମ୍ମାନିତ କରାଯାଇଥିଲା । ବିଭାଗୀୟ ମୁଖ୍ୟ ଡ. ଦେବାଶିଷ ମହାନ୍ତି କାର୍ଯ୍ୟକ୍ରମ ପରିଚାଳନା କରିଥିଲେ । ସୁଜାତା କୁମାର ବେହେରା, ପବିତ୍ର କୁମାର ବେହେରା, ଦିପ୍ତୀସ୍ମିତା ମହାରଣା ପ୍ରମୁଖ ସହଯୋଗ କରିଥିଲେ ।

Dharitri

ବିଜ୍ଞାନରେ ଗବେଷଣା ପାଇଁ ଆହ୍ୱାନ

ଢେଙ୍କାନାଳ ଅଫିସ, ୧୪।୪

ଅତିଥିମାନେ ବିଭାଗୀୟ ମୁଖପତ୍ର ଉନ୍ମୋଚନ କରୁଛନ୍ତି।

ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟରେ ଗୁରୁବାର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ବାର୍ଷିକ ଉତ୍ସବ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି। ରସାୟନ ବିଜ୍ଞାନର ପ୍ରତିଷ୍ଠିତ ପ୍ରଫେସର ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ଉଦ୍ଦେଶ୍ୟରେ ବାର୍ଷିକ ଉତ୍ସବକୁ ଲୋକାର୍ପଣ କରାଯାଇଥିଲା। କଲେଜ ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ରଞ୍ଜିତ ପ୍ରଧାନଙ୍କ ସଭାପତିତ୍ୱରେ ଆୟୋଜିତ ଏହି କାର୍ଯ୍ୟକ୍ରମରେ ମୁଖ୍ୟ ଅତିଥି ଭାବେ ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟର ଅବସରପ୍ରାପ୍ତ ପ୍ରଫେସର ଡ. ଗୋପବନ୍ଧୁ ବେହେରା ଯୋଗଦେଇ ପ୍ରଫେସର ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ଗବେଷଣା ଉପରେ ଆଲୋକପାତ କରିଥିଲେ। ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟି ସଭାପତି ପ୍ରଫେସର ରୂପଶ୍ରୀରାଗିଣୀ ଦାସ ରସାୟନ ବିଜ୍ଞାନ ଉପରେ ଗବେଷଣା କରିବାକୁ ଛାତ୍ରୀଛାତ୍ରଙ୍କୁ ଆହ୍ୱାନ ଦେଇଥିଲେ। ରେଭେନ୍ସା ବିଶ୍ୱବିଦ୍ୟାଳୟର ରସାୟନ ବିଜ୍ଞାନ ମୁଖ୍ୟ ଡ. ସିଦ୍ଧାର୍ଥ ଭରଦ୍ୱାଜ ରସାୟନ ବିଜ୍ଞାନର ବିବର୍ତ୍ତନ ସମ୍ପର୍କରେ ଆଲୋଚନା କରିଥିଲେ। ଅତିଥିଙ୍କ ଦ୍ୱାରା ବିଭାଗର ମୁଖପତ୍ର ଉନ୍ମୋଚିତ ହୋଇଥିଲା। ଗତବର୍ଷ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଶ୍ରେଷ୍ଠ ଛାତ୍ରୀ ରାମେଶ୍ୱରୀ ଗୁରୁଙ୍କୁ ସମ୍ମାନିତ କରାଯାଇଥିଲା। ବିଭାଗ ମୁଖ୍ୟ ଡ. ଦେବାଶିଷ ମହାନ୍ତି, ପ୍ରଫେସର ଶଶଧର ସାମଲ, ଗଣିତ ବିଭାଗ ମୁଖ୍ୟ ଡ. ସୁରେଖା ବଲିୟାର ସିଂ, ସୁଜତା ବେହେରା, ପବିତ୍ର ବେହେରା, ଦୀପାନ୍ୱିତା ମହାରଣା ପ୍ରମୁଖ ଉପସ୍ଥିତ ଥିଲେ।

ସକାଳ
THE SAKALA
Angul - 14 Apr 2023 - Page 5

● ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ

ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ବାର୍ଷିକ ଉତ୍ସବ

ଢେଙ୍କାନାଳ, ୧୩।୪(ସମିସ): ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟରେ ରାସାୟନିକ ବିଜ୍ଞାନ ବିଭାଗର ବାର୍ଷିକ ଉତ୍ସବ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି। ପ୍ରଫେସର ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ଜୀବନୀ ଯୁବ ବିଜ୍ଞାନୀଙ୍କୁ ସୃଜନଶୀଳ କରିବାପାଇଁ ପ୍ରେରଣା ଯୋଗାଇବ ବୋଲି ମହାବିଦ୍ୟାଳୟର ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ରଞ୍ଜିତ ପ୍ରଧାନ ପ୍ରକାଶ କରିଛନ୍ତି। ସ୍ନାତକୋତ୍ତର ରାସାୟନିକ ବିଜ୍ଞାନ ବିଭାଗର ବାର୍ଷିକ ଉତ୍ସବ ମହାବିଦ୍ୟାଳୟର ସମ୍ମିଳନୀ କକ୍ଷରେ ଅନୁଷ୍ଠିତ ହୋଇ ରାସାୟନିକ ବିଜ୍ଞାନର ଯୁଗପୁରୁଷ ପ୍ରଫେସର ମହେନ୍ଦ୍ର ରାଉତଙ୍କୁ ଉତ୍ସର୍ଗିକୃତ କରାଯାଇଥିଲା। ଏହି ଉତ୍ସବରେ ମୁଖ୍ୟଅତିଥି ଭାବେ ସମ୍ବଲପୁର ବିଶ୍ୱ ବିଦ୍ୟାଳୟର ଅବସରପ୍ରାପ୍ତ ପ୍ରଫେସର ଡ. ଗୋପବନ୍ଧୁ ବେହେରା ଯୋଗଦେଇ ପ୍ରଫେସର ରାଉତଙ୍କ ଗବେଷଣା ଜୀବନ ସମ୍ବନ୍ଧରେ ଆଲୋକପାତ କରିଥିଲେ। ଅନ୍ୟତମ ଅତିଥି ଭାବେ ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟିର ସଭାପତି ପ୍ରଫେସର ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାଶ ଯୋଗଦେଇ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ ରାସାୟନ ବିଜ୍ଞାନର ଗବେଷଣା କରିବାପାଇଁ ଆହ୍ୱାନ ଦେଇଥିଲେ। ରେଭେନ୍ସା ବିଶ୍ୱ ବିଦ୍ୟାଳୟର ରାସାୟନ ବିଜ୍ଞାନର ମୁଖ୍ୟ ଡ. ସିଦ୍ଧାର୍ଥ ଭରଦ୍ୱାଜ ଯୋଗଦେଇ ରାସାୟନ ବିଜ୍ଞାନର ବିବର୍ତ୍ତନ ସମ୍ବନ୍ଧରେ ଆଲୋଚନା କରିଥିଲେ। ପ୍ରଫେସର ଶଶଧର ସାମଲ ଆମର ଜୀବନ ଧାରା ଉପରେ ପରିବେଶର ପ୍ରଭାବ ଏକ ରାସାୟନ ବିଜ୍ଞାନୀର ଦୃଷ୍ଟି ଭଙ୍ଗିରେ ଆଲୋଚନା କରିଥିଲେ। ଗଣିତ ବିଜ୍ଞାନ ବିଭାଗର ମୁଖ୍ୟ ସୁରେଖା ବଳିଆରସିଂ ଯୋଗଦେଇ ପ୍ରଫେସର ରାଉତଙ୍କ ଜୀବନୀକୁ ଅନୁସରଣ କରିବାପାଇଁ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ ପ୍ରେରଣା ଦେଇଥିଲେ। ଏହି ଅବସରରେ ରାସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ମୁଖପତ୍ର ଦି କାଟାଲିଷ୍ଟ ଉନ୍ମୋଚିତ ହୋଇଥିଲା। ବିଗତ ବର୍ଷର ରାସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଶ୍ରେଷ୍ଠ ଛାତ୍ରୀ କୁମାରୀ ରାମେଶ୍ୱରୀ ଗୁଇଁଙ୍କୁ ସମ୍ମାନିତ କରାଯାଇଥିଲା। ଏହି ଉତ୍ସବରେ ରାସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ମୁଖ୍ୟ ଡ. ଦେବାଶିଷ ମହାନ୍ତିଙ୍କ ପ୍ରତ୍ୟକ୍ଷ ତତ୍ତ୍ୱାବଧାନରେ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା। ଏହି କାର୍ଯ୍ୟକ୍ରମକୁ ସଫଳ କରିବାରେ ବିଭାଗର କର୍ମକର୍ତ୍ତା ସୁଜାତା ବେହେରା, ପବିତ୍ର ବେହେରା, ଦିପ୍ତାସ୍ମିତା ମହାରଣା, ପ୍ରିତମ, ରାକେଶ, ସୌମ୍ୟ, ଦିପ୍ତୀ, ଶ୍ରେୟାଶ୍ରୀ ଓ ସୁଧିର ପ୍ରମୁଖ ସହଯୋଗ କରିଥିଲେ।

(D)

Maharaja Sriramachandra Bhanjadeo University (MSCB), Baripada

27th May 2023

Department of Chemistry

Maharaja Sriramachandra Bhanjadeo University Celebrates Prof. Mahendra Kumar Rout Birth Centenary Year

On 27th & 28th May 2023

The Department of Chemistry, Maharaja Sriram Chandra Bhanjadeo University, Takatpur, Baripada, celebrated Prof. Mahendra Kumar Rout Birth Centenary Year on a two-day conference (27-28th May 2023) on the theme 'Frontiers in Chemical Research' (FCR-2023) covering the latest developments in chemical science and engineering, with emphasis on emerging and multidisciplinary fields. Several distinguished speakers, who made significant contributions in their respective fields, presented their research. The meeting was funded by the Odisha Higher Education Programme for Excellence & Equity (OHEPEE)-IDP.

Distinguished persons on the dais were Prof. Santosh Kumar Tripathy, Hon'ble Vice Chancellor of the University, Keynote Speaker Prof. K. M. Parida, Director, Centre for Nanoscience and Nanotechnology, SOA University, Guest of Honour Dr. Rupashree Ragini Das, President, Orissa Chemical Society, Prof. H. N Thatoi, Coordinator, IDP, MSCB University as the Guest of Honor, and Guest of Honor Dr. Debasis Mohanty, Secretary-cum-Treasurer, Orissa Chemical Society. Prof. Pramod K. Satapathy, Chairman, Post Graduate Council, MSCBU, presided over the meeting. Dr. A. K. Dora, Organizing Secretary, and Dr. Lingaraj Behera, Head of the Department of Chemistry and Convener FCR-2023 were also on the dais.

The Chief Guest, Hon'ble Vice Chancellor Prof. Tripathy in his address praised the academic activities of the Chemistry Department and the Members of Staff and students for their dedication to upholding the rich legacy of the University through continued academic and cultural activities.

The meeting started with the distribution of the hand-out on Prof. Rout among the audience that describes briefly the great teacher, researcher, and academic administrator Prof. Rout was. The Guest of Honour, Prof. Rupasree Ragini Das, President of Orissa Chemical Society, in her address, said that it is important to recall the memory of the teachers and honor them, as they are a guiding force for us. Just as we remember our forefathers, we should enliven the memory of our celebrated teachers and emulate them in conducting ourselves.

A highlight of the meeting was that each technical session was dedicated to the loving memory of a great teacher.

- Technical Session 01: Dedicated to Prof. R. K. Nanda
- Technical Session 02: Dedicated to Prof. Bhaskar Dash
- Technical Session 03: Dedicated to Prof. Gokulananda Mohapatra
- Technical Session 04: Dedicated to Prof. P. K. Jesthi

The following technical lectures were presented. The lectures on frontiers of current research were quite informative.

Key Note Address	Prof. K. M. Parida SOA University, Bhubaneswar	'Solar light-driven photocatalytic reactions'
Address by Secretary, MKRCC	Prof. Shashadhar Samal	Chemistry at Play from the Beginning of Life and Beyond – Importance of Skill Development at the Interface
Invited Lecture	Prof. S. K. Swain VSSUT, Burla	'CQDs Imprinted Polysaccharide-based Nanocomposites for Fluorescence Glucose Sensing in Real Human Blood Serums towards Diabetes Monitoring'
Invited Lecture	Prof. Amaresh Mishra Sambalpur University	'Organic Solar Cells: Current Status and Future Prospects'
Invited Lecture	Prof. Rupasree Ragini Das Ravenshaw University	'Materials used in display devices'
Invited Lecture	Dr. Trilochan Mishra CSIR-NML, Jamshedpur	Design and Synthesis of 2D tertiary heterojunctions for improved solar photocatalytic hydrogen evolutions
Invited Lecture	Dr. Pankaj Parhi Fakir Mohan University	Advancement in Hydrometallurgy for Recovery of Valuable Metals from Secondary Wastes.
Oral and Poster Presentations		

This was a very successful meeting. The audience had good academic exposure. The students of the department demonstrated exemplary discipline. Proper guidance of the students by the Members of the Staff of the Department was visible through out, with the students remaining present until the end of the last lecture. The purpose of the MKRCC meeting was met when students spoke highly in the valedictory function on the benefits they had from the national seminar.

GLIMPSES OF THE MEETING


Frontiers in Chemical Research
P. G. Department of Chemistry

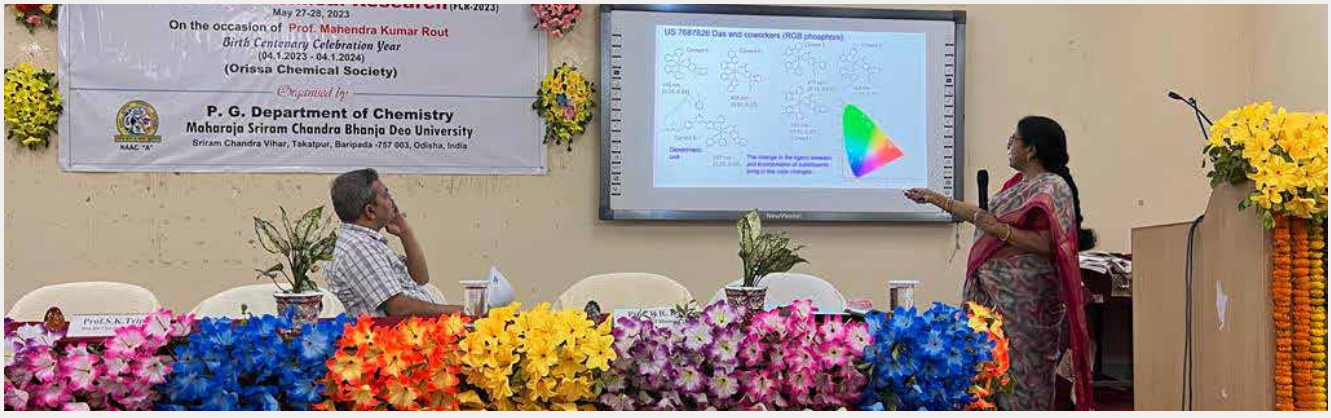

P. G. Department of Chemistry


World Bank & OHEPEE Sponsored
National Seminar on
Frontiers in Chemical Research (FCR-2023)
May 27-28, 2023
On the occasion of Prof. Mahendra Kumar Rout
Birth Centenary Celebration Year


May 27-28, 2023
occasion of Prof. Mahendra Kumar Rout
Birth Centenary Celebration Year


Prof. Mahendra Kumar Rout
Deo University
003, Odisha, India


Birth Centenary Celebration Year
(Orissa Chemical
P. G. Department


May 27-28, 2023
On the occasion of Prof. Mahendra Kumar Rout
Birth Centenary Celebration Year
(04.1.2023 - 04.1.2024)
(Orissa Chemical Society)
Organised by
P. G. Department of Chemistry
Maharaja Sriram Chandra Bhanja Deo University
Sriram Chandra Vihar, Takatpur, Baripada -757 003, Odisha, India
NAAC "A"

MEDIA COVERAGE

ଏମ୍‌ଏସସିବି ବିଶ୍ୱବିଦ୍ୟାଳୟର ବାର୍ଷିକ ସାଂସ୍କୃତିକ କାର୍ଯ୍ୟକ୍ରମ

ବାରିପଦା, (ସମ୍ବାଦ) : ମହାରାଜା ଶ୍ରୀରାମଚନ୍ଦ୍ର ଭଞ୍ଜଦେଓ ବିଶ୍ୱବିଦ୍ୟାଳୟର ଏକବର୍ଷର ବାର୍ଷିକ ସାଂସ୍କୃତିକ କାର୍ଯ୍ୟକ୍ରମ ଶୁକ୍ରବାର ଦିନ ଉଦ୍‌ଘାଟିତ ହୋଇଯାଇଛି । ବିଶ୍ୱବିଦ୍ୟାଳୟର ସ୍ନାତକୋତ୍ତର ପରିଷଦର ଅଧକ୍ଷ ପ୍ରଫେସର ପ୍ରମୋଦ କୁମାର ଶତପଥୀଙ୍କ ପୌରୋହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ଏହି ବାର୍ଷିକ ସମାରୋହ ସଭାରେ କୁଳପତି ପ୍ରଫେସର ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ ମୁଖ୍ୟଅତିଥି ରୂପେ ଯୋଗଦାନ କରି ଛାତ୍ରଛାତ୍ରୀମାନଙ୍କ ମହନୀୟତା ଓ ଚରିତ୍ରଗଠନରେ ବିକାଶ ପାଇଁ ପରିସ୍ଥିତି ଓ ପରିବେଶର ମୂଲ୍ୟାୟନାତ୍ମକ ବକ୍ତବ୍ୟ ରଖିଥିଲେ ।

ମୟୂରଭଞ୍ଜର ସୁନାମଧନ୍ୟ ଗାତିକାର ସଂଗ୍ରାମ ମହାନ୍ତି ଏଥିରେ ସମ୍ମାନିତ ଅତିଥି ରୂପେ ଯୋଗଦାନ କରି ପ୍ରତ୍ୟେକ ମନୁଷ୍ୟ ମଧ୍ୟରେ ନୂଆ ବିଶେଷ ଗୁଣର ପ୍ରକାଶ ପାଇଁ ଆତ୍ମ ପରିଚୟର ଆବଶ୍ୟକତା ସମ୍ବନ୍ଧରେ ନିଜସ୍ୱ ବକ୍ତବ୍ୟରେ ଆଲୋକପାତ କରିଥିଲେ । ବିଶ୍ୱବିଦ୍ୟାଳୟ ଦ୍ୱାରା ପୂର୍ବ ନିର୍ଦ୍ଧାରିତ ସମ୍ମାନସୂଚକ ଡି.ଲିଟ୍ ଉପାଧି ପ୍ରାପ୍ତିକାରୀ ସଂଗ୍ରାମ ମହାନ୍ତିଙ୍କୁ ପ୍ରଦାନ କରାଯାଇଥିଲା । ଡ. ସଂଗ୍ରାମ ମହାନ୍ତିଙ୍କ ଅନୁରୋଧ କ୍ରମେ ଏ ବର୍ଷପାଇଁ ମୟୂରଭଞ୍ଜର ଛଉନୃତ୍ୟ ଉପରେ ଫାଉଣ୍ଡିସେଟ ପାଠ୍ୟକ୍ରମ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ଆରମ୍ଭ ହେବ ବୋଲି କୁଳପତି ପ୍ରଫେସର ତ୍ରିପାଠୀ ସଭାମଞ୍ଚରେ ଘୋଷଣା କରିଥିଲେ । ମୟୂରଭଞ୍ଜ ସିଟିଜେନ୍ ଫୋରମର ସଭାପତି ଜିଆଲାଲ୍ ପୂର୍ଣ୍ଣଚନ୍ଦ୍ର ବୁରୁଡେଲ ଏହି ସଭାରେ ମୁଖ୍ୟବକ୍ତା ରୂପେ ଯୋଗଦାନ କରି ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ ନୈତିକ ଉପଦେଶ ପ୍ରଦାନ କରିବା ସହିତ ସମାଜ ଗଠନରେ ସେମାନଙ୍କ ଭୂମିକା ସମ୍ବନ୍ଧରେ ସାରଗର୍ଭକ ଭାଷଣ ରଖିଥିଲେ । ବିଶ୍ୱବିଦ୍ୟାଳୟ ସାଂସ୍କୃତିକ କାର୍ଯ୍ୟକ୍ରମ ଅଧିକାରୀ ତଥା ପଦାର୍ଥ ବିଜ୍ଞାନର ସହଯୋଗୀ ପ୍ରଫେସର ଡଃ ସଂଘମିତ୍ରା ପ୍ରିୟଦର୍ଶିନୀ ସାହୁ ବାର୍ଷିକ ବିବରଣୀ ପାଠ କରିବା ସହିତ ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ ।

ବାର୍ଷିକ୍ରମ ପ୍ରାରମ୍ଭରେ ବିଶ୍ୱବିଦ୍ୟାଳୟ କୁଳଗୀତ ଗାନ କରାଯାଇଥିଲା । ବିଭିନ୍ନ ସାହିତ୍ୟିକ ଓ ସାଂସ୍କୃତିକ ପ୍ରତିଯୋଗିତାରେ କୃତିତ୍ୱ ଅର୍ଜନ କରିଥିବା ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ ଅତିଥିମାନଙ୍କ ଦ୍ୱାରା ସାର୍ଟିଫିକେଟ ଏବଂ ପୁରସ୍କାର ପ୍ରଦାନ କରାଯାଇଥିଲା । ଏହି ଅବସରରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର ବାର୍ଷିକ ମୁଖପତ୍ର 'ବକାରୀ' ଅତିଥିମାନଙ୍କ ଦ୍ୱାରା ଉନ୍ମୋଚିତ ହୋଇଥିଲା । ସମ୍ମାନିତ ଅତିଥି ଡଃ ସଂଗ୍ରାମ ମହାନ୍ତି ସ୍ୱରଚିତ ପୁସ୍ତକମାନ ବିଶ୍ୱବିଦ୍ୟାଳୟ ପାଠାଗାର ଉଦ୍ଦେଶ୍ୟରେ କୁଳପତିଙ୍କୁ ଦାନ କରିଥିଲେ ।

