PROCEEDINGS

33rd Annual Conference of
Orissa Chemical Society
&
5th National Conference on
"Recent Advancement in Material Sciences"
(RAIMS–2019)

December 24-25, 2019

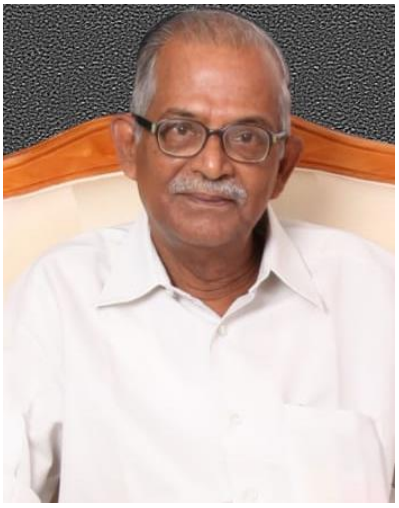
Organized by

Department of Chemistry

Veer Surendra Sai University of Technology

Burla, Sambalpur – 768018, Odisha

Dedicated to .....



Prof. (Dr.) Lalit Narayan Patnaik

Birth: 17.11.1944 **Death: 4.3.2019**

Prof. (Dr.) Lalit Narayan Patnaik was born on 17th November 1944. He obtained his M.Sc. Degree in Chemistry from Ravenshaw College, Cuttack in 1965, standing First Class First in the Batch. He was a College Teacher in Chemistry in various Govt. Colleges of Odisha from July 1967 to March 1988 for 21 years as Lecturer and Reader in Chemistry. Subsequently, he was Senior Scientist in the State Pollution Control Board, Odisha, from March 1988 to May 1993. He was also a Senior Scientist in the Department of Environment, Govt. of Odisha from May 1993 to September 1997. He became Director (Environment), Govt. of Odisha from September 1997 to November 2000 in the rank of Professor from April 1999. He was also Director (Vocational Education), Govt. of Odisha from December 2000 to November 2002 in the rank of Professor. He was superannuated from the services of Govt. of Odisha on 30th November 2002. He was appointed as the Chairman of Odisha State Pollution Control Board in July 2004 and remained in the position till January 2008. He specialized in Physical Chemistry, Environmental Chemistry & Management Sciences. He obtained his Ph.D. Degree in Chemistry from Sambalpur University in 1973. He has 57 research publications, including 36 in International Journals. He has guided six students as an Independent Research Guide and four students as a Joint Research Guide for their Ph.D. Degrees. He has visited Norway in the year 1994 as a Member of the Govt. Team to Study Environmental Management Practices in that Country. He has represented India in the International Workshop on Environmental Performance Disclosure, Beijing, China. He has also visited London & Hong Kong as a Tourist. He is a Member of the Indian Science Congress Association, Kolkata; Patron Member of Orissa Environmental Society, Bhubaneswar, and Fellow of National environmental association, etc. He is widely known and respected in the State of Odisha for his Significant Contribution to Pollution Control & Protection of Ecology & Environment of the State. He is a Life Time Bachelor. He became President of Orissa Chemical Society during 2008. During his term as the President, the Annual Conference of OCS was held on Dec 27-28, 2008 at North Orissa University, Baripada. Prof. Patnaik passed away on March 4, 2019.

Obituary……

Prof. (Dr.) Chitta Ranjan Das

Birth: 20.10.1938 **Death: 17.01.2019**

Prof.(Dr.) Chitta Ranjan Das was born on October 20, 1938 at Cuttack. He did his Matriculation at Ranihat High School and completed his M.Sc. in Chemistry from Ravenshaw College, Cuttack, in 1960. While he was a Lecturer in Chemistry in B. J. B. College, Bhubaneswar, he carried out research under the supervision of Prof. N. Bose, Professor of Chemistry, Regional College of Education, Bhubaneswar, which earned him the Ph. D. Degree of Utkal University. He was a Visiting Scientist at Norwegian Technical University, Norway, with a Royal Norwegian Government Fellowship; at Louisiana State University, USA, with a Sea Grant Fellowship; and at Leeds University, England, with a Royal Society of England Fellowship. From his professional career as a Lecturer in Chemistry, he rose to become Professor Grade-I Principal. He collaborated with Prof.(Dr.) P. K. Jena, Director, Regional Research Laboratory, Bhubaneswar, on study of corrosion and rose to fame in this line of research. His expertise in extensive corrosion studies was well recognised in the country and abroad. He became Chief Executive and Director in the Department of Environment, Govt. of Odisha, and was trained in Environmental Management at the Asian Institute of Technology, Bangkok, Thailand. He was responsible for the implementation of Integrated Sustainable Environment Management Plans for the famous wetlands like Chilika Lake and Ansupa Lake. He was Advisor to Govt. of Odisha (Planning & Coordination Department), Govt. of Madhya Pradesh on Wetland Management, and was also an advisor to UNESCO at Nairobi, Kenya. He also carried out extensive research work on Environmental Conservation of Heritage like Sun Temple, Konark, and Lord Jagannath Temple at Puri. He has published 30 research papers in various fields of Chemistry in different Indian & Foreign Journals. Fourteen students got their Ph.D. degree working under his supervision. His name has been enlisted as an Eminent Scientist of 20th Century in Marquis Who's Who. He was also Chairman of Environment Impact Assessment Authority of Odisha and was responsible for giving prior environmental clearance to all types of projects. He was an Advisor to many public and private sector undertakings. Prof. C. R. Das was the President of OCS in 2006. During his term as the President, the Annual Conference of OCS was held on Dec 16-17, 2006 at NIST, Berhampur. He breathed his last in his residence at Bhubaneswar on January 17, 2019.