ଏ ସାଂସ୍କୃତିକ ପରମ୍ପରାରେ କୁଳପତି ପ୍ରଫେସର ତ୍ରିପାଠୀ, ମୁଖ୍ୟବକ୍ତା ପୂର୍ଣ୍ଣଚନ୍ଦ୍ର ବୁରୁଡେଲଙ୍କୁ ଓ ଶ୍ରୀଯୁକ୍ତ ବୁରୁଡେଲ କୁଳପତିଙ୍କୁ ସମ୍ମାନିତ କରିଥିଲେ ଯାହା କି ଏକ ଆବେଗମୟ ପରିବେଶ ସୃଷ୍ଟି କରିଥିଲା । ତା'ପରେ ଛାତ୍ରଛାତ୍ରୀ ମାନଙ୍କ ଦ୍ୱାରା ଏକକ ନୃତ୍ୟ, ସଙ୍ଗୀତ ଓ ସମବେତ ନୃତ୍ୟ ଆଦି ସାଂସ୍କୃତିକ କାର୍ଯ୍ୟକ୍ରମ ପରିବେଷଣ କରାଯାଇଥିଲା । ପ୍ରାଣୀବିଜ୍ଞାନ ବିଭାଗର ସହକାରୀ ପ୍ରଫେସର ଡଃ ବୁବୁ ମହାପାତ୍ର, ଉଦ୍ଭିଦ ବିଜ୍ଞାନ ବିଭାଗର ସହକାରୀ ପ୍ରଫେସର ଡଃ ବିଶ୍ୱଜିତ୍ ହାଁବଦା ପ୍ରମୁଖ ମଞ୍ଚ ପରିଚାଳନା କରିଥିଲେ । ଏହି କାର୍ଯ୍ୟକ୍ରମରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର ସମସ୍ତ ଅଧ୍ୟାପକ/ଅଧ୍ୟାପିକା, ଅଣଶିକ୍ଷକ କର୍ମଚାରୀ ଓ ଛାତ୍ରଛାତ୍ରୀ ଯୋଗଦାନ କରିଥିଲେ ।

ପ୍ରଫେସର ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ଜନ୍ମଶତବାର୍ଷିକୀରେ ଆଲୋଚନାଚକ୍ର

ନିର୍ଘଣ୍ଟ ନିଜସ୍ୱ ପ୍ରତିନିଧି : ବାରିପଦା

ମହାରାଜା ଶ୍ରୀରାମଚନ୍ଦ୍ର ଭଞ୍ଜଦେଓ ବିଶ୍ୱବିଦ୍ୟାଳୟର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗରେ ସୁନାମଧନ୍ୟ ରସାୟନବିତ୍ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମଶତବାର୍ଷିକୀ ଅବସରରେ ଏକ ଜାତୀୟ ଆଲୋଚନାଚକ୍ର ଉଦ୍‌ଘାଟିତ ହୋଇଯାଇଛି ।

ସ୍ନାତକୋତ୍ତର ପରିଷଦର ଅଧକ୍ଷ ପ୍ରଫେସର ପ୍ରମୋଦ କୁମାର ଶତପଥୀଙ୍କ ପୌରହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ଏହି ଆଲୋଚନାଚକ୍ରରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ପ୍ରଫେସର ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ ମୁଖ୍ୟ ଅତିଥି ରୂପେ ଯୋଗ ଦେଇ ଜୀବନରେ ରସାୟନ ବିଜ୍ଞାନର ପ୍ରାସଙ୍ଗିକତା ସମ୍ବନ୍ଧରେ ଆଲୋଚନା କରିଥିଲେ । ସୋଆ ବିଶ୍ୱବିଦ୍ୟାଳୟରୁ ପ୍ରଫେସର କୁଳମଣି ପରିଡ଼ା ମୁଖ୍ୟବକ୍ତା ଭାବେ ଯୋଗଦାନ କରି ଆଲୋଚନାଚକ୍ରର 'ଫ୍ରଣ୍ଟିୟେର୍ସ ଇନ୍ କେମିକାଲ୍ ରିସର୍ଚ' ଶୀର୍ଷକ ବିଷୟରେ ଆଲୋଚନା କରିଥିଲେ । ଓଡ଼ିଶା କେମିକାଲ୍ ସୋସାଇଟିର ସଭାପତି ଡ. ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାସ ଓ ସଂପାଦକ ଡ. ଦେବାଶିଷ ମହାନ୍ତି ଯୋଗଦେଇ ଓଡ଼ିଶା କେମିକାଲ୍ ସୋସାଇଟିର ଭୂମିକା ସମ୍ବନ୍ଧରେ ବକ୍ତବ୍ୟ ରଖିଥିଲେ । ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗୀୟ ମୁଖ୍ୟ ତଥା ଆଲୋଚନାଚକ୍ରର ଆବାହକ ଡ. ଲିଙ୍ଗରାଜ ବେହେରା ସ୍ୱାଗତ ଭାଷଣ ପ୍ରଦାନ କରିଥିଲେ । ବିଭାଗୀୟ ସହକାରୀ ପ୍ରଫେସର ଡ. ଅମର କୁମାର ଦୋରା ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ । ବିଭାଗୀୟ ସହଯୋଗୀ ପ୍ରଫେସର ଡ. ରାଜେଶ କୁମାର ସିଂ ଓ ସହକାରୀ ପ୍ରଫେସର ଡ. ଆଶିଷ କୁମାର ଜେନା ଏହି ଆଲୋଚନାଚକ୍ରରେ ସକ୍ରିୟ ସହଯୋଗ କରିଥିଲେ । ଦୁଇଦିନ ଧରି ହେବାକୁ ଥିବା ଏହି ଆଲୋଚନାଚକ୍ରରେ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ଜନ୍ମଶତବାର୍ଷିକୀ ପାଳନ କମିଟିର ସମ୍ପାଦକ ଡ. ଶଶଧର ସାମଲ, ବିଏସ୍‌ଏସ୍‌ୟୁଟିର ପ୍ରଫେସର ଶରତ କୁମାର ସାହିଁ, ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟର ସହକାରୀ ପ୍ରଫେସର ଡ. ଅମରେଶ ମିଶ୍ର, ରାଷ୍ଟ୍ରୀୟ ଧାତୁକର୍ମ ପ୍ରୟୋଗଶାଳାର ମୁଖ୍ୟ ବୈଜ୍ଞାନିକ ପ୍ରଫେସର ତ୍ରିଲୋଚନ ମିଶ୍ର, ଫକୀର ମୋହନ ବିଶ୍ୱବିଦ୍ୟାଳୟ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ମୁଖ୍ୟ ଡ. ପଙ୍କଜ କୁମାର ପାଢ଼ୀ, ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ପ୍ରଫେସର ଡ. ନିଗମାନନ୍ଦ ଦାସ ପ୍ରମୁଖ ନିଜର ବକ୍ତୃତା ପ୍ରଦାନ କରିବେ ବୋଲି ସୂଚନା ମିଳିଛି ।

ଅନୁଧ୍ୟାନ
Anudhyan
DAILY ODIA NEWSPAPER

ସୁନାମଧନ୍ୟ ରସାୟନବିତ୍ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମଶତବାର୍ଷିକୀ ଅବସରରେ

ମହାରାଜା ଶ୍ରୀରାମଚନ୍ଦ୍ର ଭଞ୍ଜଦେଓ ବିଶ୍ୱବିଦ୍ୟାଳୟରେ ଆଲୋଚନାଚକ୍ର

ବାରିପଦା, ୨୭/୦୫: ମହାରାଜା ଶ୍ରୀରାମଚନ୍ଦ୍ର ଭଞ୍ଜଦେଓ ବିଶ୍ୱବିଦ୍ୟାଳୟର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗରେ ସୁନାମଧନ୍ୟ ରସାୟନବିତ୍ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମଶତବାର୍ଷିକୀ ଅବସରରେ ଏକ ଜାତୀୟ ଆଲୋଚନାଚକ୍ର ଉଦ୍ଘାଟିତ ହୋଇଯାଇଛି । ସ୍ନାତକୋତ୍ତର ପରିଷଦର ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ପ୍ରମୋଦ କୁମାର ଶତପଥୀଙ୍କ ପୌରୋହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ଏହି ଆଲୋଚନାଚକ୍ର ବିଶ୍ୱବ୍ୟାଙ୍କ ଦ୍ୱାରା ଉତ୍କର୍ଷତା ଏବଂ ସମାନତା ପାଇଁ ଓଡ଼ିଶା ଉଚ୍ଚ ଶିକ୍ଷା ଯୋଜନାର ସମନ୍ୱିତ ବିକାଶ କାର୍ଯ୍ୟକ୍ରମ ଦ୍ୱାରା ପ୍ରାୟୋଜିତ ହୋଇଥିଲା । ଏହି ଆଲୋଚନାଚକ୍ରରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ପ୍ରଫେସର ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ ମୁଖ୍ୟ ଅତିଥି ଭାବେ ଯୋଗ ଦେଇ ଜୀବନରେ ରସାୟନ ବିଜ୍ଞାନର ପ୍ରାସଙ୍ଗିକତା ସମ୍ପର୍କରେ ଆଲୋଚନା କରିବା ସହିତ ଏହି ଆଲୋଚନାଚକ୍ରର ପ୍ରତିଟି ସୋପାନଗୁଡ଼ିକୁ ଓଡ଼ିଶାର ବିଭିନ୍ନ ଖ୍ୟାତନାମା ରସାୟନ ବିଜ୍ଞାନ ପ୍ରଫେସରମାନଙ୍କ ନାମରେ ନାମିତ କରିଥିବାରୁ ସେ ଏହାର ଭୂୟସୀ ପ୍ରଶଂସା କରିଥିଲେ ଓ ଅନ୍ୟମାନେ ଏପରି କରିବା ପାଇଁ ପରାମର୍ଶ ଦେଇଥିଲେ । ସୋଆ ବିଶ୍ୱବିଦ୍ୟାଳୟର ନାନୋ ସାଇନ୍ସ ଆଣ୍ଡ ନାନୋ ଟେକ୍ନୋଲୋଜି ବିଭାଗର ନିର୍ଦ୍ଦେଶକ ପ୍ରଫେସର କୁଳମଣି ପରିଡ଼ା ମୁଖ୍ୟବକ୍ତା ଭାବେ ଯୋଗଦାନ କରି ଆଲୋଚନାଚକ୍ରର ଫ୍ରଣ୍ଟିୟର୍ସ ଇନ୍ କେମିକାଲ୍ ରିସର୍ଚ୍ଚ ଶୀର୍ଷକ ବିଷୟରେ ଭାଷଣ ପ୍ରଦାନ କରି ଏହି ଆଲୋଚନାଚକ୍ରକୁ ଏକ ସୁଯୋଗପଯୋଗୀ ପଦକ୍ଷେପ ବୋଲି ଅଭିହିତ କରିଥିଲେ । ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟିର ସଭାପତି ଡ. ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାସ ଓ ସଂପାଦକ ଡ. ଦେବାଶିଷ ମହାନ୍ତି ଯୋଗଦେଇ ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟିର ଭୂମିକା ଓ କାର୍ଯ୍ୟାବଳୀ ସମ୍ପର୍କରେ ବକ୍ତବ୍ୟ ରଖିଥିଲେ । ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗୀୟ ମୁଖ୍ୟ ତଥା ଆଲୋଚନାଚକ୍ରର ଆବାହକ ଡ. ଲିଙ୍ଗରାଜ ବେହେରା ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିବା ସହ ସ୍ୱାଗତ ଭାଷଣ ପ୍ରଦାନ କରିଥିଲେ । ଆଲୋଚନାଚକ୍ରର କାର୍ଯ୍ୟନିର୍ବାହୀ ସଂପାଦକ ବିଭାଗୀୟ ସହକାରୀ ପ୍ରଫେସର ଡ. ଅମର କୁମାର ଦୋରା ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ । ବିଭାଗୀୟ ସହଯୋଗୀ ପ୍ରଫେସର ଡ. ରାକେଶ କୁମାର ସିଂ ଓ ସହକାରୀ ପ୍ରଫେସର ଡ. ଅଶିଷ କୁମାର ଜେନା ଏହି ଆଲୋଚନାଚକ୍ରରେ ସକ୍ରିୟ ସହଯୋଗ କରିଥିଲେ । ଏହି ଆଲୋଚନାଚକ୍ରରେ ବିଭିନ୍ନ ମହାବିଦ୍ୟାଳୟ, ବିଶ୍ୱବିଦ୍ୟାଳୟର ଅଧ୍ୟାପକ ଓ ଅଧ୍ୟାପିକା ସହିତ ଗବେଷଣାରତ ଛାତ୍ରଛାତ୍ରୀମାନେ ଯୋଗଦାନ କରିଥିଲେ । ଦୁଇଦିନ ଧରି ହେବାକୁ ଥିବା ଏହି ଆଲୋଚନାଚକ୍ରରେ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ଜନ୍ମଶତବାର୍ଷିକୀ ପାଳନ କମିଟିର ସମ୍ପାଦକ ଡ. ଶଶଧର ସାମଲ, ଭିଏସ୍ଏସ୍ୟୁଟିର ପ୍ରଫେସର ଶରତ କୁମାର ସ୍ୱାଇଁ, ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟର ସହକାରୀ ପ୍ରଫେସର ଡ. ଅମରେଶ ମିଶ୍ର, ରାଷ୍ଟ୍ରୀୟ ଧାତୁକର୍ମ ପ୍ରୟୋଗଶାଳାର ପ୍ରମୁଖ ବୈଜ୍ଞାନିକ ପ୍ରଫେସର ତ୍ରିଲୋଚନ ମିଶ୍ର, ଫକୀର ମୋହନ ବିଶ୍ୱବିଦ୍ୟାଳୟର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ମୁଖ୍ୟ ଡ. ପଙ୍କଜ କୁମାର ପାଢ଼ୀ, ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ପ୍ରଫେସର ଡ. ନିଗମାନନ୍ଦ ଦାସ ପ୍ରମୁଖ ନିଜର ବକ୍ତୃତା ପ୍ରଦାନ କରିବେ ।

ସକାଳ
THE SAKALA
Mayurbhanj - 28 May 2023 - Page 4

ରସାୟନବିତ୍‌ଙ୍କ ଜନ୍ମ ଶତବାର୍ଷିକୀରେ ଜାତୀୟ ଆଲୋଚନାଚକ୍ର

ବାରିପଦା, ୨୭।୫(ସମିସ): ମହାରାଜା ଶ୍ରୀରାମଚନ୍ଦ୍ର ଭଞ୍ଜଦେଓ ବିଶ୍ୱବିଦ୍ୟାଳୟର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗରେ ରସାୟନବିତ୍ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମ ଶତବାର୍ଷିକୀ ଅବସରରେ ଏକ ଜାତୀୟ ଆଲୋଚନାଚକ୍ର ଉଦ୍‌ଘାଟିତ ହୋଇଯାଇଛି। ସ୍ନାତକୋତ୍ତର ପରିଷଦର ଅଧ୍ୟକ୍ଷ ପ୍ରଫେସର ପ୍ରମୋଦ କୁମାର ଶତପଥୀଙ୍କ ପୌରୋହିତ୍ୟରେ ଅନୁଷ୍ଠିତ ଏହି ଆଲୋଚନାଚକ୍ର ବିଶ୍ୱବ୍ୟାଙ୍କ ଦ୍ୱାରା ଉତ୍କର୍ଷତା ଏବଂ ସମାନତା ପାଇଁ ଓଡ଼ିଶା ଉଚ୍ଚଶିକ୍ଷା ଯୋଜନାର ସମନ୍ୱିତ ବିକାଶ କାର୍ଯ୍ୟକ୍ରମ ଦ୍ୱାରା ପ୍ରାୟୋଜିତ ହୋଇଥିଲା। ଆଲୋଚନାଚକ୍ରରେ ବିଶ୍ୱବିଦ୍ୟାଳୟର କୁଳପତି ପ୍ରଫେସର ସନ୍ତୋଷ କୁମାର ତ୍ରିପାଠୀ ମୁଖ୍ୟଅତିଥି ରୂପେ ଯୋଗଦେଇ ଜୀବନରେ ରସାୟନ ବିଜ୍ଞାନର ପ୍ରାସଙ୍ଗିକତା ସମ୍ପର୍କରେ ଆଲୋଚନା କରିବା ସହିତ ଆଲୋଚନାଚକ୍ରର ପ୍ରତିଟି ସୋପାନଗୁଡ଼ିକୁ ଓଡ଼ିଶାର ବିଭିନ୍ନ ଖ୍ୟାତନାମା ରସାୟନ ବିଜ୍ଞାନ ପ୍ରଫେସରମାନଙ୍କ ନାମରେ ନାମିତ କରିଥିବାରୁ ସେ ଏହାର ପ୍ରଶଂସା କରିଥିଲେ। ଅନ୍ୟମାନେ ଏଭଳି କରିବା ପାଇଁ ପରାମର୍ଶ ଦେଇଥିଲେ। ସୋଆ ବିଶ୍ୱବିଦ୍ୟାଳୟର ନାନୋ ସାଇନ୍ସ ଆଣ୍ଡ ନାନୋ ଟେକ୍ନୋଲୋଜି ବିଭାଗର ନିର୍ଦ୍ଦେଶକ ପ୍ରଫେସର କୁଳମଣି ପରିଡ଼ା ମୁଖ୍ୟବକ୍ତା ଭାବେ ଯୋଗଦାନ କରି ଆଲୋଚନାଚକ୍ରର 'ଫ୍ରଣ୍ଟିୟର୍ସ ଇନ୍ କ୍ୟାମିକାଲ୍ ରିସର୍ଚ୍ଚ' ଶୀର୍ଷକ ବିଷୟରେ ଭାଷଣ ଦେଇ ଏହି ଆଲୋଚନାଚକ୍ରକୁ ଏକ ସୁଯୋଗପଯୋଗୀ ପଦକ୍ଷେପ ବୋଲି ଅଭିହିତ କରିଥିଲେ। ଓଡ଼ିଶା କେମିକାଲ୍ ସୋସାଇଟିର ସଭାପତି ଡ. ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାସ ଓ ସମ୍ପାଦକ ଡ. ଦେବାଶିଷ ମହାନ୍ତି ଯୋଗଦେଇ ଓଡ଼ିଶା କେମିକାଲ୍ ସୋସାଇଟିର ଭୂମିକା ଓ କାର୍ଯ୍ୟାବଳୀ ସମ୍ପର୍କରେ ବକ୍ତବ୍ୟ ରଖିଥିଲେ। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗୀୟ ମୁଖ୍ୟ ତଥା ଆଲୋଚନାଚକ୍ରର ଆବାହକ ଡ. ଲିଙ୍ଗରାଜ ବେହେରା ଅତିଥି ପରିଚୟ ଓ ସ୍ୱାଗତ ଭାଷଣ ଦେଇଥିଲେ। ବିଭାଗୀୟ ସହକାରୀ ପ୍ରଫେସର ଡ. ଅମର କୁମାର ଦୋରା ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ। ବିଭାଗୀୟ ସହଯୋଗୀ ପ୍ରଫେସର ଡ. ରାକେଶ କୁମାର ସିଂ ଓ ସହକାରୀ ପ୍ରଫେସର ଡ. ଅଶିଷ କୁମାର ଜେନା କାର୍ଯ୍ୟକ୍ରମରେ ସହଯୋଗ କରିଥିଲେ। ଦୁଇଦିନ ଧରି ହେବାକୁ ଥିବା ଏହି ଆଲୋଚନାଚକ୍ରରେ 'ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ଜନ୍ମ ଶତବାର୍ଷିକୀ ପାଳନ କମିଟିର ସମ୍ପାଦକ ଡ. ଶଶଧର ସାମଲ, ଭିଏସ୍ଏସ୍ୟୁଟିର ପ୍ରଫେସର ଶରତ କୁମାର ସ୍ୱାଇଁ, ସମ୍ବଲପୁର ବିଶ୍ୱବିଦ୍ୟାଳୟର ସହକାରୀ ପ୍ରଫେସର ଡ. ଅମରେଶ ମିଶ୍ର, ରାଷ୍ଟ୍ରୀୟ ଧାତୁକର୍ମ ପ୍ରୟୋଗଶାଳାର ମୁଖ୍ୟ ବୈଜ୍ଞାନିକ ପ୍ରଫେସର ତ୍ରିଲୋଚନ ମିଶ୍ର, ଫକୀର ମୋହନ ବିଶ୍ୱବିଦ୍ୟାଳୟ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ମୁଖ୍ୟ ଡ. ପଙ୍କଜ କୁମାର ପାଢ଼ୀ, ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ପ୍ରଫେସର ଡ. ନିଗମାନନ୍ଦ ଦାସ ପ୍ରମୁଖ ନିଜର ବକ୍ତୃତା ପ୍ରଦାନ କରିବେ।

(E)

Khariar College, Nuapada

15th October 2023

Prof. M. K. Rout Birth Centenary Celebration Year
Orissa Chemical Society Regional Conference,
Khariar Autonomous College, Khariar,
Nuapada 766107, Odisha

15th October 2023

In the Prof. Mahendra Kumar Rout Birth Centenary Celebration Year, the Department of Chemistry Khariar (Autonomous) College, Khariar organized the 27th Regional Conference of Orissa Chemical Society along with a National Conference on "Biochemical and Physical Aspects of Material Science" (BPAMS) on 15th October 2023.

In the event Prof. Balaram Sahoo, Retd. Professor of Chemistry, IIT Kharagpur was the Chief Guest, and Prof. Gopabandhu Behera, Retd. Professor of Chemistry, Sambalpur University was the Guest of Honour. Prof. Sarat Kumar Swain, VSSUT Burla attended as the OCS President's representative. Dr. Bigyan Ranjan Jali, Joint Secretary, OCS was also present. The Principal cum Head of the Chemistry Department, Khariar (Autonomous) College, Dr. Tarun Kumar Pradhan presided over the inaugural session. Prof. Pradeep Kumar Behera, Sambalpur University was the Guest of Honour. The +2 in-charge Principal Mr. Prasanta Kumar Panda, and Convener of the National Seminar Mrs. Rajalaxmee Rath were present on the dais in the inaugural session.

Smt. Rath introduced the guests and delivered the welcome address. Dr. Tarun Kumar Pradhan gave an overview of the Regional Conference and the National Seminar. Prof. Sarat Ku. Swain and the keynote speaker Prof. Priyaranjan Mohapatra, VSSUT, Burla addressed the audience. The joint secretary of OCS Dr. B. R. Jali presented a report of the OCS activities in the year.

The Governing Body President Mr. B. Padhi told how the event is beneficial to the students. Prof. Gopabandhu Behera in his address said how the OCS Regional Conference and National Seminar benefit the students and researchers. Prof. Balaram Sahoo inspired everyone in his address, telling how research is done. Then the SOUVENIR was inaugurated by the guests. After the felicitation of all the guests, a Vote of Thanks was offered by the Organizing Secretary Mr. Rajaram Mishra.

There were technical sessions with invited lectures and oral presentations. Overall, it was a highly successful OCS Regional Conference.

27th Regional Conference of Orissa Chemical Society"

One Day National Seminar

On

"Biochemical & Physical Aspects of Material Science"

(BPAMS-2023)

15th October, 2023

Organized by

Department of Chemistry

KHARIAR (AUTONOMOUS) COLLEGE, KHARIAR

In collaboration with

ORISSA CHEMICAL SOCIETY

Venue: M.P. Hall, Khariar (Autonomous) College, Khariar

SCHEDULE	EVENTS
08:00 – 09:00 AM	Registration & Breakfast
	INAUGURAL SESSION
9:00 AM	Invitation of the Guests
9:10 AM	Lighting of the Lamp , Greeting & Opening Song
9:25 AM	Welcome address by Smt. Rajalaxmee Rath
9:40 AM	Address by Principal, KACK, +2 Principal, KHSS & G.B. President
10:00 AM	Address by The President, OCS
10:15 AM	Address by joint secretary, OCS
10:25 AM	Address by guest of honour (Prof. Gopabandhu Behera)
10:30 AM	Address by Chief Guest (Prof. Balaram Sahoo)
10:40 AM	Inauguration of the Souvenir BPAMS - 2023
10:45 AM	Felicitation and Vote of Thanks (by Prasanta Ku. Panda)
11:00 AM	Tea Break
	TECHNICAL SESSION - I
11:30 AM	IL- 1: Prof. Sarat Kumar Swain, VSSUT, Burla Topic: **Wound Healing Applications of Polymeric and Bio-polymeric Hybrid Materials**
12:30 PM	IL- 2: Dr. Hirak Chakraborty, Sambalpur University, Sambalpur Topic: **Biophysics: A melting pot for Physics, Chemistry and Biology**
	 LAUNCH BREAK - (1:30- 2:30) PM 
	TECHNICAL SESSION - II
2:30 PM	IL - 3: Prof. Sukalyan Dash, VSSUT, Burla, Topic: Adsorption – An Efficient Technique for Environmental Remediation
3:30 PM	Oral Presentation/ Panel Discussion
4:00 PM	Poster Presentation
4:15 PM	Valedictory Function
4:30 PM	Cultural Programme

IL -01

Wound Healing Applications of Polymeric and Bio-polymeric Hybrid Materials

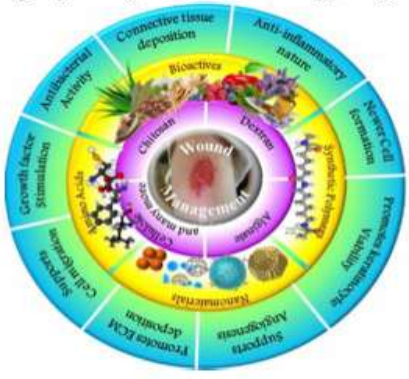
Prof. Sarat K. Swain
Department of Chemistry, Veer Surendra Sai University of Technology, Burla, Sambalpur-768018, Odisha, India
Phone No: 9937082348; Email: skswain_chem@vssut.ac.in

ABSTRACT

Material science has emerged to be the prior solution to almost all problems faced by human world. Several materials like ceramics, metals, polymers, biopolymers have been harnessed to fabricate novel nanocomposite systems to address different issues. Especially, polymeric nanocomposites have become an indispensable part of health industry. Inherent features ranging from antimicrobial and therapeutic efficacies to bio-sensing and bio-marking abilities, these advanced nanocomposite-based materials have transformed the face of biomedical fields as we know today. Herein, the immense therapeutic potential of polymeric nanocomposites from a wound healing point of view is briefly discussed. Polymeric nanocomposites satisfy all the requirements of an ideal wound dressing material which explains its suitability in the particular field. The wide scope of manipulation of material properties by the selective use of polymers, biopolymers, nanomaterials and bioactive materials in unison provides therapeutic properties to the materials which can show outstanding healing properties without the use of any commercial drugs. Polymeric and bio-polymeric materials like chitosan, alginates, dextran, acrylic and vinyl-based polymers have been harnessed to impart non-toxicity, biocompatibility, anti-microbial and wound healing attributes to the synthesized materials [1]. Additionally, soft polymeric systems mimic the structure of natural extracellular matrix which acts as a support for cell proliferation. Further, the use of nanomaterials. Such as Ag Nps, Au Nps, ZnO Nps TiO_2 Nps, carbon-based nanomaterials and different bioactive materials enhances the wound closure rates for their antimicrobial nature and cell growth stimulating properties [2]. Hence, careful selection of the constituent materials will provide smart hybrid polymeric nanocomposites which will display accentuated wound healing characteristics, which holds prime importance in the field of regenerative medicines.

Keywords: Polymers; Biopolymers; Wound healing; Regenerative medicines

Graphical Abstract:



IL-02

Biophysics: A melting pot for Physics, Chemistry and Biology

Asst. Prof Hirak Chakraborty

School of Chemistry, Sambalpur University, Jyoti Vihar, Burla, Odisha 768 019

Email: hirak@suniv.ac.in

ABSTRACT

Understanding the molecular mechanism allows us to improvise the process for the betterment of humankind. The chemical, physical, and biological manipulations are required to satisfy the needs of 6 billion people worldwide and combat emerging and re-emerging viral diseases. We all have witnessed the speed of vaccine development against the SARS coronavirus during the COVID-19 pandemic became possible as the technical know-how for vaccine development was well understood. We are working to understand biological processes such as viral entry to the host cell and protein trafficking utilizing arrays of physical and chemical techniques aiming to decipher their molecular mechanism. Understanding the molecular mechanism of viral entry would provide an edge to develop better entry inhibitors, which can be used as antiviral agents. The long-term goal of the laboratory is to develop antiviral agents that would work against multiple viruses.

IL -03

Adsorption – An Efficient Technique for Environmental Remediation

Prof. Sukalyan Dash

Dept. of Chemistry

Veer Surendra Sai University of Technology, Burla

e-mail: sukalyan_dash@yahoo.com

ABSTRACT

Adsorption, a process of binding between adsorbate molecules and adsorbent surfaces, has been a much studied process due to its industrial applications. The present topic discusses the basics of adsorption phenomenon and two of its applications in the removal of some styrylpyridinium dyes from aqueous as well as non-aqueous media. Egg shell particles (ESP) obtained from local eateries have been used as adsorbent materials in raw, as well as in modified forms, to remove the dye molecules from water medium and a detailed study thereof has been presented wherein variation of dye concentration, adsorbent dose, temperature, etc . as well as impact of H-bond maker and breaker salts have been analyzed. ESP has been confirmed to be an excellent adsorbent available at zero cost throughout the globe. Adsorption of the dye molecules from some organic solvent media has also been studied using raw silica and modified silica as adsorbents. The results obtained from the studies have been encouraging and are almost novel since such study has not been reported much in literature. The study not only emphasizes the utilization of common adsorption phenomena, but also extends avenues for discussions on the impact of solvent polarity parameters and effects of dye substituents in the extent of adsorption. In both the studies, adsorption models have schematically been proposed from their kinetic and thermodynamic data.

GLIMPSES OF THE EVENT


NATIONAL CONFERENCE
BPAMS - 2023

MEDIA COVERAGE

ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଜାତୀୟ ସମ୍ମାନ

ଖଡ଼ିଆଳ,୧୫।୧୦(ଅପ୍ର): ଖଡ଼ିଆଳ ସ୍ୱୟଂ ଶାସିତ ମହାବିଦ୍ୟାଳୟରେ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ପକ୍ଷରୁ ଏକ ଜାତୀୟ ସମ୍ମାନ ଅନୁଷ୍ଠିତ ହୋଇଛି। ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟିର ଏକ ଆଞ୍ଚଳିକ କନଫରେନ୍ସ ଓ ଏକ ଦିବସୀୟ ଜାତୀୟ ସେମିନାର ଅଧ୍ୟକ୍ଷ ଡ.ତରୁଣ କୁମାର ପ୍ରଧାନଙ୍କ ଅଧ୍ୟକ୍ଷତାରେ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା। ଏଥିରେ ମୁଖ୍ୟଅତିଥି ଭାବେ ଆଇଆଇଟି ଖଡ଼ଗପୁରର ପ୍ରଫେସର ବଳରାମ ସାହୁ, ମୁଖ୍ୟବକ୍ତା ଭାବେ ପ୍ରଫେସର ଶରତ କୁମାର ସ୍ୱାଇଁ, ପ୍ରଫେସର ସୁକଲ୍ୟାଣ ଦାସ, ପ୍ରଫେସର ହୀରକ ଚକ୍ରବର୍ତ୍ତୀ ଯୋଗଦେଇ ରସାୟନ ବିଜ୍ଞାନର ବିଭିନ୍ନ ତଥ୍ୟ ଉପରେ ଆଲୋକପାତ କରିଥିଲେ। ସେହିପରି ସମ୍ମାନିତ ଅତିଥି ଭାବେ ପ୍ରଫେସର ଗୋପବନ୍ଧୁ ବେହେରା, ଅତିଥି ଭାବେ ପ୍ରଫେସର ପ୍ରଦୀପ କୁମାର ବେହେରା, ଡ.ବିଜ୍ଞାନ କୁମାର ଜେଲି, ପ୍ରଫେସର ପ୍ରିୟରଞ୍ଜନ ମହାପାତ୍ର, କଲେଜ ପରିଚାଳନା କମିଟିର ସଭାପତି ବିଶ୍ୱଜିତ ପାଢ଼ୀ ଓ ଯୁକ୍ତଦୁଇ ଇନଚାର୍ଜ ପ୍ରଶାନ୍ତ କୁମାର ପଣ୍ଡା ପ୍ରମୁଖ ଯୋଗଦେଇଥିଲେ। ଅଧ୍ୟାପିକା ରାଜଲକ୍ଷ୍ମୀ ରଥ ପ୍ରାରମ୍ଭିକ ସୂଚନା ଓ ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ। ଅଧ୍ୟାପକ ରାଜାରାମ ମିଶ୍ର ସଂଯୋଜନା କରିଥିବାବେଳେ ଅଧ୍ୟାପକ ତଥାଗତ ରାଉତ ଓ ଡ.ସରୋଜ କୁମାର ପଣ୍ଡା ସହଯୋଗ କରିଥିଲେ। ଏଥିରେ ଡ.ପଦ୍ମଲୋଚନ ବର୍ମା, ଡ. ବିଷ୍ଣୁଦେବ ସିଂ ମଲ୍ଲିକ ସମେତ ସମସ୍ତ ଅଧ୍ୟାପକ ଅଧ୍ୟାପିକା ଓ କର୍ମଚାରୀ ସହଯୋଗ କରିଥିଲେ। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଅନ୍ୟ ଅଧ୍ୟାପିକା ଲିପ୍ସା ବାରିକ, ରୋହିତ ଭିତିରିଆ, ସମୀର କୁମାର ଦାସ ପ୍ରମୁଖ ଉପସ୍ଥିତ ଥିଲେ। ଶେଷରେ ସମସ୍ତ ଅଧ୍ୟାପକ, ଅଧ୍ୟାପିକା ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ ମାନପତ୍ର ପ୍ରଦାନ କରାଯାଇଥିଲା। ଶେଷରେ ପ୍ରଫୁଲ୍ଲ କୁମାର ପଣ୍ଡା ଧନ୍ୟବାଦ ଦେଇଥିଲେ।

ସକାଳ
THE SAKALA
KBK - 17 Oct 2023 - Page 5

ଖଡ଼ିଆଳ କଲେଜରେ ଆଞ୍ଚଳିକ ସମ୍ମିଳନୀ

[illegible]

[illegible]

ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଜାତୀୟସଂପାନ

ଖଡ଼ିଆଳ,୧୬ ୧୦(ନି.ପ୍ର): ଖଡ଼ିଆଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟରେ ରସାୟନ ବିଜ୍ଞା
ବିଭାଗ ପକ୍ଷରୁ ଓଡିଶା କେମିକାଲ ସୋସାଇଟିର ଏକ ଆଞ୍ଚଳିକ କନଫରେନ୍ସ ଓ ଏ
ଦ୍ୱିଦିବସୀୟ ଜାତୀୟ ସେମିନାର ଅଧକ୍ଷ ଡ଼. ତରୁଣ କୁମାର ପ୍ରଧାନଙ୍କ ଅଧକ୍ଷତାରେ
ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି। ଏଥିରେ ଆଇଆଇଟି ଖଡ଼ଗପୁରର ପ୍ରଫେସର ବଳରାମ ସା
ମୁଖ୍ୟଅତିଥି, ପ୍ରଫେସର ଗୋପବନ୍ଧୁ ବେହେରା ସମ୍ମାନିତ ଅତିଥି, ପ୍ରଫେସର ପ୍ରଦୀ
କୁମାର ବେହେରା ଓଏଲେସ ତରଫରୁ ଡ. ବିଜ୍ଞାନ କୁମାର ଜାଲି, ପ୍ରଫେସର ପ୍ରିୟରଂଜ
ମହାପାତ୍ର ଅତିଥି ଭାବେ ଯୋଗଦାନ କରିଥିଲେ। ମହାବିଦ୍ୟାଳୟର ପରିଚାଳନା କମିଟି
ସଭାପତି ବିଶ୍ୱାଜିତ ପାଢ଼ୀ ଓ ଯୁକ୍ତ ଦୁଇ ଇଂନଚାର୍ଜ ପ୍ରଶାନ୍ତ କୁମାର ପଣ୍ଡା ସମ୍ମାନିତ ଅତି
ଭାବେ ଯୋଗଦାନ କରିଥିଲେ । ମୁଖ୍ୟବକ୍ତା ଭାବରେ ପ୍ରଫେସର ଶରତ କୁମାର ସ୍ୱାଇଁ
ପ୍ରଫେସର ସୁକଲ୍ୟାଣ ଦାସ, ପ୍ରଫେସର ହୀରକ ଚକ୍ରବର୍ତ୍ତୀ ଯୋଗଦେଇ ରସାୟ
ବିଜ୍ଞାନର ବିଭିନ୍ନ ତଥ୍ୟ ଉପରେ ଆଲୋକପାତ କରିଥିଲେ। ଅଧ୍ୟାପିକା ରାଜଲକ୍ଷ୍ମୀ ର
ପ୍ରାରମ୍ଭିକ ସୂଚନା ଓ ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ। ଅଧ୍ୟାପକ ରାଜାରାମ ମି
ସଂଯୋଜନା କରିଥିଲେ। ଅଧ୍ୟାପକ ତଥାଗତ ରାଉତ ଓ ଡ. ସରୋଜ କୁମାର ପଣ
ସହଯୋଗ କରିଥିଲେ। ଏଥିରେ ଦିନ ଡ. ପଦ୍ମଲୋଚନ ବର୍ମା, ଡ. ବିଷ୍ଣୁଦେବ ସି
ମଲ୍ଲିକଙ୍କ ସମେତ ସମସ୍ତ ଅଧ୍ୟାପକ ଅଧ୍ୟାପିକା ଓ କର୍ମଚାରୀ ସହଯୋଗ କରିଥିଲେ
ରାସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଲିପ୍ସା ବାରିକ, ରୋହିତ ଭିତିରିଆ, ସମୀର କୁମାର ଦା
ପ୍ରମୁଖ ଯୋଗଦନ କରିଥିଲେ। ପ୍ରଫୁଲ କୁମାର ପଣ୍ଡା ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ ।

ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଜାତୀୟ ସମ୍ମାନ

ଖଡ଼ିଆଳ,୧୫।୧୦(ସୁଜିତ୍ କୁମାର ପ୍ରଧାନ)

ନୂଆପଡା ଜିଲା ଖଡ଼ିଆଳ ସ୍ୱୟଂ ଶାସିତ ମହାବିଦ୍ୟାଳୟଠାରେ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ପକ୍ଷରୁ ଓଡିଶା କେମିକାଲ ସୋସାଇଟିର ଏକ ଆଞ୍ଚଳିକ କନଫରେନ୍ସ ଓ ଜାତୀୟ ସେମିନାର ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି। ଖଡ଼ିଆଳ ମହାବିଦ୍ୟାଳୟ ଅଧକ୍ଷ ଡ଼. ତରୁଣ କୁମାର ପ୍ରଧାନଙ୍କ ଅଧକ୍ଷତାରେ ଆଇଆଇଟି ଖଡ଼ଗପୁରର ପ୍ରଫେସର ବଳରାମ ସାହୁ ମୁଖ୍ୟଅତିଥି, ପ୍ରଫେସର ଗୋପବନ୍ଧୁ ବେହେରା ସମ୍ମାନିତ ଅତିଥି, ପ୍ରଫେସର ପ୍ରଦୀପ କୁମାର ବେହେରା ଓ ଏଲେସ ପକ୍ଷରୁ ଡ଼. ବିଜ୍ଞାନ କୁମାର ଜାଲି, ପ୍ରଫେସର ପ୍ରିୟରଞ୍ଜନ ମହାପାତ୍ର ଅତିଥି ଭାବେ ଯୋଗଦାନ କରିଥିଲେ। ମହାବିଦ୍ୟାଳୟ ପରିଚାଳନା କମିଟି ସଭାପତି ବିଶ୍ୱଜିତ ପାଢ଼ୀ ଓ ଯୁକ୍ତ ୨ ଇନ୍‌ଚାର୍ଜ ପ୍ରଶାନ୍ତ କୁମାର ପଣ୍ଡା ସମ୍ମାନିତ ଅତିଥି ଭାବେ ଯୋଗଦେଇଥିଲେ। ମୁଖ୍ୟବକ୍ତା ଭାବେ ପ୍ରଫେସର ଶରତ କୁମାର ସ୍ୱାଇଁ, ପ୍ରଫେସର ସୁକଲ୍ୟାଣ ଦାସ, ପ୍ରଫେସର ହୀରକ ଚକ୍ରବର୍ତ୍ତୀ ଯୋଗଦେଇ ରସାୟନ ବିଜ୍ଞାନର ବିଭିନ୍ନ ତଥ୍ୟ ଉପରେ ଆଲୋକପାତ କରିଥିଲେ। ଅଧ୍ୟାପିକା ରାଜଲକ୍ଷ୍ମୀ ରଥ ପ୍ରାରମ୍ଭିକ ସୂଚନା ଓ ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ। ଅଧ୍ୟାପକ ରାଜାରାମ ମିଶ୍ର ସଂଯୋଜନା କରିଥିଲେ। ଅଧ୍ୟାପକ ତଥାଗତ ରାଉତ ଓ ଡ଼. ସରୋଜ କୁମାର ପଣ୍ଡା ସହଯୋଗ କରିଥିଲେ। ଦିନ ଡ଼. ପଦ୍ମଲୋଚନ ବର୍ମା, ଡ଼. ବିଷ୍ଣୁଦେବ ସିଂ ମଲ୍ଲିକଙ୍କ ସମେତ ସମସ୍ତ ଅଧ୍ୟାପକ ଅଧ୍ୟାପିକା ଓ କର୍ମଚାରୀ ସହଯୋଗ କରିଥିଲେ। ରାସାୟନ ବିଜ୍ଞାନ ବିଭାଗର ଅନ୍ୟ ଅଧ୍ୟାପିକା ଲିପ୍ସା ବାରିକ, ରୋହିତ ଭିତିରିଆ, ସମୀର କୁମାର ଦାସ ପ୍ରମୁଖ ଯୋଗାଦେଇଥିଲେ। ସମସ୍ତ ଅଧ୍ୟାପକ, ଅଧ୍ୟାପିକା ଛାତ୍ରୀଛାତ୍ରଙ୍କୁ ମାନପତ୍ର ପ୍ରଦାନ କରାଯାଇଥିଲା। ପ୍ରଫୁଲ କୁମାର ପଣ୍ଡା ଧନ୍ୟବାଦ ଅର୍ପଣ କରିଥିଲେ।

(F)

Mohan Subudhi College, Badamba

11th November, 2023

DEPARTMENT OF CHEMISTRY,
MOHAN SUBUDHI COLLEGE, BADAMBA
CELEBRATES
PROF. MAHENDRA KUMAR ROUT BIRTH CENTENARY YEAR
ON 11TH NOVEMBER 2023

IN THE ANNUAL SEMINAR OF THE DEPARTMENT ON THE THEME
'Chemistry Evolves in Making a Better World'

The Department of Chemistry, M. S. College, Badamba celebrated Prof. M. K. Rout Birth Centenary on 11th November 2023, in its Annual Seminar with the theme, "**Chemistry evolves in making a better world".** On this occasion several distinguished academicians Prof. (Dr.) Balaram Sahoo, retired professor of chemistry, IIT, Kharagpur, Prof. Shashadhar Samal, Secretary, Prof. M. K. Rout Birth Centenary Celebration Committee, Dr. Debasis Mohanty, Secretary, Orissa Chemical Society, Dr. Rakesh Ranjan Behera, Asst. Prof. of Chemistry, Govt. (Auto) College, Angul, invited delegates along with Dr. (Smt.) Suchismita Mohanty, Principal, Mr. Biswanath Pattnaik, IQAC Coordinator, all the faculty members, and students of the science stream of the college participated with great enthusiasm. At the outset, a brochure on the Life History of Prof. Rout was circulated among the audience to aware them of Prof. M. K. Rout.

The inaugural function was chaired by Dr. (Smt.) Suchismita Mohanty, Principal of the college. In her welcome address, Dr. Mohanty talked about the evolution of the universe and the birth of space and time. Praising the students and faculty members of the chemistry department, and especially Dr. Subas Chandra Asa, HOD, Chemistry, she said that Dr. Asa is a dedicated teacher and an efficient organizer, and through such types of seminars, he amplifies the glory of the chemistry department as well as of the college. Dr. S. C. Asa offered a warm introduction of the guests and emphasized involvement in chemical research & career prospective. He conveyed a deep sense of gratitude to Orissa Chemical Society and Prof. M. K. Rout Birth Centenary Celebration Committee for accepting their proposal to organize the function in the Department of Chemistry, M. S. College, Badamba. All the dignitaries on the dais were felicitated. The most attractive event of the seminar was the felicitation of Chief Guest Prof. (Dr.) Balaram Sahoo, a pioneer of chemistry teaching and research, who continues his academic interest even at the prime age of 93. In his speech, Prof. Sahoo recalled the pivotal role played by Prof. M. K. Rout in establishing M. S. College at Badamba.