ज्ञान-विज्ञान विमुक्तये
प्रो॰ धीरेन्द्र पाल सिंह
अध्यक्ष
Prof. D. P. Singh
Chairman

सत्यमेव जयते

विश्वविद्यालय अनुदान आयोग
University Grants Commission
(मानव संसाधन विकास मंत्रालय, भारत सरकार)
(Ministry of Human Resource Development, Govt. of India)
बहादुरशाह ज़फ़र मार्ग, नई दिल्ली-110002
Bahadur Shah Zafar Marg, New Delhi-110002
दूरभाष Phone : कार्यालय Off : 011-23234019, 23236350
फैक्स Fax : 011-23239659, e-mail : cm.ugc@nic.in | web: www.ugc.ac.in

MESSAGE

I am pleased to know that the Department of Chemistry, Veer Surendra Sai University of Technology, Sambalpur, Odisha, is organizing 33rd Annual Conference of Orissa Chemical Society and National Conference on "*Recent Advancement on Material Sciences (RAIMS-2019)*" on 24th & 25th December, 2019. On this occasion, the Department is planning to publish conference proceedings.

I hope the Conference will provide an excellent opportunity to the active researchers and scientists to share their research ideas, experiences and experimental results in different areas of Chemistry and Materials Science and to gain knowledge to develop further to attain new heights. It also provides an international platform for researchers and academicians to discuss the most recent innovations, trends, practical challenges encountered and the solutions adopted in the fields of Chemical Sciences, Materials Science and Technology. It is expected that the Conference will yield constructive results.

I extend my best wishes to the Organizers of the International Conference and the participants and wish the publication every success.

(Prof. D.P. Singh)

1st October, 2019

बीर सुरेन्द्र साए प्रोद्योगिकी विश्वविद्यालय
बुर्ला - 768018, सम्बलपुर, उडिशा, भारत
Veer Surendra Sai University of Technology
Burla - 768018, Sambalpur, Odisha, India

Prof. (Dr.) Atal Chaudhary
Vice Chancellor
VSSUT Burla

MESSAGE

I am delighted to know that the Department of Chemistry of Veer Surendra Sai University of Technology Burla is going to organize their33rd Annual Conference of Orissa Chemical Society (OCS) and 5th National Conference on Recent Advancement in Material Sciences (RAIMS–2019) during December 24–25, 2019.

The National Conference RAIMS–19 and 33rd Annual Conference of OCS are designed and organized to provide an interdisciplinary and multidisciplinary intellectual forum for pioneering academicians, frontier researchers, and distinguished industrialists to exchange and share their brainstorming ideas and important thoughts on the recent innovations, trends, developments, practical challenges confronted in the field of Science, Engineering, and Technology.

I heartily congratulate the Organizing Committee Members for hosting and successfully organizing the conference and wish the conference a grand success.

Prof. (Dr.) Atal Chaudhary

Bhola Nath Shukla
Chairman-cum-Managing Director

ମହାନଦୀ କୋଲଫିଲ୍ଡସ ଲିମିଟେଡ
महानदी कोलफील्ड्स लिमिटेड
Mahanadi Coalfields Limited
(A Subsidiary of Coal India Ltd.)
A Mini Ratna Company

MESSAGE

It gives me immense pleasure to learn that Department of Chemistry & Production Engineering, VSSUT, Burla is organising the 33rd Annual Conference of Orissa Chemical Society and National Conference on 'Recent Advancement in Material Sciences' RAIMS-2019 from 24-25 December, 2019.

Material Science plays a vital role in our lives because of its uniqueness in properties and extended application in various industries. These are the basis of modern science and technology. Material Science are at the heart of many technological developments that touch our lives and find applications such as electronic materials for communication and information technology, biomaterials for better health care, sensors for intelligent environment, energy materials for renewable energy and environment, light alloys for better transportation, materials for strategic applications and more.

The conference may aims to provide a platform for researchers to share their research ideas and to gain updated information/knowledge, advancement in the field of Material Sciences.

I wish this Conference a great success.

18/12/19

(B.N. Shukla)
Chairman-cum-Managing Director

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY: ODISHA

(Formerly University College of Engineering, Burla, ESTD:1956)

(A UGC Recognised StateGovernmentUniversity by an Act of Assembly)

P.O.EngineeringCollege
Burla, Pin-768 018
Dist:Sambalpur, Odisha, (India)
www.vssut.ac.in

Phone No : 91-9861238403
Fax No. : 91-663-2430204
E-Mail: nayakan1964@gmail.com

Prof. (Dr.) Amar Nath Nayak
Professor, Department of Civil Engineering
& Coordinator, TEQIP-III

MESSAGE

I am happy to know that Department of Chemistry of Veer Surendra Sai University of Technology (VSSUT), Burla, Sambalpur, Odisha is organizing 33rd Annual Conference of Orissa Chemical Society and National Conference on Recent Advancement in Material Sciences (RAIMS–2019) during December 24-25, 2019. I am sure that the technical and scientific programs of the seminar would certainly give the delegates an opportunity for fruitful discussions and stimulating interactions.

On behalf of TEQIP-III VSSUT Burla, I congratulate the organizers for arranging this conference and my best wishes for making this event a grand success.

Prof. (Dr.) Amar Nath Nayak

Prof.(Dr) Ajaya Kumar Patnaik
President OCS

Message

I am extremely glad to announce that the Dept. of Chemistry VSSUT, Burla is hosting 33rd Annual Conference of Orissa Chemical Society along with organising a National conference on Recent Advancement in Material Science during 24-25th Dec. 2019. It is the best platform for young scientists, academicians, research scholars, industrial personals etc. from all over the country to participate and to share innovative ideas and their result output on the same dais. The key objective of the conference is to promote material science research for betterment of human life through its applications.

The conference will have memorial Lectures, invited talks, oral presentation, poster presentation and awards for best oral and poster presentation. All publications will be reflected in the conference souvenir.

I am sure that the in-depth discussion in this academic event will be helpful to all participants. I am very much thankful to vice-chancellor VSSUT, Local Organising committee, Dept. of Chemistry for hosting 33rd Annual Conference of Orissa Chemical Society.

I congratulate all participants. I wish all the best for grand success of the conference.

A K Patnaik
President of OCS

ORISSA CHEMICAL SOCIETY
Regd. No.18990/28-87/XXVII-22/87 OF 1987-88
http://www.ocs.in, E.mail: info@ocs.org.in

ANNUAL REPORT OF THE SECRETARY
ORISSA CHEMICAL SOCIETY FOR THE YEAR-2019

Honourable Vice-chancellor of Veer Surendra Sai University of Technology, Burla and Chief Guest of the functionProf. Atal Chaudhuri,Esteemed Guest of Honour, Padmashree J.P.Mital, Respected President of Orissa Chemical Society Prof. Ajaya Kumar Patnaik, Head of the Department of Chemistry and Chairman of the conference Prof. Sukalyan Dash, Convenor Prof. Sarat Kumar Swain, Organising Secretary Dr. Achyut Kumar Panda, Joint Secretaries Dr. Monalisa Mohapatra and Dr. Arun K. Barick, Treasurer Dr. Bigyan R. Jail and distinguished members of the local organising committee, faculty and staff members of department of chemistry and other departments, revered members of executive committee of Orissa Chemical Society, esteemed former Presidents and Secretaries of Orissa Chemical Society, members of award committee, co-ordinator, deputy co-ordinator and members of Olympiad committee, delegates and invitees, print and electronic media persons, students and distinguished audience.

Today Orissa Chemical Society is celebrating the 33rd Annual Conference at Veer Surendra Sai University of Technology (VSSUT), Burla. On this occasion I, on behalf of the society extends my warm welcome to you all to this conference. The Orissa Chemical Society was formed in the year 1985 by the founder President Prof. Mahendra K. Rout. The 1st Annual conference of the Society was held at Ravenshaw College (now University), Cuttack in the year 1986. The society has come a long way overcoming all hurdles and has attained the young age to celebrate 33rd Annual Conference.

It is a privilege and pleasure on my part to present the Annual Report of the society for the year 2019. The 32nd Annual Conference was held at National Institute of Science & Technology (NIST), Palur Hills, Berhampur. In the meeting of General Body on 23rd December 2018, the new Executive Committee was formed with the following office bearers and members for the year 2019.