At the end of the inaugural meeting, Mr. B. N. Pattnaik, HOD, Economics & Coordinator IQAC of the college proposed a vote of thanks to the dignitaries. In his speech, Mr. Pattnaik emphasized the uses of chemistry for the betterment of people living in this world in every aspect of life and the role of economics in all branches of scientific research. He also expressed his deep admiration to the Principal & Department of Chemistry of the college for organizing such a program, inviting eminent academicians to interact with students which will greatly influence them and enhance the image of this college.

In the first technical session, chaired by Prof. (Dr.) Balaram Sahoo, Dr. Debasis Mohanty, and Dr. Rakesh Ranjan Behera discussed the theme of the seminar. Dr. Mohanty discussed in detail and interacted with the students about the evolution of chemistry starting from the word alchemy to modern chemistry involving nanoparticles and quantum dots. He also emphasized the practical-based teaching and learning

system and the problems faced by the students in the present system of education. Dr. Rakesh Ranjan Behera presented his research paper on applications of hydro-silylation reactions catalyzed by low valent manganese complexes in modern days.

At the end, the memorial lecture was delivered by Prof. Shashadhar Samal. In this lecture, he presented a movie titled 'What a Wonderful World'. He explained the past, present & future of chemistry from the ancient monuments, developments over time, and up to recent threats to living beings attributed to the adverse effects of persistent chemicals in our environment. Prof. Samal also emphasized need to overcome stress by lifestyle changes in food habits, and practicing yoga and meditation, which are proven to generate positive energy by secretion of happy chemicals (hormones).

In the second technical session, chaired by Prof. Samal the students of Chemistry Honors of the college participated in the presentation of posters. With this Miss Subhadra Sahoo, the student of Chemistry Honors securing the highest CGPA in Final University UG Exam-2023 among all the students of the college, was felicitated as Best Graduate of the college by the chief guest.

In the end, Mr. Santosh Kumar Puhan, Co-convenor of the seminar proposed a vote of thanks to all the guests, resource persons, delegates, students, and members of the organizing committee for making the program a grand success.

GLIMPSES OF THE EVENT

The Dais

Guests on the Dais

Dr. Subas Chandra Asa, HOD of Chemistry,
Presenting the Welcome Address

Prof. Balaram Sahoo, Former Profesor of Chemistry, Indian Institute of Technology, Khadagpur is being Felicitated

The Audience

The Audience

Guests on the Dais being Felicitated

Miss Subhadra Sahoo, Best Graduate-2023
Received Accolades from Chief Guest Prof. Balaram Sahoo

Address by Dr. Debasis Mohanty,
Secretary, Orissa Chemical Society

Presentation by Dr. Rakesh Ranjan Behera

Prof. Shashadhar Samal, Secretery, MKRCC
Presenting his Lecture on: 'A Sustainable World'

Poster Presentation by Chemistry Students

Principal Dr.(Smt.) Suchismita Mohanty with the Students, Colleagues, and Guests

MEDIA COVERAGE

ସମାଜ

ମୋହନସୁବୁଦ୍ଧି କଲେଜ୍‌ରେ ଆଲୋଚନାଚକ୍ର

ବଡ଼ମ୍ବା, ୧୧/୧୧ (ଭମିମ): ବଡ଼ମ୍ବା ମୋହନ ସୁବୁଦ୍ଧି କଲେଜ୍ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ଓ ଓଡ଼ିଶା କେମିକାଲ୍ ସୋସାଇଟି ମିଳିତ ଆନୁକୂଲ୍ୟରେ ପ୍ରଫେସର୍ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ମେମୋରିଆଲ୍ ଜନ୍ମ ଶତବାର୍ଷିକରେ 'ବିଶ୍ୱର କଲ୍ୟାଣ ପାଇଁ ରସାୟନ ବିଜ୍ଞାନର ଉତ୍ପତି' ଶୀର୍ଷକ ଆଲୋଚନାଚକ୍ର କଲେଜ୍ ସଳିଳନୀ କକ୍ଷରେ ଅନୁଷ୍ଠିତ ହୋଇଛି। କଲେଜ୍ ଅଧ୍ୟକ୍ଷା ଡକ୍ଟର ସୁତିସ୍ମିତା ମହାନ୍ତିଙ୍କ ସଭାପତିତ୍ୱରେ ବିଭାଗୀୟ ମୁଖ୍ୟ ଡକ୍ଟର୍ ସୁବାସ ଚନ୍ଦ୍ର ଆସଙ୍ଗ ସଂଯୋଜନାରେ ଅନୁଷ୍ଠିତ ଆଲୋଚନାଚକ୍ରରେ ମୁଖ୍ୟ ଅତିଥି ଭାବେ ଆଇଆଇଟି ଖଡ଼ଗପୁର ଅବସରପ୍ରାପ୍ତ ପ୍ରଫେସର୍ ଡକ୍ଟର ବଳରାମ ସାହୁ, ମୁଖ୍ୟବକ୍ତା ପ୍ରଫେସର୍ ଶଶଧର ସାମଲ, ସମ୍ମାନିତ ଅତିଥି ପ୍ରାଧ୍ୟାପକ ବିଶ୍ୱନାଥ ପଟ୍ଟନାୟକ ଯୋଗ ଦେଇଥିଲେ। ଏହି ଅବସରରେ ପ୍ରଫେସର୍ ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ଜୀବନୀ ଓ ଆଦର୍ଶ ବର୍ଣ୍ଣନା କରାଯାଇଥିଲା। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ଅଧ୍ୟାପକ ସନ୍ତୋଷ କୁମାର ପୁହାଣ, ଶଶୀକାନ୍ତ ଦାଶ ସହଯୋଗ କରିଥିଲେ। ୨୦୨୨-୨୩ ଶିକ୍ଷାବର୍ଷର ରସାୟନ ବିଜ୍ଞାନରେ ସର୍ବୋଚ୍ଚ ନମ୍ବର ରଖିଥିବା କଲେଜର ଛାତ୍ରୀ ସୁଭଦ୍ରା ସାହୁଙ୍କୁ ସମ୍ବର୍ଦ୍ଧନା ଦିଆଯାଇଥିଲା। ଅଧ୍ୟାପକ ସନ୍ତୋଷ ପୁହାଣ ଧନ୍ୟବାଦ ଦେଇଥିଲେ।

CUTTACK Edition

ମୋହନସୁବୁଦ୍ଧି କଲେଜ୍‌ରେ ଆଲୋଚନାଚକ୍ର

ବଡ଼ମ୍ବା, ୧୧/୧୧ (ଭମିମ): ବଡ଼ମ୍ବା ମୋହନ ସୁବୁଦ୍ଧି କଲେଜ୍ ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ଓ ଓଡ଼ିଶା କେମିକାଲ୍ ସୋସାଇଟି ମିଳିତ ଆନୁକୂଲ୍ୟରେ ପ୍ରଫେସର୍ ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ମେମୋରିଆଲ୍ ଜନ୍ମ ଶତବାର୍ଷିକରେ 'ବିଶ୍ୱର କଲ୍ୟାଣ ପାଇଁ ରସାୟନ ବିଜ୍ଞାନର ଉତ୍ପତି' ଶୀର୍ଷକ ଆଲୋଚନାଚକ୍ର କଲେଜ୍ ସଳିଳନୀ କକ୍ଷରେ ଅନୁଷ୍ଠିତ ହୋଇଛି। କଲେଜ୍ ଅଧ୍ୟକ୍ଷା ଡକ୍ଟର ସୁତିସ୍ମିତା ମହାନ୍ତିଙ୍କ ସଭାପତିତ୍ୱରେ ବିଭାଗୀୟ ମୁଖ୍ୟ ଡକ୍ଟର୍ ସୁବାସ ଚନ୍ଦ୍ର ଆସଙ୍ଗ ସଂଯୋଜନାରେ ଅନୁଷ୍ଠିତ ଆଲୋଚନାଚକ୍ରରେ ମୁଖ୍ୟ ଅତିଥି ଭାବେ ଆଇଆଇଟି ଖଡ଼ଗପୁର ଅବସରପ୍ରାପ୍ତ ପ୍ରଫେସର୍ ଡକ୍ଟର ବଳରାମ ସାହୁ, ମୁଖ୍ୟବକ୍ତା ପ୍ରଫେସର୍ ଶଶଧର ସାମଲ, ସମ୍ମାନିତ ଅତିଥି ପ୍ରାଧ୍ୟାପକ ବିଶ୍ୱନାଥ ପଟ୍ଟନାୟକ ଯୋଗ ଦେଇଥିଲେ। ଏହି ଅବସରରେ ପ୍ରଫେସର୍ ମହେନ୍ଦ୍ର ରାଉତଙ୍କ ଜୀବନୀ ଓ ଆଦର୍ଶ ବର୍ଣ୍ଣନା କରାଯାଇଥିଲା। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ଅଧ୍ୟାପକ ସନ୍ତୋଷ କୁମାର ପୁହାଣ, ଶଶୀକାନ୍ତ ଦାଶ ସହଯୋଗ କରିଥିଲେ। ୨୦୨୨-୨୩ ଶିକ୍ଷାବର୍ଷର ରସାୟନ ବିଜ୍ଞାନରେ ସର୍ବୋଚ୍ଚ ନମ୍ବର ରଖିଥିବା କଲେଜର ଛାତ୍ରୀ ସୁଭଦ୍ରା ସାହୁଙ୍କୁ ସମ୍ବର୍ଦ୍ଧନା ଦିଆଯାଇଥିଲା। ଅଧ୍ୟାପକ ସନ୍ତୋଷ ପୁହାଣ ଧନ୍ୟବାଦ ଦେଇଥିଲେ।

ମୋହନ ସୁବୁଦ୍ଧି ମହାବିଦ୍ୟାଳୟରେ ଆଲୋଚନାଚକ୍ର

ବଡ଼ମ୍ବା, ୧୩/୧୧ : ବଡ଼ମ୍ବା ମୋହନ ସୁବୁଦ୍ଧି ମହାବିଦ୍ୟାଳୟର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ଓ ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟି ମିଳିତ ଆନୁକୂଲ୍ୟରେ ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତ ମେମୋରିଆଲ ଜନ୍ମ ଶତବାର୍ଷିକରେ 'ବିଶ୍ୱର କଲ୍ୟାଣ ପାଇଁ ରସାୟନ ବିଜ୍ଞାନର ଉତ୍ପତି' ଆଲୋଚନା ଚକ୍ର ମହାବିଦ୍ୟାଳୟ ସଳିଳନୀ କକ୍ଷରେ ଶନିବାର ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି। ମହାବିଦ୍ୟାଳୟ ଅଧ୍ୟକ୍ଷା ଡଃ ସୁତିସ୍ମିତା ମହାନ୍ତିଙ୍କ ସଭାପତିତ୍ୱରେ ବିଭାଗୀୟ ମୁଖ୍ୟ ଡଃ. ସୁବାସ ଚନ୍ଦ୍ର ଆସଙ୍ଗ ସଂଯୋଜନାରେ ଅନୁଷ୍ଠିତ ଆଲୋଚନାଚକ୍ରରେ ମୁଖ୍ୟ ଅତିଥି ଭାବେ ଆଇଆଇଟି ଖଡ଼ଗପୁର ଅବସରପ୍ରାପ୍ତ ପ୍ରଫେସର ଡଃ. ବଳରାମ ସାହୁ, ମୁଖ୍ୟବକ୍ତା ଭାବେ ପ୍ରଫେସର ଶଶଧର ସାମଲ, ସମ୍ମାନିତ ଅତିଥି ଭାବେ ପ୍ରାଧ୍ୟାପକ ବିଶ୍ୱନାଥ ପଟ୍ଟନାୟକ ବିଷୟବସ୍ତୁ ଉପରେ ବକ୍ତବ୍ୟ ରଖିଥିଲେ। ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ଅଧ୍ୟାପକ ସନ୍ତୋଷ କୁମାର ପୁହାଣ, ଶଶିକାନ୍ତ ଦାଶ କାର୍ଯ୍ୟକ୍ରମରେ ସହଯୋଗ କରିଥିଲେ। ୨୦୨୨-୨୩ ଶିକ୍ଷାବର୍ଷର ରସାୟନ ବିଜ୍ଞାନରେ ସର୍ବୋଚ୍ଚ ନମ୍ବର ରଖିଥିବା ମହାବିଦ୍ୟାଳୟ ଛାତ୍ରୀ ସୁଭଦ୍ରା ସାହୁଙ୍କୁ ସମ୍ବର୍ଦ୍ଧିତ କରାଯାଇଥିଲା। ଅଧ୍ୟାପକ ସନ୍ତୋଷ କୁମାର ପୁହାଣ ଧନ୍ୟବାଦ ଦେଇଥିଲେ। ଶେଷରେ ଛାତ୍ରୀଛାତ୍ରଙ୍କ ଦ୍ୱାରା ସାଂସ୍କୃତିକ କାର୍ଯ୍ୟକ୍ରମ ପରିବେଷଣ କରାଯାଇଥିଲା।

(G)

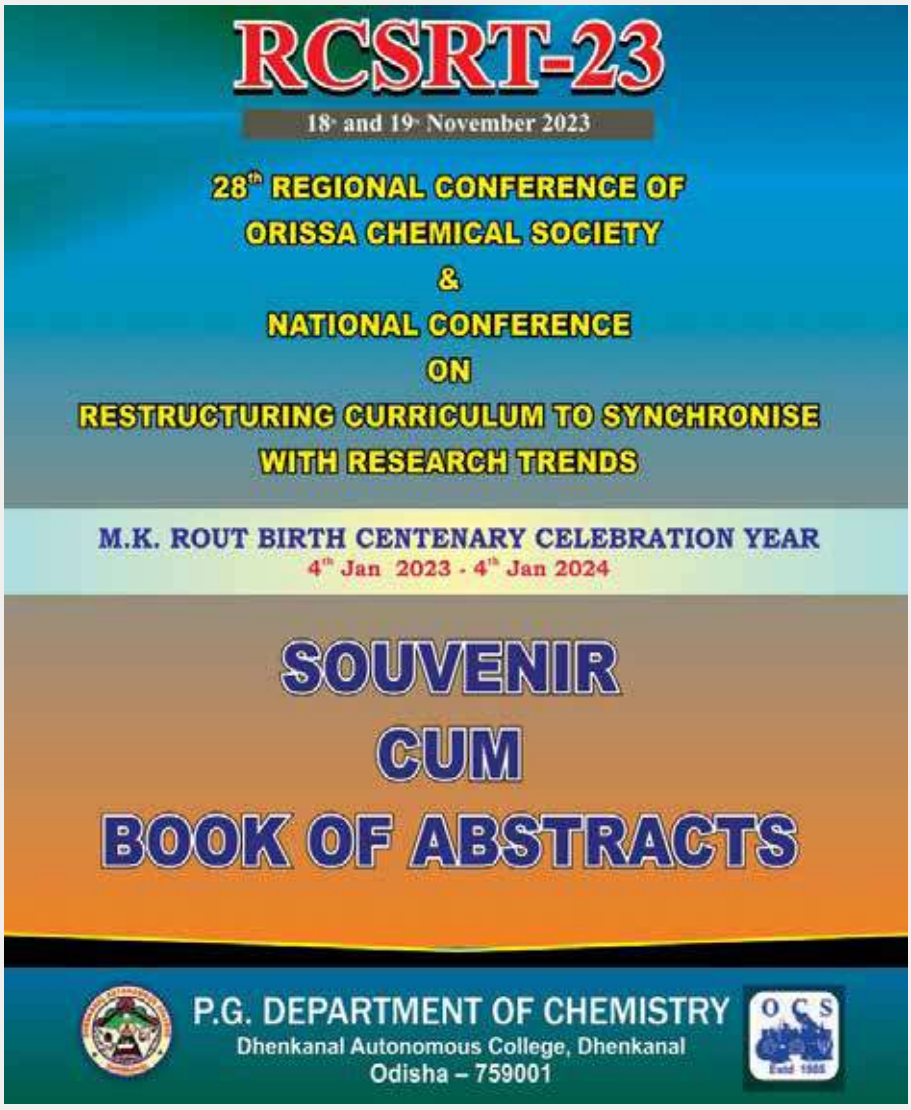
Dhenkanal Autonomous College, Dhenkanal

18th - 19th November, 2023

Prof. M. K. Rout Birth Centenary Celebration Year

Orissa Chemical Society Regional Conference

Dhenkanal Autonomous College, Dhenkanal - 759001



PLENARY LECTURE

MAKING OF THE MULTI-CAVITY COORDINATION ARCHITECTURES

Dillip Kumar Chand

Department of Chemistry

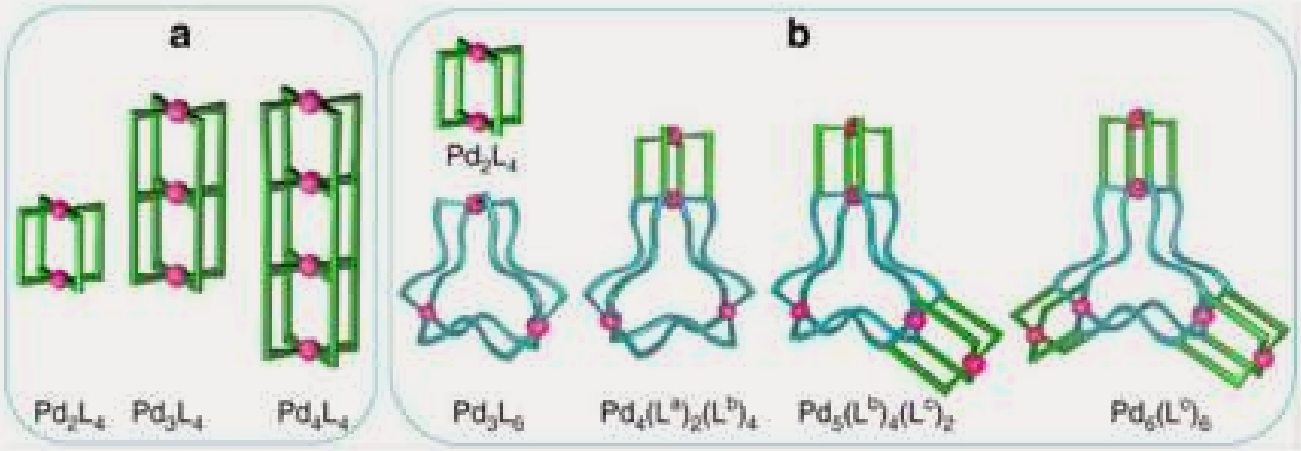
Indian Institute of Technology Madras, Chennai 600036

Email: dillip@iitm.ac.in

Abstract

A self-assembled coordination cage usually possesses one well-defined three-dimensional (3D) cavity whereas infinite number of 3D-cavities are crafted in a designer metal-organic framework or coordination polymer. Construction of a discrete coordination architecture possessing multiple number of 3D-cavities is a challenging task. Complexation of Pd(II) with a nonchelating bi- or poly-dentate ligand is a known strategy for the construction of one-cavity containing 3D-cages of various shapes and sizes. We introduced a double-decker shaped two-cavities based architecture of $[Pd_3L_4]$ formulationthat was prepared using Pd(II) and "E-shaped" tridentate ligand.[1] This double-decker design can be considered as a conjoin of two $[Pd_2L_4]$ units having a common metal centre. Subsequently, we made peripheral decoration of a trinuclear $[Pd_3L_6]$ core with one, two and three units of the $[Pd_2L_4]$ entity for the preparation of multi-3D-cavity conjoined-cages of $[Pd_4(L^a)_2(L^b)_4]$, $[Pd_5(L^b)_4(L^c)_2]$ and $[Pd_6(L^c)_6]$ formulations, respectively.[2] Formation of the mixed-ligand tetranuclear and pentanuclear complexes is attributed to the favourable integrative self-sorting of the participating components. In contrast to the double-decker shape of $[Pd_3L_4]$ formulation, one of our recent reports demonstrated anhour-glass shape architecture having the same Pd_3L_4formulation but alternate arrangement

of ligand units around metal centers.[3] We are involved in making of self-assembled single cavity-based cages using known strategies as well as exploring the art of making of multi-cavity conjoined-cages of new and exotic structures.[4] We also exploit the functional aspects of the isolated nano-space of the coordination architectures.



References:

1. Bandi, S.; Pal, A.; Hanan, G. S.; Chand, D. K. *Chem. Eur. J.*, **2014**, *20*, 13122-13126.
2. Samantray, S.; Krishnaswamy, S.; **Chand,** D.K. *Nature Commun.*, **2020**, *11*, Article number 880.
3. Dasary, H.; Sarkar, M.; Chand, D. K. *Chem. Commun.*, **2022**, *58*, 8480-8483.
4. Sharma, S.; Sarkar, M.; Chand, D. K. *Chem. Commun.*, **2023**, *59*, 535-554. (Review)

RESTRUCTURING CURRICULUM TO SYNCHRONISE CONVENTIONAL ORGANIC PRACTICAL TO NON-CONVENTIONAL GREEN PROCEDURES

Sarat K Swain

Department of Chemistry, Veer Surendra Sai University of Technology, Burla, Sambalpur, 768018, Odisha, India

E-mail: skswain_chem@vssut.ac.in

Abstract

The conversion of traditional organic practical methods to eco-friendly green alternatives is a pivotal response to environmental concerns, resource scarcity, rising energy costs and heightened awareness of negative ecological impacts. Conventional practical methods, historically rooted in resource-intensive and environmentally harmful practices, are increasingly being reconsidered in favour of sustainable and environmentally friendly alternatives. The need to reduce greenhouse gas emissions, minimize waste generation, and conserve biodiversity has prompted a re-evaluation of traditional chemical processes. This study provides an overview of the ongoing transition from conventional laboratory chemical processes to green methods, highlighting the key drivers, challenges, and potential benefits. The 12 principles of green chemistry serve as guiding precepts to promote environmentally conscious and sustainable approaches within the realm of chemical science. The green methods reduce emissions, conserve resources, improve environmental quality, and offer economic growth

opportunities. This transformation is necessary for environmental preservation and long-term sustainability, emphasizing the need for research, policy support, and industry engagement which are required to change the mindset of both industries and consumers in the pursuit of a greener future. While it presents numerous challenges, the potential benefits are undeniable.

Figure: Transforming conventional organic practical to sustainable green practices

SYNCHRONIZING CURRENT RESEARCH TREND WITH CHEMISTRY COURSE CURRICULA TOWARDS ENHANCING EMPLOYABILITY OF CHEMISTRY STUDENTS

Ashok Kumar Mishra
Professor and Dean Academic Research,
CYB 212, Department of Chemistry,
Indian Institute of Technology Madras, Chennai – 600036

Abstract

NEP-2020 mandates that after higher secondary studies, the course curriculum for 4-year Bachelors as well as 5-year BS-MS curriculum need to have exit option at the end of every year. While designing a course curriculum for Chemistry, it would be desirable that the exiting student has adequate employability at each exit level. A student of chemistry, seeking a professional career in industry or academics post Bachelors/Masters level, will benefit significantly if the course curriculum educates the student about the emerging areas of importance related to chemistry. This talk will discuss the possibilities and challenges of designing such a curriculum.

RESTRUCTURING CHEMISTRY SYLLABI TO MEET CONTEMPORARY NEEDS

Nigamananda Das
Professor of Chemistry and Director,
College Development Council,
Utkal University, Bhubaneswar

Abstract

Education in the current scenario throws up a multitude of challenges and the curricula and syllabi ought to reflect the paradigm shift that has occurred in the various disciplines. Periodical restructuring of the syllabi is carried out to fulfil the requirements of graduate attributes, qualification descriptors, programme learning outcomes, and course-level learning outcomes.

The Choice Based Credit System (CBCS)was introduced in 2009 based on the recommendation of the NationalKnowledge Commissionwith the provisions of choosing electives from a wide range of courses, undertaking additional courses and acquiring more than the required number of credits, adopting an interdisciplinary approach to learning, Inter college/University transfer of Credits, enhancing the skill/employability by taking up project work, entrepreneurship and vocational training, etc. A massive restructuring of curricula in all subjects has been done with the framing of model syllabi by the University Grant Commission (UGC).In Odisha, the implementation of the CBCS-based restructured scheme and syllabus of core and complementary courses of UG Chemistry was started in 2013-14. Subsequently, common syllabi were framed in all UG programmes and implemented throughout the state. With the introduction of NEP 2020, there is a need for further restructuring of the curricula and syllabi to accommodate the mandate of NEP.

The successful implementation of the restructured/reformed syllabi is always challenging and relies on several factors such as strong willpower, adequate preparedness in terms of infrastructure, qualified faculty, funds, etc.Some of the major issues relating to implementation will alsobe discussed.

GLIMPSES OF THE EVENT





Thank You



MEDIA COVERAGE

ଧରିତ୍ରୀ

ଜାତୀୟସ୍ତରୀୟ କର୍ମଶାଳା ଉଦ୍‌ଘାଟିତ

ଜାତୀୟସ୍ତରୀୟ କର୍ମଶାଳାରେ ସ୍ମରଣିକା ଉନ୍ମୋଚନ କରାଯାଉଛି ।

ଢେଙ୍କାନାଳ,୧୮।୧୧(ଉତ୍କଳ ନାୟକ)

ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ଜଜେଡ ଅଟିଟୋରିୟମଠାରେ ୨୮ ତମ ଜାତୀୟସ୍ତରୀୟ କର୍ମଶାଳା ଶନିବାର ଉଦ୍‌ଘାଟିତ ହୋଇଯାଇଛି । 'ରିଷ୍ଟ୍ରକ୍ଚରିଙ୍ଗ୍ କରିକୁଲମ ଟୁ ସିକ୍ରୋନାଇଜ୍ ଇଭଥ୍ ରିସର୍ଚ୍ଚ ଟ୍ରେଣ୍ଡ୍' ଶୀର୍ଷକ ଏହି କର୍ମଶାଳା ରବିବାର ପର୍ଯ୍ୟନ୍ତ ଚାଲିବ । ପ୍ରଫେସର ଡ. ଜୁପଶ୍ରୀ ରାଣିଣୀ ଦାସଙ୍କ ସଭାପତିତ୍ୱରେ ରସାୟନ ବିଭାଗ ମୁଖ୍ୟ ଡ. ଦେବାଶିଷ ମହାନ୍ତି ସ୍ୱାଗତ ଭାଷଣ ପ୍ରଦାନ କରି କର୍ମଶାଳାର ଲକ୍ଷ୍ୟ ଓ ଉଦ୍ଦେଶ୍ୟ ସମ୍ପର୍କରେ କହିଥିଲେ । ଡ. ସୁପ୍ରଭା ମହାରଣା ଅତିଥି ପରିଚୟ ପ୍ରଦାନ କରିଥିଲେ । ଡ. ନୀଳାଦ୍ରି ବିହାରୀ ଦେବତା କର୍ମଶାଳାର ଆଭିମୁଖ୍ୟ ସମ୍ପର୍କରେ ବକ୍ତବ୍ୟ ରଖିଥିଲେ । ମୁଖ୍ୟ ଅତିଥି ଭାବେ ଆରଆଇଟି ମାନ୍ଦ୍ରାସର ପ୍ରଫେସର ଦିଲୀପ କୁମାର ଚାନ୍ଦ କର୍ମଶାଳାରେ ଯୋଗ ଦେଇଥିବା ବେଳେ ସମ୍ମାନିତ ଅତିଥି ଭାବେ ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟର ଅଧ୍ୟକ୍ଷ ଡ. ପୃଥ୍ୱୀଚନ୍ଦ୍ର ବରାଳ, ସହଭାଗୀ ନିର୍ଦ୍ଦେଶକ ପ୍ରଫେସର ରଞ୍ଜିତ କୁମାର ପ୍ରଧାନ ଯୋଗଦେଇଥିଲେ । ଏହି ଅବସରରେ ଅତିଥିମାନଙ୍କ ଦ୍ୱାରା ଏକ ସ୍ମରଣିକା ଉନ୍ମୋଚନ କରାଯାଇଥିଲା । ପ୍ରକାଶ କୁମାର ସାହୁ ଧନ୍ୟବାଦ ପ୍ରଦାନ କରିଥିବା ବେଳେ ସୁଜାତା ବେହେରାଙ୍କ ସମେତ ବିଭିନ୍ନ ମହାବିଦ୍ୟାଳୟର ଅଧ୍ୟାପିକା ଅଧ୍ୟାପକ ଓ ଛାତ୍ରୀଛାତ୍ର ସହଯୋଗ କରିଥିଲେ ।

ଗବେଷଣାର ଧାରା ଅନୁଯାୟୀ ପାଠ୍ୟକ୍ରମରେ ପରିବର୍ତ୍ତନ ହେଉ

ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟରେ ଅନୁଷ୍ଠିତ ଜାତୀୟ ସମ୍ମାନ ଅବସରରେ ଅତିଥିଙ୍କ ସହ ଛାତ୍ରୀଛାତ୍ରମାନେ ।।

ଢେଙ୍କାନାଳ,୨୦।୧୧(ଉତ୍କଳ ନାୟକ)

ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟରେ ଜାତୀୟ ସମ୍ମାନ

ସାମ୍ପ୍ରତିକ ଗବେଷଣାର ଧାରା ଅନୁଯାୟୀ ପାଠ୍ୟକ୍ରମରେ ପରିବର୍ତ୍ତନ ରସାୟନ ବିଜ୍ଞାନ ଛାତ୍ରଛାତ୍ରୀଙ୍କୁ ନିୟୋଜନ ପାଇଁ ଉପଯୁକ୍ତ ସୁଯୋଗ ସୃଷ୍ଟି କରିବ ବୋଲି ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟରେ ଅନୁଷ୍ଠିତ ଜାତୀୟ ସମ୍ମାନରେ ମତ ପ୍ରକାଶ ପାଇଛି । ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟର ସ୍ନାତକୋତ୍ତର ରସାୟନ ବିଜ୍ଞାନ ବିଭାଗ ଓ ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟି ସହଭାଗିତାରେ ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟିର ୨୮ତମ ଆନୁଷ୍ଠିକ ଅଧିବେଶନ ଓ ସାମ୍ପ୍ରତିକ ଗବେଷଣାର ଧାରା ଅନୁଯାୟୀ ପାଠ୍ୟକ୍ରମରେ ପରିବର୍ତ୍ତନ ଶୀର୍ଷକ ୨ ଦିନିଆ ଜାତୀୟ ସମ୍ମାନ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟରେ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା । ଏଥିରେ ଜାତୀୟ ଓ ଅନ୍ତର୍ଜାତୀୟ ଖ୍ୟାତି ସମ୍ପନ୍ନ ବୈଜ୍ଞାନିକ, ଗବେଷକ, ଅଧ୍ୟାପକ ଓ ଛାତ୍ରଛାତ୍ରୀମାନେ ଅଂଶ ଗ୍ରହଣ କରିଥିଲେ । ଏହି ସମ୍ମାନରେ ଆରଆଇଟି ମାନ୍ଦ୍ରାସର ବରିଷ୍ଠ ପ୍ରଫେସର ଦିଲୀପ କୁମାର ଚାନ୍ଦ, ଅଶୋକ କୁମାର ମିଶ୍ର, ପ୍ରଫେସର ନିରଞ୍ଜନ ଚାନ୍ଦ, ପ୍ରଫେସର ଶରତ କୁମାର ସାହୁ, ଭାଷ୍ଟି ସ୍ଥିତ କେନ୍ଦ୍ରୀୟ ବିଶ୍ୱବିଦ୍ୟାଳୟର ସହଯୋଗୀ ପ୍ରଫେସର ବୈରାଗୀ ଚରଣ ମଲିକ, ନାଇଜର ଭୁବନେଶ୍ୱରର ସହଯୋଗୀ ପ୍ରଫେସର ବିଶ୍ୱ ପ୍ରସାଦ ବିଶ୍ୱାଳ, ନିଟ୍ ରାଉରକେଲାର ସହଯୋଗୀ ପ୍ରଫେସର ରବୀନ୍ଦ୍ର ବେହେରା ଓ ଶିଳ୍ପ ବୈଜ୍ଞାନିକ ପୁରାସ ଚନ୍ଦ୍ର ମଲିକଙ୍କ ସମେତ ବହୁ ଗବେଷକ ଏହି ବିଷୟରେ ନିଜ ନିବନ୍ଧ ଉପସ୍ଥାପନ କରିଥିଲେ । ଏହା ସହିତ ଗୋଷ୍ଠୀ ଆଲୋଚନା ମଧ୍ୟ ହୋଇଥିଲା । ଏହି ସମ୍ମାନରେ ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟି ସଭାପତି ଜୁପଶ୍ରୀ ରାଣିଣୀ ଦାସ, ପୂର୍ବତନ ସଭାପତି ଶଶଧର ସାହୁ, ବିରଜା ମହାବିଦ୍ୟାଳୟ ମହାନ୍ତି, ଅଜୟ ପଟ୍ଟନାୟକ ଓ ଢେଙ୍କାନାଳ ସ୍ୱୟଂଶାସିତ ମହାବିଦ୍ୟାଳୟ ଅଧ୍ୟକ୍ଷ ପୃଥ୍ୱୀଚନ୍ଦ୍ର ବରାଳ ପ୍ରମୁଖ ଭାଗ ନେଇଥିଲେ । ୧୮ ତାରିଖ ଉଦ୍‌ଘାଟନୀ ସମ୍ଭାରରେ ଅଧ୍ୟାପିକା ସୌମ୍ୟା ନନ୍ଦଙ୍କ ଓଲ୍ଲାବଧାନରେ ସାଂସ୍କୃତିକ କାର୍ଯ୍ୟକ୍ରମ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା । ରସାୟନ ବିଜ୍ଞାନ ମୁଖ୍ୟ ତଥା ଓଡ଼ିଶା କେମିକାଲ ସୋସାଇଟି ସମ୍ପାଦକ ଦେବାଶିଷ ମହାନ୍ତି ଏହାର ପରିଚାଳନା କରିଥିଲେ । ନୀଳାଦ୍ରି ଦେବତା, ସୁଜାତା ବେହେରା, ସୁପ୍ରଭା ମହାରଣା, ପବିତ୍ର ବେହେରା ପ୍ରମୁଖ୍ୟ ବିଭାଗର ସମିର କୁମାର ସାହୁ, ବିରାଜ ମହାବିଦ୍ୟାଳୟ ରସାୟନ ବିଜ୍ଞାନ ଅଧ୍ୟାପକ ପ୍ରହ୍ଲାଦ ମଲ୍ଲିକ ପ୍ରମୁଖ ସହଯୋଗ କରିଥିଲେ ।

(H)

Utkal University,
Vani Vihar, Bhubaneswar

2nd December, 2023

DEPARTMENT OF CHEMISTRY,
UTKAL UNIVERSITY,
VANI VIHAR, BHUBANESWAR

CELEBRATES

PROF. MAHENDRA KUMAR ROUT
BIRTH CENTENARY YEAR

ON 2ND DECEMBER 2023

THEME:

'Priorities of Chemistry Research for a Sustainable Growth'

SYMPOSIUM COMMITTEE

Chief Patron	Prof. S. Acharya, Vice Chancellor, Utkal University
Patron	Prof. Navneeta Rath, Chairperson, P.G. Council, Utkal University
Convener	Prof. N. Das, Department of Chemistry
Secretary-cum-Treasurer	Dr. S. N. Pal, Department of Chemistry

ADVISORY COMMITTEE

Prof. P K Mishra	President, MKRCC
Prof. A.C. Dash	Retd. Prof., Utkal University, Odisha
Prof. S. K. Nayak	Vice Chancellor, Ravenshaw University
Prof. R. R. Das	President, Orissa Chemical Society
Prof. B.K. Mishra	Retd. Prof., Sambalpur University
Prof. A.K. Mishra	IIT-Madras, India
Prof. S. Roy	IIT Bhubaneswar India
Prof. U. N. Dash	Retd. Prof., Utkal University, Odisha
Prof. S. P. Rout	Retd. Prof., Utkal University, Odisha
Prof. P. Mohanty	Retd. Prof., Utkal University, Odisha
Prof. G. C. Pradhan	Retd. Prof., Utkal University, Odisha
Prof. S. Jena	Retd. Prof., Utkal University, Odisha
Prof. P. K. Sahu	Retd. Prof., Utkal University, Odisha
Prof. A. Pattnaik	Retd. Prof., Khallikote College

LOCAL ORGANIZING COMMITTEE

Prof. J. Behera, Utkal University
Prof. S. K. Badamali, Utkal University
Dr. J. Dinda, Utkal University
Dr. B.N. Patra, Utkal University
Dr. B. Jena, Utkal University
Dr. A. K. Behera, Utkal University
Dr. B. C. Tripathy, CSIR-IMMT, Bhubaneswar
Dr. A. N. Acharya, OUTR, Bhubaneswar
Dr. N. Swain, OUAT, Bhubaneswar
Dr. S. Mohanty, CIPET, Bhubaneswar

FURTHER DETAILS & CONTACT

Organizing Secretary

Department of Chemistry, Utkal University,
Bhubaneswar 751004, Odisha, India
E-mail: **seminarchem.uu@gmail.com**
Ph: 8093122923 (M)
Website: www.utkaluniversity.ac.in

One-day symposium on
"Priorities of Chemistry Research for a Sustainable Growth"
&
Observance of the
Birth Centenary Celebration Year
(04/01/23 – 04/01/24)
Professor Mahendra Kumar Rout
On
02 December 2023

Organized by

Department of Chemistry
Utkal University, Bhubaneswar, India

AGENDA

INAUGURAL SESSION	
10.30 am	Introduction of the guests and Welcome address by the Convener, Prof. N. Das
10.45 am	About Prof. M. K. Rout from invitees/audience
11.15 am	Address by Guest of honour, Prof. Navneeta Rath, Chairperson, PG Council, Utkal University
11.30 am	Address by Guest of honour Prof R. R. Das, President, OCS
11.45 am	Address by the Chief Guest
12.15 pm	Felicitation to the Guests on the dais
12.25 pm	Vote of thanks
TECHNICAL SESSION – I (Session Chair: Prof. A. C. Dash)	
12.45 pm – 1.30 pm	Invited talk by Prof. Saroj Kumar Nayak, IIT-Bhubaneswar "Advanced Materials for Sustainable Energy Solutions"
LUNCH BREAK (1.30 pm – 2.30 pm)	
TECHNICAL SESSION – II (Session Chair: Prof. P. Mohanty)	
2.30 pm	Dr.. Bankim C. Tripathy, CSIR-IMMT, Bhubaneswar "Recycling of Wastes to Recover Metals and Materials for Sustainable Development"
3.15 pm	Dr. Saroj Kumar Sahu, Department of Environmental Science, Utkal University Understanding Air Quality and Emission of Pollutants in Indian Cities and its Health Impact: A Solution for Sustainable Air"
TEA BREAK	
4.15 PM	Valedictory (Session Chair: Prof. S. Samal)

The Department of Chemistry, Utkal University, Bhubaneswar observed the Birth Centenary Celebration Year (04/01/23 – 04/01/24) of Professor Mahendra Kumar Rout, the Founder President of the Orissa Chemical Society and former Vice Chancellor of Utkal University (14.09.1980-13.09.1983) along with the one-day symposium on "Priorities of Chemistry Research for a Sustainable Growth" on 02/12/2023.

The symposium was primarily aimed at bringing together the scientific community for discussion and deliberations on research priorities in chemical science for the benefit of humankind and a sustainable future besides highlighting the significant contribution of Prof. M. K. Rout in research and teaching in chemistry. The Students/Faculty/Research scholars of the department and participants immensely benefitted from the discussion on the recent developments as well as the ongoing current research in the area of sustainable chemistry.

Before the start of the meeting, a handout on Prof. Rout was distributed. The inaugural session commenced at 11.00 am in the seminar hall of the Department of Chemistry with the lighting of the lamp by the dignitaries followed by homage to Prof. M. K. Rout and playing of the University theme song. Prof. Nigamananda Das, Convener of the symposium welcomed all the dignitaries present on the dais and participants, colleagues, and students, introduced the guests on the dais, and narrated the purpose of the symposium. Prof. Pranabandhu Tripathy (one among the first batch of Ph.D. students of Prof. M. K. Rout) was the Chief Guest and Prof. Navneeta Rath (Chairperson, P.G. Council, Utkal University) and Prof. Rupasree Ragini Das (President, Orissa Chemical Society) graced the inaugural session as the Guests of Honor. The guests on the dais, and Prof. Anadi Charan Dash, former Professor of Chemistry, Utkal University from the audience highlighted the life, academic, research, and administrative contributions of Prof. M. K. Rout. The meeting ended with a vote of thanks by Dr. S. N. Pal, Organizing Secretary and Head of the Department of Chemistry, Utkal University.

Following the inaugural session, the first technical session was convened which was chaired by Prof. A. C. Dash. In this session, Prof. Saroj Kumar Nayak, IIT-Bhubaneswar delivered a talk on "Advanced Materials for Sustainable Energy Solutions". The highlight of his lecture was his work on providing electricity for irrigation at remote corners of the state using flexible solar panels.

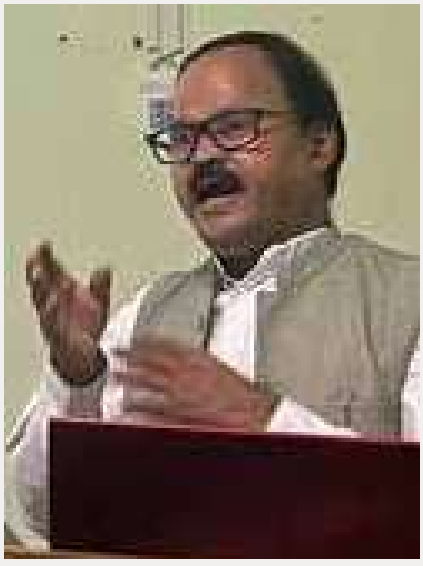
In the post-lunch technical session, two more invited talks were arranged. Dr. Bankim C. Tripathy, Chief Scientist, CSIR-IMMT, Bhubaneswar delivered the first invited talk on "Recycling of Wastes to Recover Metals and Materials for Sustainable Development" while the second talk on understanding "Air Quality and Emission of Pollutants in Indian Cities and its Health Impact: A Solution for Sustainable Air" by Dr. Saroj Kumar Sahu, Department of Environmental Science, Utkal University.

In the concluding session, Dr. Debasish Mohanty (Secretary, Orissa Chemical Society) and Prof. S. Samal (Secretary, MKRCC) thanked the Department for organizing the event successfully.

GLIMPSES OF THE EVENT


Department of Chemistry, Utkal University
Odisha, India


Department of Chemistry, Utkal University
Odisha, India









(I)

KIIT Deemed to be University Bhubaneswar

4th December, 2023

KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY

Prof. M. K. Rout Birth Centenary Celebration Year
(4th January 2023 to 4th January 2024)

OCS Estd 1985

ROYAL SOCIETY OF CHEMISTRY

"3rd OCS ONE-DAY EXTENDED LECTURE SERIES 2023"

Theme

"Research in Frontier Areas of Chemical Science and Technology"

Organized by

School of Applied Sciences

KIIT Deemed to be University, Bhubaneswar

4th December 2023

Venue: **Auditorium, Campus-7, KIIT Deemed to be University, Bhubaneswar**

PROGRAMME SCHEDULE

OCS Estd 1985

Prof. M. K. Ray Birth Centenary Celebration Year

ROYAL SOCIETY OF CHEMISTRY

KIIT

"3rd OCS ONE - DAY EXTENDED LECTURE SERIES 2023"

Theme

"Research in Frontier Areas of Chemical Science and Technology"

4th December, 2023

Organized by: **School of Applied Sciences, KIIT Deemed to be University, Bhubaneswar**

Venue: **Campus -7, Auditorium**

Programme Schedule

Time	Programme	Code
8.00 -9.30 am	**Registration & Breakfast**	
Session – I 9.30 -10.15 am	**Inauguration**	
10:15-10:30	High Tea & Photography	
Session – II	Scientific Session	
10.30-11.50 am	Session Chair: **Dr. Gopal Kundu**, Professor, KIIT Deemed to be University	
10:30-11:10 am	**Dr. Santosh J. Gharpure**, Department of Chemistry, IIT Bombay Title: Functional group-based approach to the heterocycle synthesis	Keynote-1
11.10-11.50 am	**Dr. Debendra Kumar Mohapatra**, Department of Organic Synthesis and Process Chemistry, CSIR-IICT Hyderabad Title: Importance of Total Synthesis: Disproving the Proposed Structure of Few Natural Products	Keynote-2
Session -III	Technical Session-01	
11:50am- 1:30 pm	Session Chair: **Dr. Prasant Rath**, Professor, KIIT Deemed to be University	IT-1
11:50-12.20 pm	**Dr. Sivakumar Vaidyanathan**, Department of Chemistry, IIT Hyderabad Title: Dual emissive Lanthanide complexes through Excited state modulation of organic antennas for smart lightings	IT-1

12.20-12.50 pm	**Dr. Chandra Shekhar Purohit**, Department of Chemistry, NISER, Bhubaneswar Title: Homo-Dimetalic Silver Purine Complexes as Neuromorphic Materials	IT-2
12.50-1.30 pm	An introduction to RSC; Career & opportunities in chemistry **Dr. Chandra Shekhar Purohit**, Department of Chemistry, NISER, Bhubaneswar **Mr. Rajdip Roy**, Membership Executive - External Relationships, Royal Chemistry India Private Limited	IT-3
1.30 – 2. 30 PM	**LUNCH:**	**Venue: Banquet Hall, Campus-6, KIIT DU**
2.30 – 3.15 PM	**Poster Presentation:**	Venue: Kujaban, Campus-6, KIIT DU
Session- IV	Technical Session-02 Venue: Seminar Hall-1, Campus 6, KIIT DU	
03:15–4:15pm	Session Chair : **Dr.T.K Bastia**, Associate Professor, KIIT Deemed to be University	
3.15-3.45 pm	**Dr. Malay Kumar Rana**, Department of Chemical Sciences, IISER Berhampur Title: Molecular Simulations of SARS-CoV-2 Targets: Discovery of Potent Drugs and Allosteric sites	IT-4
3.45-4.15 pm	**Dr. Akhilesh Kumar Singh**, Department of Chemistry, IIT Bhubaneswar Title: Molecular Probes for Magnetic Resonance Imaging and Fluorescence Imaging	IT-5
Session- V	Technical Session-03 Venue: Seminar Hall-1, Campus 6, KIIT DU	
04:30–5:30pm	Session Chair : **Dr. Kajal Parashar,** Associate Professor, KIIT-DU	
4.30-5.00 pm	**Dr. Togapur Pavan Kumar,** CSIR-Institute of Minerals and Materials Technology (IMMT), Bhubaneswar Title: Strategies for Protecting Chemical Innovations - An IP Interface	IT-6
5.00-5.30 pm	**Dr. Sabita Patel,** Department of Chemistry, NIT Rourkela Title: PEG based micellar drug delivery vehicles for application in cancer therapy	IT-7
5.30-5.40 pm	**CONCLUDING REMARKS & POSTER AWARD CEREMONY**	

INAUGURATION

TIME	AGENDA
9:30-9:31 AM	Invite dignitaries to the Dias
9:31-9:33 AM	Invocation & Lighting of the Lamp
9:33-9:36 AM	Presentation of Welcome Bouquet
9:36-9:40 AM	Welcome Address by **Prof. Prasanta Rath,** Dean, School of Applied Sciences, KIIT DU
9:40-9:44 AM	Overview of Orissa Chemical Society by **Dr. Debasis Mohanty,** Secretary, OCS
9:44-9:49 AM	Address by **Prof. Jnyana Ranjan Mohanty,** Registrar, KIIT DU
9:49-9:55 AM	Address by **Dr. Rupasree Ragini Das**, President, OCS
9:55-9:58 AM	**Felicitation of Guests**
9:58-9:59 AM	**Inauguration of the Abstract book**
9:59-10:05 AM	Address by the Chief Guest, **Prof. Santosh J. Gharpure**, IIT, Bombay
10:05-10:11 AM	Address by **Prof. Saranjit Singh,** Vice Chancellor, KIIT DU
10:11-10:15 AM	Vote of Thanks by **Dr. Anita Pati**, Convener, 3rd OCS ONE DAY EXTENDED LECTURE SERIES

KEYNOTE SPEAKERS

Dr. S. J. Gharpure
IIT, Bombay

Dr. Debendra Ku Mahapatra
IICT, Hyderabad

INVITED SPEAKERS

Dr. V. Siva Kumar
IIT, Hyderabad

Dr. C.S. Purohit
NISER, Bhubaneswar

Dr. Malay Rana
IISER, Berhampur

Dr. Akhilesh Singh
IIT, Bhubaneswar

Dr. Pavan Kumar
IMMT, Bhubaneswar

Dr. Sabita Patel
NIT Rourkela

Functional group-based approach to the heterocycle synthesis

Santosh J. Gharpure*
Department of Chemistry
Indian Institute of Technology Bombay, Powai, Mumbai – 400076
(Email: sjgharpure@chem.iitb.ac.in)

Abstract:
Metal catalyzed transformations of alkynes have gained prominence for the synthesis of *oxa*- and *aza*-cycles. However, their utility under metal free conditions is still under explored. In this context, we have demonstrated that the oxonium and iminium ion intermediates generated from vinylogous carbonates and carbamates in the presence of Lewis acids can be trapped with alkynes to get access to 2,3-disubstituted dihydrobenzofurans and indoline derivatives. Over the years, these studies were extended to divergent synthesis of heterocycles such as indoles, quinolines, cyclic ethers and amines and cyclic acetals under not only Lewis acidic conditions but also under radical conditions (Figure 1). The talk will focus on some of the recent developments on using alkynes for the synthesis of heterocycles from our laboratory.

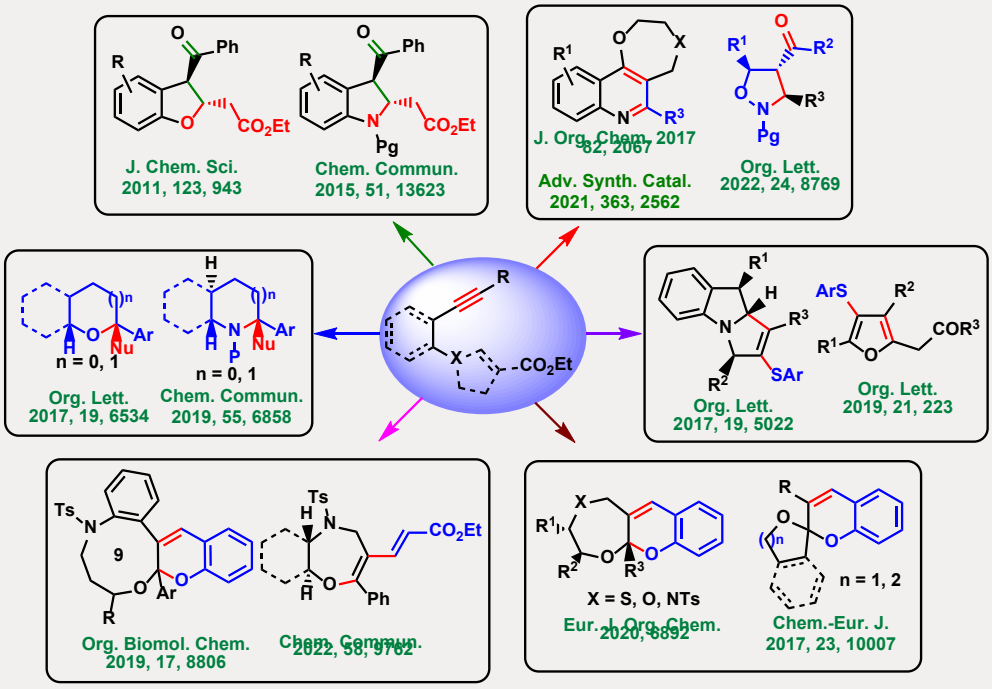


Fig. 1: Alkynes in the synthesis of heterocycles

References and Notes:

1. Gharpure, S. J.; Vishwakarma, D. S.; Patel, R. K. *Chem. Commun.*, **2019**, *55*, 6858.
2. Gharpure, S. J.; Padmaja; Prasath, V.; Shelke, Y. G. *Org. Lett.*, **2019**, *21*, 223.
3. Gharpure, S. J.; Nanda, S. K.; Fartade, D. J. *Adv. Synth. Catal.*, **2021**, *363*, 2562.
4. Gharpure, S. J.; Fartade, D. J.; Gupta, K. S.; Patel, R. K. *Chem. Commun.*, **2022**, *58*, 9762.
5. Gharpure, S. J.; Pal, J.; Pansuriya, K. C. *Org. Lett.*, **2022**, *24*, 8769.
6. Gharpure, S. J.; Vishwakarma, D. S.; Hajam, S. A. *Org. Lett.* **2023**, *25*, 2525.

Importance of Total Synthesis: Disproving the Proposed Structure of Few Natural Products

Debendra Kumar Mohapatra*

Department of Organic Synthesis and Process Chemistry,
CSIR-Indian Institute of Chemical Technology, Hyderabad-500007, Telangana, INDIA
E-mail: mohapatra@iict.res.in

Abstract:

During the 19th century and early half of the 20th century, the elucidation of a natural product structure was an art that be contingent almost entirely on the power of chemical synthesis, or, more specifically, on the effectiveness of degradation or derivatization processes provided gram quantities of the substance under investigation were available. The assignment of absolute or relative configuration was, of course, essentially out of the question in most cases. This intellectually difficult and physically tedious approach often attended with errors. Nevertheless, the near-exclusive use of total synthesis of natural products for structural elucidation did score several remarkable successes. From the year 1900 to 2018, more than 350 natural products have been incorrectly assigned (stereochemical and/or structural).[1]

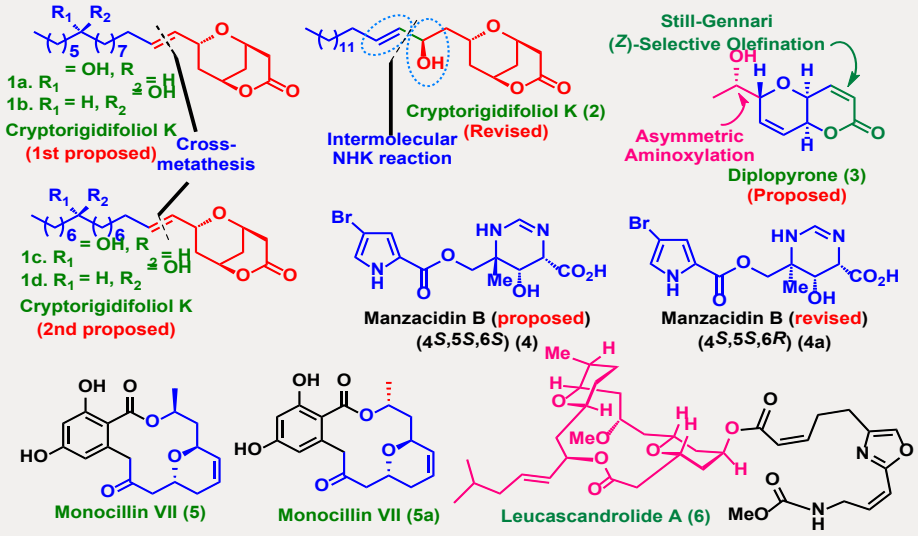


Figure 1. Structures of few natural products

The first asymmetric convergent total synthesis, correct structure, and absolute configuration of few more natural products will be discussed.

References and Notes:

1. (a) Nicolaou, K. C.; Snyder, S. A. *Angew. Chem. Int. Ed.* **2005***, 44,* 1012. (b) Paul, D.; Kundu, A.; Saha, S.; Goswami, R. K. *Chem. Commun.* **2021**, *57*, 3307.
2. (a) Sankar, K.; Rahman, H.; Das, P. P.; Bhimireddy, E.; Sridhar, B.; Mohapatra, D. K. *Org. Lett.* **2012**, *14*, 1082. (b) Yadav, J. S.; Pattanayak, M. R.; Das, P. P.; Mohapatra, D. K. *Org. Lett.* **2011**, *13*, 1710. (c) Reddy, G. S.; Padhi, B.; Bharath, Y.; Mohapatra, D. K. *Org. Lett.* **2017**, *19*, 6506. (d) Mallampudi, N. A.; Srinivas, B.; Reddy, J. G.; Mohapatra, D. K. *Org. Lett.* **2019**, *21*, 5952. Choudhury, U. M.; Mendhekar, K. L.; Kunwar, A. C.; Mohapatra, D. K. *J. Org. Chem.* **2023**, ASAP.

Dual emissive Lanthanide complexes through Excited state modulation of organic antennas for smart lightings

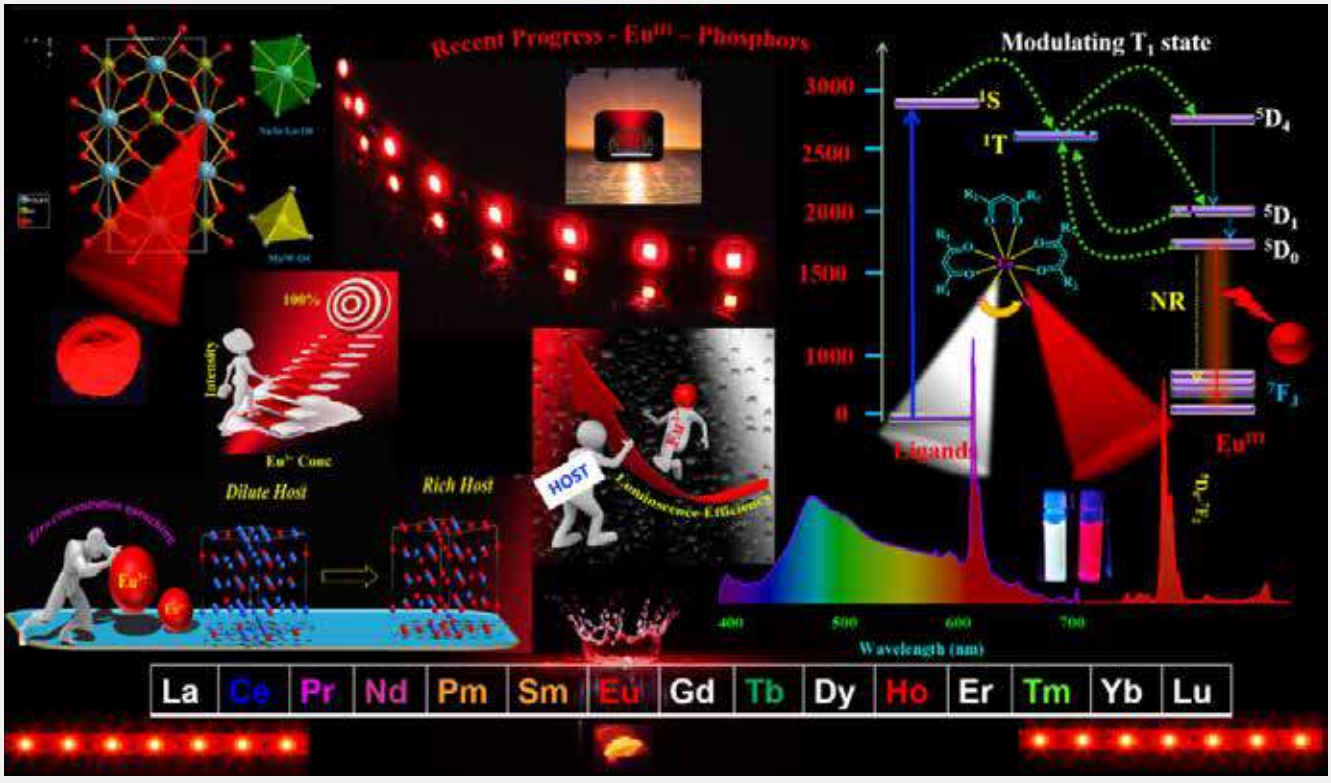
Sivakumar Vaidyanathan*

Department of Chemistry, Indian Institute of Technology Hyderabad, Kandi, Sangareddy-502285, Telangana, India.

*Email: vsiva@chy.iith.ac.in

Abstract:

Phosphor-converted white light-emitting diodes (pcLEDs) have attracted much attention in the past few decades owing to their several advantages, such as eco-friendliness, low power consumption, high efficiency, small volume, and long persistence. High performance and ultra-stable oxide based narrow band red emitting phosphors are still a bottleneck in white LED applications. Trivalent europium-based monochromatic red light-emitting phosphors are a vital component to recognize high-performance smart lighting devices; however, the concentration and thermal quenching restrict their usage. In this talk, various trivalent europium based red emitting phosphors with different crystal structure will be discussed with special emphasis on their optical properties as well as detail structure-compositions-property relationship will also be presented and discussed. Some of the red phosphors showed extremely high efficiency and good thermal stability. In addition, trivalent ion based molecular complexes also been investigated aiming to obtain high performance red emission or multiple emission (including white light emission) for solid state lighting applications. The detail results will be presented and discussed.



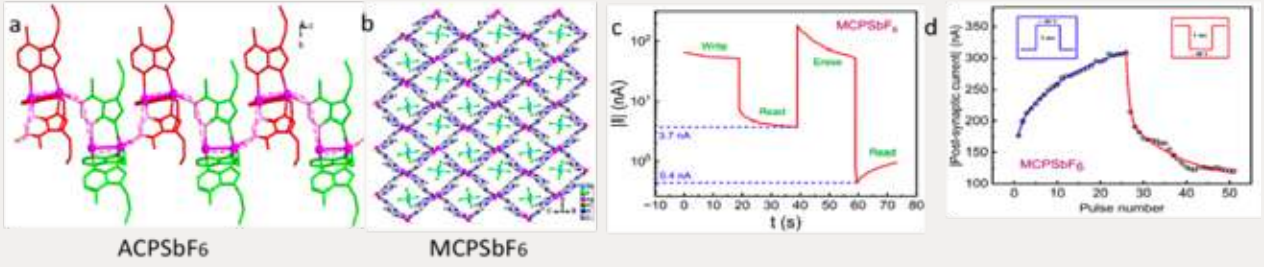
Homo-Dimetalic Silver Purine Complexes as Neuromorphic Materials#

Subhra Jyoti Panda, Chandra Shekhar Purohit*
School of Chemical Sciences, NISER, HBNI,
Bhubaneswar, 752050, Odisha, India
Email: purohit@niser.ac.in

Abstract:

Various materials explored for bioinspired neuromorphic devices like afferent nerves,[1] optoelectronic sensors,[2] olfactory neurons,[3] adaptive biosensors,[4] and optomemristors.[5] We synthesized few MOFs with 7-methylchloropurone and 7-allylchloropurine (Scheme -1) that gives di-metallic silver-purine complexes having Ag-Ag bonds. These materials are showing interesting electrical conductivity, and are studied for neuromorphic computing such as LTP, LTD, and STDP. A Six-terminal neuromorphic device with MCPSbF6 complex shows heterosynaptic neural computing with an endurance of 2800 cycles and a retention time exceeding 6 hours.

Figure:



Scheme-1:

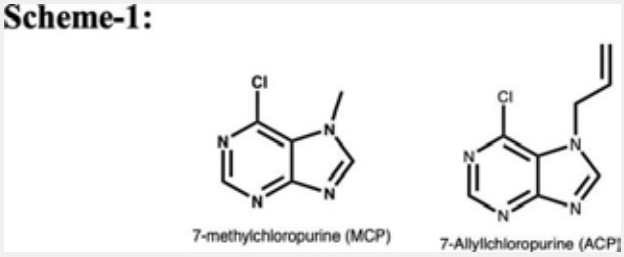


Figure 1 (a) Crystal structure of ACPSbF6 (b) Crystal structure of MCPSbF6 (c) reten8on 8me in the device made with MCPSbF6 in LRS state aAer wri8ng and reading (d) Postsynap8c current vs. pulse number showing LTP, LTD.

References and Notes:

Communicated.

1. Y. Kim, A. Chortos, W. Xu, Y. Liu, J. Y. Oh, D. Son, J. Kang, A. M. Foudeh, C. Zhu, Y. Lee, S. Niu, J. Liu, R. Pfattner, Z. Bao, T.-W. Lee, *Science* **2018**, *360*, 998-1003.
2. S. M. Kwon, S. W. Cho, M. Kim, J. S. Heo, Y.-H. Kim, S. K. Park, *Adv. Mater.* **2019**, *31*, 1906433.
3. J.-K. Han, M. Kang, J. Jeong, I. Cho, J.-M. Yu, K.-J. Yoon, I. Park, Y.-K. Choi, *Advanced Science* **2022**, *9*, 2106017.
4. Y. Zhang, E. R. W. van Doremaele, G. Ye, T. Stevens, J. Song, R. C. Chiechi, Y. van de Burgt, *Adv. Mater.***2022**, *34*, 2200393.
5. S. G. Sarwat, T. Morai8s, C. D. Wright, H. Bhaskaran, *Nature Communications* **2022**, *13*, 2247.

Molecular Simulations of SARS-CoV-2 Targets : Discovery of Potent Drugs and Allosteric sites

Malay Kumar Rana

Assistant Professor, Department of Chemical Sciences, IISER Berhampur

Abstract:

Mechanistic insights and therapeutic discoveries obtained through computational simulations represent a significant step forward in combating infectious diseases at a rapid pace. The outbreak of COVID-19 has decimated a sizable population; it continues looming worldwide with the emergence of different variants. A comprehensive study is essential for the fruitful design or discovery of sustainable remedies against COVID-19. In this talk, I will briefly elaborate on the structure and function of proteins/enzymes present in SARS-CoV-2 so as to use them as a biological target for therapeutic discovery. Two kinds of protein targets are selected: one is mutation-prone, and the other one is highly conserved. Therefore, two different avenues are explored, namely i. biomimetic peptide design for inhibiting the spike protein and ii. repurposing existing drugs or screening bioactive molecules against conserved non-structural proteins. While carrying out such investigation, we identified potent inhibitors along with the discovery of new binding or allosteric sites in SARS-CoV-2 targets, providing insights into the molecular mechanism of interaction. The studies enable us to rationalize the prophylaxis effects of drugs like vitamin D3 or steroids, the exact causes of which remained largely unknown to date. Studies were performed by Molecular Dynamics and other advanced computational simulations, including Bioinformatics and docking analyses.

References:

1. S. K. Panda, P. S. S. Gupta, S. Karmakar, S. Biswal, N. C. Mahanandia, M. K. Rana *J. Phys. Chem. Lett.* **2023**, *14*, *45*, 10278–10284.
2. Ray, A. K.; Gupta, P. S. S.; Panda, S. K.; Biswal, S.; Bhattacharya, U.; Rana, M. K. *Computers in Biology and Medicine* **2022**, *142*, 105183.
3. Panda, S.K.; Sen Gupta, P. S.; Biswal, S.; Ray, A. K.; Rana, M. K. *Journal of Proteome Research* **2021**, *20*, 1296–1303.

Molecular Probes for Magnetic Resonance Imaging and Fluorescence Imaging

Akhilesh Kumar Singh
Indian Institute of Technology Bhubaneswar, India
E-mail: aksingh@iitbbs.ac.in

Abstract:

Research in the field of biomedical imaging is fascinating nowadays. Among other imaging techniques magnetic resonance imaging and fluorescence imaging are the most advanced and rapidly used techniques. Herein, few ligands suitable for both the techniques were designed and synthesized. Their ability in the respective imaging techniques were investigated and their stability in physiological pH and temperature was checked. Some macrocyclic and acyclic ligands were designed and synthesized and their Fe(II), Co(II) and Ni(II) complexes were isolated and explored for the development of paraCEST-based MRI contrast agents. These complexes were found exceptional and showed a huge CEST activity which is higher than many reported paraCEST probes. The complexes were found inert in the presence of various competing ions, in pH range of 6.5 – 8.3, and in higher temperature. These complete paraCEST investigations suggested their utilization in the *in vivo* and *in vitro* studies. For fluorescence imaging, few probes have been designed and synthesized for the selective detection of some useful/toxic metal ions. The selective detection of hazardous ion like Cd^{2+} over the Zn^{2+} and other metal ions, is a challenging task and to execute that some ligand has been designed and synthesized, which can detect only Cd^{2+} over other metal ions. Moreover, to detect the ion like Ga^{3+} selectively over other metal ions and to separate it from group 13 metal ions another ligand has been synthesized, which has an ability to selectively detect Ga^{3+} in red region with a high absorption wavelength of 560 nm. The detection ability of these probes to their respective metal ions were also verified in live cells, and in all the cases positive responses were observed. These research finding will be presented in my brief talk.

Keywords: MRI, ParaCEST Contrast Agent;. *Fluorescence imaging · Cytotoxicity · Stability constant · Live-cell Bioimaging.*

Strategies for Protecting Chemical Innovations – An IP Interface

Togapur Pavan Kumar
Senior Scientist - Chemistry & IPR
CSIR-Institute of Minerals and Materials Technology (IMMT)
Sachivalaya Marg, Bhubaneswar – 751013; Odisha

Abstract

Innovation is the key for growth, development and advancement of science and technological outcomes. The successful technological development depends increasingly on collaborations between different stakeholders such as academia, research and industry. Exploring the role of IP in technology and innovation processes on a strategic level and utilization of IP knowledge for decision making may find huge and unexploited potential for a productive outcome in almost all sectors including chemical sciences. This lecture contributes to integrating-patent knowledge for strategic planning and innovation led technology road-mapping- for chemical sciences sector, enabling the participants to get insights on some practical approaches associated with chemistry research. The experience gained from the research and technology development of works on production of alpha lipoic acid-a simple molecule with effective applications; process for nicotine, Zafirlukast and many others are discussed here, which may also provide some guidance for further applications. Overall, this lecture throws a light on how IP knowledge plays a crucial role in strategic design and planning for an effective innovation led technology road mapping with case studies focusing to chemical science.

Keywords: Chemical Innovations, Patent Knowledge, Strategic thinking, Innovation led-Technology Development, Chemical Process

PEG based micellar drug delivery vehicles for application in cancer therapy

Sabita Patel
Department of Chemistry, National Institute of Technology Rourkela, Odisha, India, 769008
(Email: sabitap@nitrkl.ac.in; sabita_patel@yahoo.com)

Abstract:

The development of an effective drug carrier for hydrophobic anticancer agents is very important for cancer chemotherapy. Among various drug carriers, PEG based polymeric micellar drug carrier is widely accepted due to its greater solubility, biocompatibility, and prolonged circulation time. In spite of significant progress in the development of various micellar systems for delivery of anti-cancer agents, these drug delivery systems (DDS) suffer from some disadvantages with respect to drug loading capacity and formulation stability, thus much improvement is still needed in the existing systems. To improvise the drug loading capability and formulation stability of PEG based DDS, different PEG based amphiphiles have been synthesized containing long chain hydrocarbons as hydrophobic segment instead of block co-polymer. Suitable condensation strategies have been adopted to synthesize these amphiphiles containing size tunable hydrophobic tail to achieve HLB for possible formation of micelles with required size (<100 nm), greater stability upon dilution and lower cmc compared to that of micelles formed from block co-polymers. Micelle formation of these synthesized amphiphiles has been investigated using UV-Vis and fluorescence spectroscopic technique. Encapsulations of suitable drugs, drug loading capabilities and drug release aspect of these micellar assemblies have been investigated. These micelles are also found to be biocompatible and thus non-toxic to healthy cells. Further, these are accompanied with good cell penetration activity which is also required to increase the therapeutic efficacy of the hydrophobic anticancer agents.

Report on : 3rd OCS-ONEDAY EXTENDED LECTURE SERIES 2023

In collaboration with Orissa Chemical Society (OCS) School of Applied Sciences, KIIT DU have organized the "**3rd OCS-ONEDAY EXTENDED LECTURE SERIES 2023" on the theme "Research in Frontier Areas of Chemical Science and Technology**" on **04.12.2023** at KIIT University. Orissa Chemical society has taken the initiative to celebrate the birth centenary year of Prof. Mahendra Kumar Rout, a founder chemist of Odisha who is having a great role to give a new direction to the chemistry research in Odisha and created an environment to think for innovation and creativity in the field of chemical sciences. This extended lecture series is one of the events dedicated to that celebration. To give best tributes to the contribution of Prof. M. K. Rout to this society, this programme started with an interaction session with the students of KISS DU on 03.12.2023. Dr. S. J. Gharpure, IIT Bombay, Dr. Debendra Ku. Mahapatra, IICT Hyderabad, Dr. V. Sivakumar, IIT Hyderabad and Dr. Sabita Patel, NIT Rourkela have graced this interaction session and motivated the students with their encouraging words.

On 04.12.2023, it started with the inauguration ceremony where Dr. Prasant Rath, Dean, School of Applied Sciences, KIIT DU welcomed all the eminent speakers, delegates and guests present there. Prof. S. J. Gharpure graced the occasion as the chief guest and encouraged the students to think for a bright career in chemistry. He mentioned that researchers like Prof M. K. Rout have published research papers in highly reputed journals even if they had the constrains of instrumental facilities. He motivated the students to keep the patience and through their hard work contribute for the betterment of the society. Prof. Saranjit Singh, Vice Chancellor, KIIT DU thanked OCS for giving the chance to KIIT DU to organize such a wonderful event and suggested to have a KIIT Chapter of OCS where OCS and KIIT can work together for this noble cause. Prof. Jyanaranjan Mohanty, Registrar, KIIT DU given his valuable

insights and mentioned that chemistry is making remarkable progress since it not only penetrates into all areas of human activity but also determine progress in critical directions. Prof. R.R. Das, President OCS created the research enthusiasm among the students and participants with her inspiring words. Dr. Debashis Mohanty, Secretary OCS presented an overview of the OCS. The meeting was ended with the vote of thanks by Dr. A. Pati, Convener of this programme.

There were 5 sessions including the inaugural session, one scientific and 4 technical sessions. In 1st session Prof. S. J. Gharpure, IIT, Bombay and Dr. Debendra Ku Mahapatra, CSIR, IICT, Hyderabad delivered the keynote address and in both the presentations two vital areas of organic chemistry has been accommodated. They have also mentioned the area of research and type of work that has been pioneered by Prof. M. K. Rout during his research era.

In the 2nd session Dr. V. Siva Kumar, IIT, Hyderabad have discussed on the advanced research on the light-emitting diodes whereas Dr. Chandrasekhar Purohit from NISER, Bhubaneswar have presented his research work on the Neuromorphic Materials. One RSC session has been included in this session and within this Dr. C. S. Purohit motivated the students through the "Career & Opportunities in Chemistry" and Dr. Rajdip Roy, Membership Executive - External Relationships, RSC conducted an informative session on the various RSC programme and benefits for the members.



The 3rd session was addressed by Dr. Malay Kumar Rana, IISER, Berhampur where he talked about one of the emerging research topics, the Molecular Simulations of SARS-CoV-2 Targets, Discovery of Potent Drugs and Allosteric sites and Dr. Akhilesh Kumar Singh, IIT Bhubaneswar who inspired the students through his enthusiastic presentations on Molecular Probes for Magnetic Resonance Imaging and Fluorescence Imaging.


In the 4th session Dr. T. Pavan Kumar, IMMT Bhubaneswar delivered a talk on 'Strategies for Protecting Chemical Innovations – An IP Interface' and created an awareness on the IP activities followed by an enthusiastic presentation by Dr. Sabita Patel, NIT Rourkela on the topic PEG based micellar drug delivery vehicles for application in cancer therapy. All the sessions were chaired by distinguished professors of our University.

More than 250 participants from various institutions/colleges/universities like KIIT DU, KISS DU, Angul Government Autonomous College, U.N. College of Sc. & Tech., Khalikote Unitary University, IIT Hyderabad, IGIT Sarang, R. D. Womens' College, Ravenshaw University, NISER, ICT BBSR, Govt. Sc. College Chatrapur, Centurion University, Tribhuvan University attended this 3rd OCS Extended Lecture Series. To encourage the young researchers, a poster session has been incorporated in this lecture series. There were 26 poster presentations during 6 best posters has been selected for the award of best poster presentation who will be getting the membership benefits from the Royal Society of Chemistry. The programme was concluded with the concluding remarks by Dr. T. K. Bastia, Coordinator, Chemistry.

(J)

Odisha University of Technology and Research (OUTR) Bhubaneswar

15th December, 2023

Prof. M. K. Rout Birth Centenary Celebration Year

4th OCS One-Day Extended Lecture Series 2023

Odisha University of Technology and Research (OUTR), Bhubaneswar

December 15, 2023

Theme:

Global Research Trends in Chemical Sciences- Bridging the Gap between State and Central-Funded Universities and Institutions

In the Prof. Mahendra Kumar Rout Birth Centenary Celebration Year (04.1.2023 to 04.1.2024), the 4th OCS ONE-DAY EXTENDED LECTURE SERIES 2023 was organised at Odisha University of Technology and Research, Bhubaneswar on 15th December 2023, with Prof. A. N. Acharya, Professor of Chemistry and Dean, Academic Affairs, as the Convener, and Prof. B. R. Das, Head, School of Basic Sciences and Humanities, as Organizing Secretary. Prof. F. Baliarsingh, Vice Chancellor-in-Charge, addressed the august gathering as the Chief Guest of the function. Dr. P. B. Tripathy, the 4th Ph.D. student of Prof. M. K. Rout, graced the occasion as Chief Speaker, Prof. S. P. Rout, son of Prof. M. K. Rout, joined as Guest of Honour, and Prof. Rupasree Ragini Das, the President of Odisha Chemical Society. Prof. B. R. Das, Organising Secretary, welcomed all the dignitaries, invited guests, staff members, and students. He underlined the importance of organising such an event vis-à-vis the introductory information about the dignitaries and invited speakers. Prof. A. N. Acharya, Convener, highlighted the newly established Unitary University, the Odisha University of Technology and Research (OUTR). Established in October 2021, the University offers various courses, including post graduate teaching and research in chemistry. He also highlighted the achievements of the University, and the thrust areas are teaching, sponsored and collaborative research, along with filing of patents in cutting-edge technology, innovation, and start-up activities.

Dr. Tripathy highlighted the vision of Prof. M. K. Rout and his dedication to research in chemistry. His affectionate attitude towards the students is always remembered. His guidance in carrying out the research was marvelous. He also advised the students to work hard, read some good textbooks, mostly foreign-authored books, and know the principles behind each experiment, as chemistry is an experimental science. Prof. S. P. Rout enlightened the audience on the various positions held by his father, Prof. M. K. Rout, during his service period, his workaholic attitude, his skills for solving the complex issues while dealing with students and in administration. He highlighted his research publications at Ravenshaw College in high impact journals during those days. The Lecture Series had four eminent researchers presented their research. The cutting research presented in this meeting were befitting to the occasion.

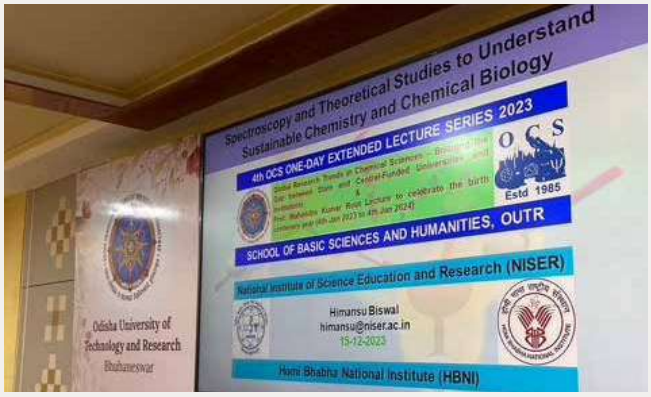
The speakers emphasized the importance of developing technology for industrial production of starting materials at low cost so that our dependance on import is minimized. Many of the organic synthesis in laboratory are apparently simple, but when carried out at an industrial scale, the cost of production becomes the primary factor. The purity of the starting material is also very important. Though India is a manufacturing hob of pharmaceutical products, we still depend on import of the starting materials.

The speakers discussed the advanced instruments and analytical equipment in ICT-IOP and NISER. They said that these facilities are open to all, particularly the students and researchers of colleges and universities in the locality. They offered to conduct regular visits to their labs and invited students to join summer programs.

The Invited Speakers

Talk No.	Name of the Eminent Speakers	Title of the talk	Photo
Session Chair: **Prof. Shashadhar Samal**, Secretary, MKRCC & Former President, OCS			
1	**Prof. P. R. Vavia** Director, ICT-IOC, Bhubaneswar campus.	Recent Trends in Pharmaceutical Sciences	
2	**Prof. Himansu Sekhar Biswal** Professor, Chemical Sciences, NISER, Bhubaneswar	Spectroscopy and Theoretical Studies to Understand Sustainable Chemistry and Chemical Biology	
Session Chair: **Prof. Ajaya K. Pattnaik**, Former President, OCS			
3	**Prof. A. R. Kapdi** Deputy Director, Institute of Chemical Technology, Mumbai	π-Acceptor Caged Phosphine Ligands: Exploration of Novel Catalytic Reactivity and Mechanism.	
4	**Prof. Nigamananda Das** Professor of Chemistry, Utkal University, Bhubaneswar	Multicomponent Nanomaterials for Photocatalytic and Energy Storage Applications	

GLIMPSES OF THE EVENTS


Spectroscopy and Theoretical Studies to Understand
Sustainable Chemistry and Chemical Biology
4th OCS ONE-DAY EXTENDED LECTURE SERIES 2023
OCS
Estd 1985
SCHOOL OF BASIC SCIENCES AND HUMANITIES, OUTR
National Institute of Science Education and Research (NISER)
Himansu Biswal
himansu@niser.ac.in
15-12-2023
Homi Bhabha National Institute (HBNI)
Odisha University of Technology and Research
Bhubaneswar


Odisha University of Technology and Research
Bhubaneswar


Welcome
OCS
OUTR


Shot on OnePlus

MEDIA COVERAGE

The Samaj : 15/12/2023

ଓୟୁଟିଆରରେ ଆଲୋଚନାଚକ୍ର

ଭୁବନେଶ୍ୱର,୧୫।୧୨(ନି.ପ୍ର): ଓଡ଼ିଶା ବୈଷୟିକ ଓ ଗବେଷଣା ବିଶ୍ୱବିଦ୍ୟାଳୟ(ଓୟୁଟିଆର)ର ସ୍କୁଲ ଅଫ୍ ବେସିକ୍ ସାଇନ୍ସ ଏଣ୍ଡ ହ୍ୟୁମାନିଟିକ୍ସ ପକ୍ଷରୁ ଏକ ଆଲୋଚନାଚକ୍ର ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି । ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ଜନ୍ମଦିନ ଅବସରରେ ଏହି କାର୍ଯ୍ୟକ୍ରମ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା ।

ଏଥିରେ ପ୍ରଫେସର ରାଉତଙ୍କ କର୍ମମୟ ଜୀବନୀ ସମ୍ବନ୍ଧରେ ଆଲୋଚନା କରାଯାଇଥିଲା । ପ୍ରଫେସର ପି.ଆର ଭାଭିଆ, ପ୍ରଫେସର ହିମାଂଶୁ ଶେଖର ବିଶ୍ୱାଳ, ପ୍ରଫେସର ଏ. ଆର. କାପଡି ରାସାୟନିକ ବିଜ୍ଞାନ କ୍ଷେତ୍ରରେ ଦୀପ୍ତିମାନ ଏବଂ ପ୍ରଫେସର ନିଗମାନନ୍ଦ ଦାସ ପ୍ରମୁଖ ଆଲୋଚନାରେ ଭାଗ ନେଇଥିଲେ । ପ୍ରଫେସର ରୀତା ଦାସ, ପ୍ରଫେସର ଏସ. ସାମଲ, ପ୍ରଫେସର ଅଜୟ କୁମାର ନାୟକ ଏବଂ ପ୍ରଫେସର ସ୍ମୃତି ଦାସଙ୍କ ସହ ପ୍ରଫେସର ଫାଲ୍‌ଗୁନି ବଳିଆରସିଂହ ଉପସ୍ଥିତ ଥିଲେ । ସ୍କୁଲ ଅଫ୍ ବେସିକ୍ ସାଇନ୍ସ ଏଣ୍ଡ ହ୍ୟୁମାନିଟିସ୍‌ର ମୁଖ୍ୟ ପ୍ରଫେସର ବିଜ୍ଞାନ ରଞ୍ଜନ ଦାସଙ୍କ ଉପସ୍ଥିତିରେ ପ୍ରଫେସର ଏ.ଏନ୍ ଆଚାର୍ଯ୍ୟ, ଏକାଡେମିକ୍ ଆଫେୟାରର ଡିନ୍ ତଥା ଓସିଏସ୍‌ର ସମ୍ମାନିତ ପ୍ରେସିଡେଣ୍ଟ ପ୍ରଫେସର ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାସ ପ୍ରମୁଖ ଆଲୋଚନାରେ ଭାଗ ନେଇଥିଲେ । ରାସାୟନିକ ବିଜ୍ଞାନରେ ଗ୍ଲୋବାଲ୍ ରିସର୍ଚ୍ଚ ଟ୍ରେଣ୍ଡ ଉପରେ ଆଲୋଚନା କରାଯାଇଥିଲା ।

ଧରିତ୍ରୀ 16/12/2023

ଓୟୁଟିଆର୍‌ରେ ଓସିଏସ୍ ଏକ ଦିବସ ବିସ୍ତାରିତ ଲେକ୍ଚର ସିରିଜ

ଭୁବନେଶ୍ୱର, ୧୫।୧୨(ଅନୁରାଧା ମହାରଣା)– ଓଡ଼ିଶା ୟୁନିଭର୍ସିଟି ଅଫ୍ ଟେକ୍ନୋଲୋଜି ଆଣ୍ଡ ରିସର୍ଚ୍ଚ (ଓୟୁଟିଆର୍)ର ସ୍କୁଲ ଅଫ୍ ବେସିକ୍ ସାଇନ୍ସ ଆଣ୍ଡ ହ୍ୟୁମାନିଟିସ୍ ଚତୁର୍ଥ ଓସିଏସ୍ ଏକ ଦିବସ ବିସ୍ତାରିତ ଲେକ୍ଚର୍ ସିରିଜ୍ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି। ପ୍ରଫେସର ମହେନ୍ଦ୍ର କୁମାର ରାଉତଙ୍କ ୧୦୦ତମ ଜନ୍ମଦିନ ଅବସରରେ ଏହି କାର୍ଯ୍ୟକ୍ରମ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା । ପ୍ରଫେସର ପି.ଆର୍. ଭାଭିଆ, ପ୍ରଫେସର ହିମାଂଶୁ ଶେଖର ବିଶ୍ୱାଳ, ପ୍ରଫେସର ଏ. ଆର୍. କାପଡି, ଦୀପ୍ତିମାନ ଏବଂ ପ୍ରଫେସର ନିଗମାନନ୍ଦ ଦାସ ଯୋଗଦେଇ ରସାୟନ ବିଜ୍ଞାନରେ ବିଶ୍ୱ ଅନୁସନ୍ଧାନ ଧାରା ଉପରେ ଆଲୋଚନା କରିଥିଲେ। ଏଥିସହ ପ୍ରଫେସର ରୀତା ଦାସ, ପ୍ରଫେସର ଏସ୍. ସାମଲ , ପ୍ରଫେସର ଅଜୟ କୁମାର ନାୟକ ଏବଂ ପ୍ରଫେସର ସ୍ମୃତି ଦାସ ଙ୍କ ସହ ପ୍ରଫେସର ଫାଲ୍‌ଗୁନୀ ବଳିଆରସିଂହ ଉପସ୍ଥିତ ଥିଲେ। ସ୍କୁଲ ଅଫ୍ ବେସିକ୍ ସାଇନ୍ସ ଏଣ୍ଡ ହ୍ୟୁମାନିଟିସ୍‌ର ମୁଖ୍ୟ ପ୍ରଫେସର ବିଜ୍ଞାନ ରଞ୍ଜନ ଦାସଙ୍କ ବିଶିଷ୍ଟ ଉପସ୍ଥିତିରେ ପ୍ରଫେସର ଏ.ଏନ୍. ଆଚାର୍ଯ୍ୟ, ଏକାଡେମିକ୍ ଆଫେୟାରର ଡିନ୍ ତଥା ଓସିଏସ୍‌ର ସମ୍ମାନିତ ପ୍ରେସିଡେଣ୍ଟ ପ୍ରଫେସର ରୂପଶ୍ରୀ ରାଗିଣୀ ଦାସ ଏହି କାର୍ଯ୍ୟକ୍ରମରେ ସାମିଲ ହୋଇଥିଲେ।

Odisha Bigyan Academy
Bhubaneswar

Department of Science & Technology
Government of Odisha

Felicitates

PROF. MAHENDRA KUMAR ROUT

AS

SENIOR SCIENTEST OF ODISHA-2007 (POSTHUMOUSLY)

THEY ALSO SERVED THE LEGEND

Shri Bimbadhar Mandoi
DOB: 05.06.1928
(Service period: 02.03.1953 – 30.06.1988)
Served Prof. Rout in Ravenshaw College
for a period of 15 years
Contact: Sri Antaryami Mandoi (Son)
Phone: 99374 67413

Shri Rabindra Kumar Baliarsingh
DOB: 16.06.1945
Served Prof. Rout in Ravenshaw College
Res.: Subham Tower, Manisahu Chhak,
Buxi Bazar, Cuttack
Phone: 9437378059

Shri Dasarathi Mohapatra
DOB: 05.04.1959
Served Prof. Rout in Utkal University and
SPCB, Bhubaneswar from 1981
Phone: 76839 79720

Shri Abhay Charan Nath
DOB: 22.01.1961
(Service period: 01.04.1984 – 31.01.2021)
Served Prof. Rout in SPCB, Bhubaneswar
Phone: 94374 96842

A ROAD MAP TO THE FUTURE

"कर्मण्येवाधिकारस्ते मा फलेषु कदाचन।"

Prof. M. K. Rout Birth Centenary Celebration

(Celebration of Birth Centenary Year starting from the 99th Birthday on 4th January 2023 and ending with 100th Birthday on 4th January 2024)

Prof. Mahendra Kumar Rout Birth Centenary Celebration Year ends with observing his 100th Birthday on 4th January 2024. The MKRCC formed in early 2020, celebrated the centenary year with several events conducted in different parts of the state. This year, the MKRCC touched a diverse discipline of individuals who believe that the legendary figure cannot be confined to any boundaries of time and space. The Centenary Year Celebrations are the foundation upon which a superstructure needs to be built. Some of the future dreams could be the following:

- **Setting up of Advanced Institute of Chemical Sciences**
  Plans are underway to setup an interdisciplinary institute that would impart skills in current and emerging fields in diverse domains of Chemical Sciences.
- **To Institute Prof. Mahendra Kumar Rout Chair**
  Plans are afoot to institute Prof. Mahendra Kumar Rout Chairs in differnt Universities and Institutes of the State in the name of the legend and will be open to persons of eminence selected/invited from the global arena.
- **Presentation of Prof. Mahendra Kumar Rout Medal of Excellence**
  Prof. Mahendra Kumar Rout Medal of Excellence is planed to be given to Man of Excellence for significant contributions to Chemical Sciences.

The MKRCC rests with the event of 4th January 2024 and hope that the memory of **Prof. Mahendra Kumar Rout** flourishes and blossoms with the passage of time.

***

INVITATION

Prof. Mahendra Kumar Rout Birth Centenary Celebration

Venue: Seven Pillars of Wisdom, Ravenshaw University, Cuttack
Date: 4th January 2024

Join Us for the Inaugural Meeting of Birth Centenary Celebration.

We extend our warmest invitation to you for the inaugural meeting of celebration marking the birth centenary of Prof. Mahendra Kumar Rout. This event commemorates the life and legacy of Prof. Rout, a remarkable individual whose contributions have left an indelible mark on our lives The inaugural meeting promises to be an enlightening and inspiring gathering, a momentous celebration that will pay homage to a life well-lived. Join us in honoring and celebrating a life that has touched countless hearts and inspired generations.

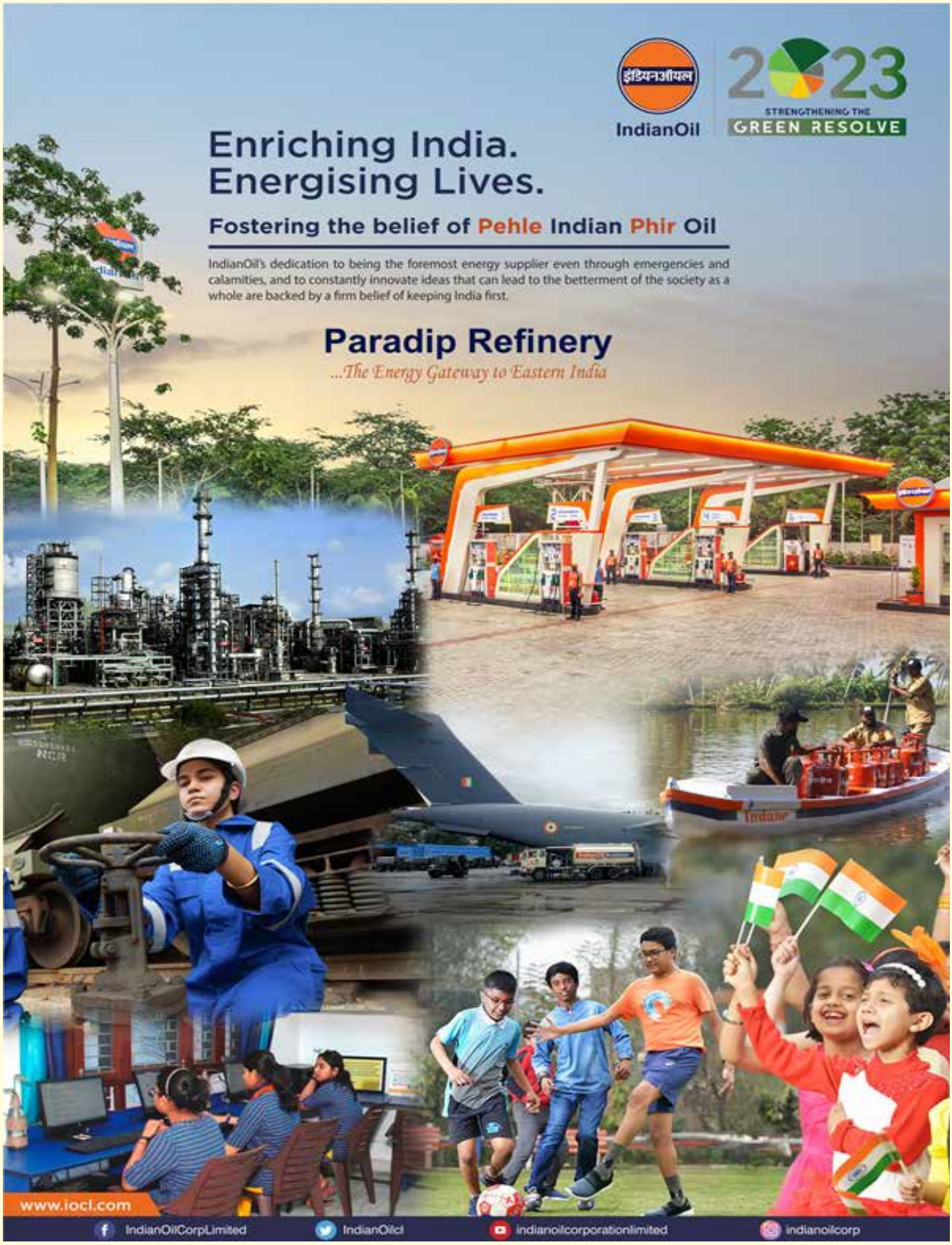
Members of the MKRCC

PROGRAM HIGHLIGHTS

8.00 AM – 10 AM	:	Registration and Breakfast
9.15 AM	:	Assembly in front of the historic campus residence of Prof. M. K. Rout, adjacent to Commerce Block of Ravenshaw University
9.30 AM	:	The Assembly walks the stretch of road leading to the Main Gate of Department of Chemistry
10.00 AM	:	Admission into the Conference Hall
10.30 AM	:	Commence of the Inaugural Meeting
10.30 AM - 1.30 PM	:	Inaugural Meeting
1.30 PM – 3.00 PM	:	Lunch Break
3.00 PM – 3.30 PM	:	Screening of a Documentary on the life and works of Prof. M. K. Rout
3.30 PM – 5.30 PM	:	Address by Invited Guests and Speakers
5.30 PM – 6.00 PM	:	Tea Break
6.00 PM - 7.30 PM	:	Entertainment Program
8.00 PM – 10.00 PM	:	Dinner

***


PPL
DEFINING
A NEW
PRESENT
ENVISAGING
A BETTER
FUTURE
Paradeep Phosphates Limited
www.paradeepphosphates.com


इंडियनऑयल
IndianOil
2023
STRENGTHENING THE
GREEN RESOLVE
Enriching India.
Energising Lives.
Fostering the belief of Pehle Indian Phir Oil
IndianOil's dedication to being the foremost energy supplier even through emergencies and calamities, and to constantly innovate ideas that can lead to the betterment of the society as a whole are backed by a firm belief of keeping India first.
Paradip Refinery
...The Energy Gateway to Eastern India
www.iocl.com
IndianOilCorpLimited
IndianOilcl
indianoilcorporationlimited
indianoilcorp

THEY ALSO REMEMBERED

THE LEGEND

One Question and an Encounter that Changed a Life

Dr. Shanti Mishra, USA

In August 1967, I was a student in Ravenshaw College, Cuttack. This was my second year as a Physics Honors Student. Things were not going too well. I was from Balasore and was out of place socially, emotionally and financially. And then I had an encounter with Professor Rout. He was the Head of the Chemistry Department He was teaching Organic Chemistry to the entire class. After the second lecture he asked the class about the differentiation of Substitution and Addition reactions involving Ethane, Ethylene and Bromine. In a big class we girls were about 10% of the enrollment and we sat in the front. None of the class raised their hand. I decided to raise my hand to answer the question. 56 years later I will say that did it for me. He asked my name and knew that I was one of the National Science Talent Scholars. He must have spread the news to the entire Chemistry Department. I was taken notice of and was encouraged by other professors.

I wasn't so lucky with my Physics classes. Our department was not well run. Many courses were not taught properly and the syllabus was not finished before the final examination. I had the bad luck to get some lousy lab draws that never worked well. Consequently I didn't receive 60% score in Physics. However I did well in Chemistry and Mathematics to score 63%in total. In some other Indian Universities that would be considered First Class. But in Utkal University that was not the case. I came from a poor background. Science Talent scholarship was the only reason I had come to Cuttack. I was devastated that I will lose the scholarship. I came back to Cuttack to take admission in M.Sc. class. I had a faint hope to have the Department Chairman to write a recommend to NCERT so that I can keep my scholarship. My department chair won't even talk to me.

I gathered enough courage to go and see Dr. Rout. He not only recognized me, he knew that I had got a second class. He calmed me down and hand wrote a note in his official pad that I have scored 63%, where our first class requirement is 60%. That letter was mailed to NCERT and six months later I received Rs. 2000 for the first eight months. In 1968 that was a lot of money. I went on to finishing my M.Sc. degree and joining Saha Institute of Nuclear Physics. While in Calcutta (Kolkata) I applied abroad and rest is history.

I have been in USA for over 51 years and done reasonably well socially, emotionally and financially. All the things that 18 year old lacked in 1967 were possible because she answered a simple question in front of a big class. I often wonder what would have happened if I didn't have that encounter. I visited Dr. Rout in Niskayuna to convey my gratitude. Because of ALS he wasn't talking. I drove back with the satisfaction of seeing him one last time. He cared for a poor student when no one else did. ■■■

A HIDDEN SAINT

Dr. Dillip K. Agarwalla

They say, to describe a hero, one need to possess some of his qualities. To sketch a picture of greatness of Dr. M.K. Rout, I lay claim to no such merit. But, I will draw courage from the fact that I had basked in the warmth of his inspiration, as a student once upon a time.

In June 1974, I entered Ravenshaw College as a Graduation student of science stream. We had the opportunity of being taught Organic Chemistry by this legendary teacher. Though Dr. Rout as the Principal of the College, was extremely preoccupied with Administrative responsibilities, he managed to steal time for teaching in classes from I.Sc. to M.Sc.. This was a rare virtue. His mode of teaching was student friendly and interactive. He took pains to explicate the intricacies and make the class room vibrant and interesting.

Later on, when I joined Medical College, I realized in my Biochemistry classes, his invaluable contribution in building my understanding of the fundamentals in the subject.

As I grew up, I came to know about the other dimensions of his personality. He was an excellent Academic Administrator, who at different stages of his life was Principal of Khallikote and Ravenshaw College, Director of Higher Education and Vice- Chancellor of Utkal University, Vani Vihar respectively. In each of these places, he has left behind the indelible stamp of his personality.

Here, I take the opportunity to narrate a personal experience of mine. After completion of my graduation in Medical Science, I joined state Medical Service. At that time, I was selected for undertaking Post Graduate studies in Bombay University. I was required to produce my MBBS degree certificate in original at the time of admission. This was a mandatory clause. By that time, the original certificate for 1979 batch was not disbursed due to some technical snag. It was a matter of grave concern for me as I was about to lose the opportunity in absence of the said document. In that moment of anxiety and perturbation, I decided to meet the Vice Chancellor, Utkal University, who was none other than Dr. M.K. Rout. Next morning, I went to his office and sent a slip whereupon I wrote my name with a simple appendage "YOUR FORMER STUDENT". Though many

officials and important visitors were waiting for appointment, I was immediately called in. I was thrilled to understand that the word "STUDENT" was magnet enough for him. He sympathetically listened to my problem and immediately called the Registrar and Controller to his office. Upon finding that the certificate was not written, he also summoned the official writer of the certificates and directed him to write the same immediately and instructed the other officials to complete the requisite formalities and place the certificate on his table before lunch. I was asked to collect the same then and there. I may be allowed to mention here that, I was not known to him personally nor was my case recommended to him by anyone else. His commitment to rescue an old student in trouble is truely praise worthy. I could travel to Bombay happily the same day (3rd June 1982) by Konark Express with tears of joy and gratitude.

In shall be failing in my duty if I gloss over his influence upon me to pursue my continuous research activities along with my career as a medical professional and teacher. He, undoubtedly, stood tall in the academic community of India for his relentless effort in pursuing research in the field of Polymer Science. Apart from his personal interest in search and exploration, he had mentored many scholars in their Doctoral and Post-Doctoral projects. This triggered a cascading chain of academic excellence. I too was had my baptism in this culture. Foundation of my continuous research activities over decades woes its provenance to Prof. Rout's blessings.

I can perhaps, only pay back my debt to this great soul by passing on his legacy to the next generation, for that is what he always heartily cherished. ■■■

Former Professor
Department of Medical Oncology
Acharya Harihar Post Gaduate Institute of Cancer
Cuttack

A Tribute to Prof. Mahendra Kumar Rout

Prof. Sunil Kumar Talapatra &
Prof. Bani Talapatra

I feel profoundly privileged and happy to be a part of the centenary celebration of Prof. Mahendra Kumar Rout which falls on 4th January, 2024.

Many people walk on our life, but only a few keep their foot prints. Prof. Mahendra Kumar Rout was one of such few men. I remember him as a friend, a scholar and a scientist who curved a sphere of influence amongst all who came in contact with him. The students labeled him as a spirit of inspiration and enlightenment. They were benefitted by his avuncular tutelage. Unlike most of the big personalities with colossal ego, who are more respected than loved, Prof. Rout was equally loved and respected. He never kept him in proud isolation as ivory tower theorists and made him affable to all. His charismatic, characteristic wits (a welcome diversion) and his winning smile endeared him to us. He had the gift of inspiring total loyalty and enthusiasm in those studied under his personal tutelage and wide ranging progression. He was involved in several moves towards closer cooperation between bodies concerned with chemistry and chemists. His contribution on environmental pollution, a vital field, was massive.

His personal career was filled with success. We claim for him a distinction that sets him apart from many other successful names. He had a very clear and logical brain. To him work was a celebration of love. These two were the vital points of his life's work. His achievements began to escalate on a local to national scale. His life was in a phase extreme career accretion that raised him several notch. He believed that good science required solid experimental design and truthful recording of results. He further believed that young people are our future inheritors. It is vital to engage their imagination and enthusiasm in science, particularly chemistry a major gem of science.

His sincerity was radiant and pillar to the students. To him teaching and research combined together was the most exalted profession. He derived profound satisfaction out of it. His work was acknowledged trough the bestowal of numerous awards and honors. He had his own style of cooking chemical gravy.

According to him in absence of zeal for research and absence of curiosity, there is no vitality in higher teaching. Teaching should be inspired by love. He was a man of advanced view with many years of respectability behind him and not of limited horizon. And he possessed iconic quality.

He offered our reverential and heartwarming tribute to him. Life ends but values remain. Our experience of association with him is not easily forgotten. Memory does not age. His popularity among the students remained unabashed. He could

remain composed even under turmoil condition, and wisely kept quite. He believed that anger is one letter short of danger. Perhaps, he followed the saying of Kirk Douglas (Golden Era of Hollywood, died at the age of 103) - to keep the ice factory in the brain, sweet factory in the tongue, and love factory in the heart. Prof. Rout will be remembered as a legendary educator who galvanized generation of students and never passed any derisive comment about anyone, even of his enemy and respectfully deferred in his opinion.

He was a great orator. His sentences were lean and crisp. His verbal gymnastics could hold the audience for hours, and they shared the wavelength of his thoughts. His mind was stored with information and ideas, and he had for his students an unalloyed affection and encouraged hope which flowed in great abundance.

Though apparently he behaved as a plain talking person but behind the curtain there remained an in-depth learned knowledge of chemistry, and a great passion for students. As a man, he surpassed his deeds, and he was unfailingly helpful.

Our respect for him more than words can ever do justice. We summarized him as a man with colossal knowledge and infinite charm. It was academically profitable to work with him as a PhD Viva-Voce examiner, and to watch him questioning students from which we learned a lot. It will not be out of place if we put one such question as an example. How one could convert benzamide to benzoic acid without hydrolyzing it. The question is tricky and the answer is not obvious. He used to think that rewriting is the essence of writing well. He looked for clutters and pruned those out.

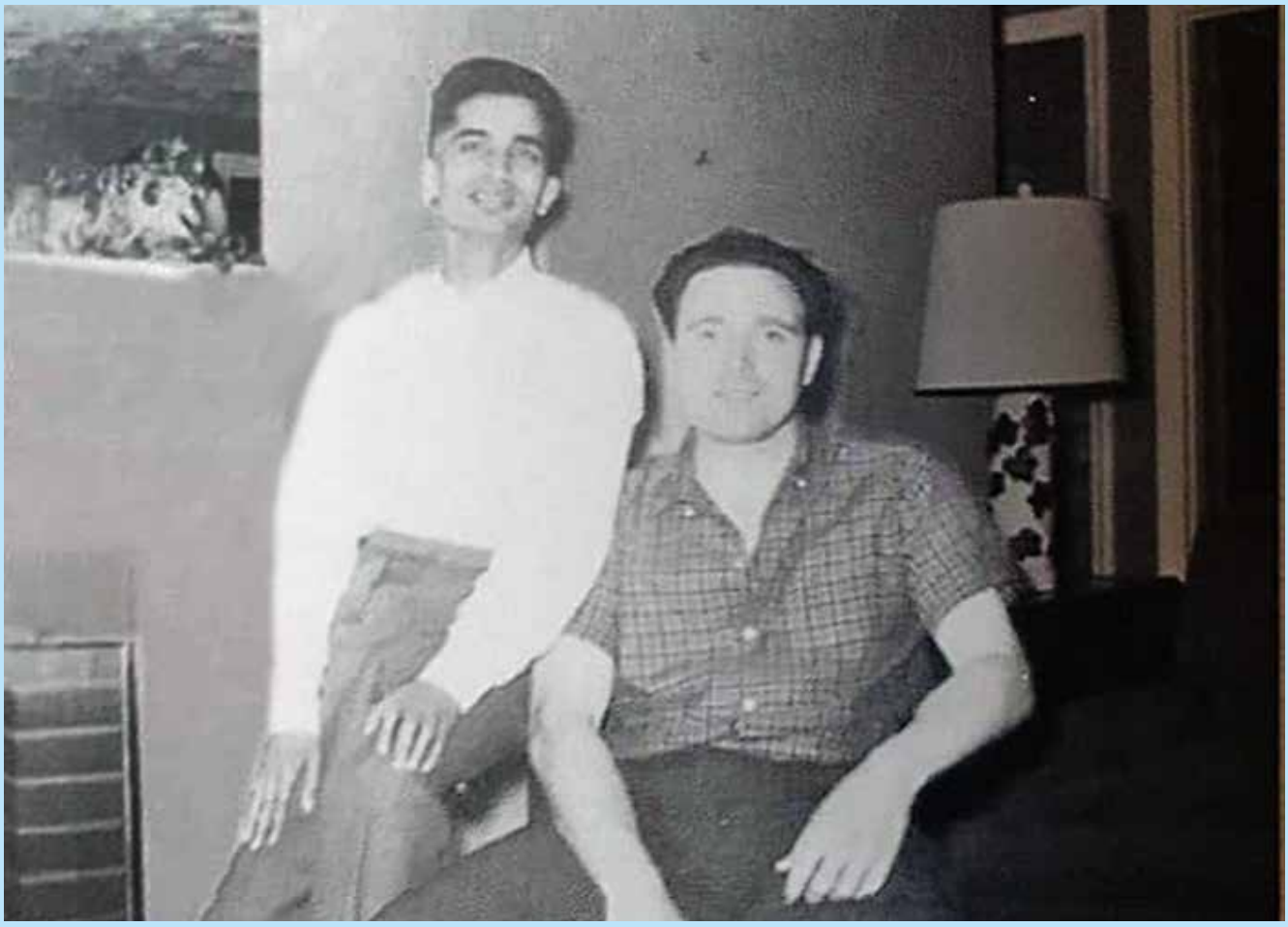
He went to USA as a Visiting Fellow on an International Exchange Programme, and had been associated with Prof. Harold J. Conroy of Brandeis University. The work was under the general supervision of Prof. R.B. Woodward, Harvard University, USA, who later received Nobel Prize in Chemistry. At that time, Prof. Rout published three research papers in the Journal American Chemical Society (JACS), one of the topmost journals in the chemical researches. He was one of the few scientists at that time to use Nuclear Magnetic Resonance(NMR) spectroscopy for the elucidation of structures. He used to think that respect is the most important element o one's personality, and that talent will take us to a high position in our career , but behaviour will help to maintain a high position in the hearts of other. His wisdom and wishes work together. His intellectual level of speech showed erudition. No short description his achievement would adequately convey the academic contribution, administrative skill, unflagging energy, clarity of vision and consummate division of the man. His memory is so vivid in our mind, that while writing this article about him, he steps outside from the frame of our mind and comes to life.

We close by offering our ever- increasing respect to a man with mercurial career- we love, adore and respect. ■■■

Formerly, Professors,
Department of Chemistry,
University of Calcutta

Residence:
201, Manicktala Main Road
Suit No. 5, Kolkata-700054
Phone: 8777842524

Prof. H.J. Conroy



Prof. M.K. Rout with Prof. H.J. Conroy, his academic associate in Boston, USA in 1957

Brandeis University Science Centre USA

STATE POLLUTION CONTROL BOARD, ODISHA

[Dept., of Forest, Environment and Climate Change, Govt. of Odisha]
Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII
Bhubaneswar - 751012

Ban on Single Use Plastic (SUP) from 1st July, 2022

Manufacturing, import, stocking, distribution, sale and use of identified single use plastic commodities shall be prohibited with effect from 1st July, 2022 in accordance with the Plastic Waste Management (Amendment) Rules, 2021.

List of Single Use Plastic (SUP) items prohibited from 1st July, 2022

1. Earbuds with plastic stick
2. Plastic sticks for balloon
3. Plastilags
4. Candy Sticks
5. Ice cream sticks
6. Polystyrene [Thermocol] for decoration
7. Plates
8. Cups
9. Glasses
10. Forks
11. Spoons
12. Knives
13. Straw
14. Trays
15. Wrapping or packing films around sweet boxes
16. Invitation cards
17. Cigarette packets
18. Plastic/PVC banners less than 100 micron
19. Stirrers


RAVENSHAW CONVENTION CENTRE
SEVEN PILLARS OF WISDOM