President: Prof. Ajay Kumar Patnaik
Vice-Presidents: 1) Prof. Sarat Kumar Swain
2) Dr. Arun Kumar Padhy
3) Dr. Bamakanta Garnaik
Secretary-cum-Treasurer: Shri Pravat Kumar Swain
Joint Secretaries: 1) Dr. Manabendra Patra
2) Dr. Pradeep Kumar Jena
Members : 1) Prof. Ajay Kumar Behera
2) Dr. Ashok K. Roul
3) Dr. N C Pati
4) Dr. Jaya Prakash Das
5) Dr. Gokarneswar Sahoo
6) Dr. Debasis Mohanty
7) Prof. Baman Acharya
8) Prof. Sukalyan Dash
9) Prof. Ashok Kumar Mishra

This 33rd Annual conference is dedicated to the memory of our revered teacher and former Presidents of Orissa Chemical Society late Prof. Lalit N. Patnaik. His dedication and love for chemistry will be remembered by all the distinguished members of chemistry family.

It is sadnews for all of us that three members of the chemistry family have passed away from November 2018-till date. They are: - (i) Prof. C. R. Das (ii) Prof. Lalit N. Patnaik (iii) Mr. Mayadhar Behera.

That this year the prestigious Prof. Mahendra K. Rout (the founder President of Orissa Chemical Society and former Vice-Chancellor, Utkal University, Vani Vihar, Bhubaneswar) Memorial Lecture will be delivered by a renowned Organic Chemist Prof. Dilip K. Maiti, FRS, Organic Catalysis and Materials Division, University of Calcutta,& Prof. S. R. Mohanty memorial Lecture which was instituted in the memory of Late Prof. S. R. Mohanty, the founder Head of Chemistry Department Utkal University, Vani Vihar & former Vice-Chancellor, Berhampur University, will be delivered by Padma Shri Prof. J. P. Mittal, FASc, FNA and former Director, Chemistry and Isotope Group, Bhabha Atomic Research Centre (BARC), Mumbai.

Besides the memorial lectures, the Orissa Chemical Society presents awards to deserving students, research scholars, teachers and scientists in order to encourage the chemistry education and research.

This year the following Scholars/teachers/scientists are selected by the award committee to receive different awards and prizes.

1.	Prof. R.C. Tripathy Memorial Award (Outside the state,Odisha)	:	Dr. Bishnu Prasad Biswal Max Planck Institute, Germany
2.	Prof. R.C. Tripathy Memorial Award (inside the state,Odisha)	:	Dr. Bibhuti Bhusan Parida Berhampur University, Berhampur
3.	Prof. Dayanidhi Patnaik Memorial Award for best research paper published in current year	:	Miss Monidipa Konar NIT, Rourkela
4.	Prof. G. B. Behera best Ph.D. Thesis award	:	Dr. Srikanta Moharana Sambalpur University, Sambalpur
5.	Kulamani Das Memorial Award for best paper on Environmental science	:	Mr. L. Satish Kumar Achary NIT Rourkela
6.	Prof. Donald S. Matteson & Prof. P. K. Jesthy Memorial Award for best paper on organometallics	:	Dr. Santosh Kumar Behera Madrid Institute for Advance Studies, Spain
7.	Prof. Sripati Pani Memorial Award for best paper on inorganic chemistry	:	Mr. Abhinav Mohanty NIT Rourkela
8.	Prof. K.K. Patnaik Memorial Award for Highest percentage of marks in M.Sc. Chemistry	:	Miss Swati Samantaray Berhampur University, Berhampur
9.	Smt. Parvati Mishra Memorial Award for Highest percentage of Marks among lady candidate in M.Sc. Chemisty	:	Miss Minaz Parbin Sambalpur University, Sambalpur
10.	B.K. Mohanty Memorial Book Grant for highest percentage in B.Sc. (Chem. Hons)	:	Miss Soumya Subhashree Mohapatra Utkal University, Bhubaneswar
11.	Smt. Subhadra Devi Memorial Award for highest % in GATE Score	:	Mr. Ashok Kumar Pusti Utkal University, Bhubaneswar
12.	Dr. Pranabandhu Tripathy Award for securing highest mark in CSIR-UGC NET (JRF category from the state)	:	Mr. Jyotiranjan Mishra Berhampur University, Berhampur
13.	Prof. R.K. Nanda Award for best Oral presentation in the current Annual conference	:	To be declared in the valedictory function
14.	Dr. Subasini Lenka Award for best Poster Presentation in the current Annual Conference	:	To be declared in the valedictory function

15. OLYCHEM – 2019**:**

1st - Mr. Priyabrata Mohanty, DAV School, Dera, Talcher.

2nd- Mr. Tushar Kanta Patel, DAV School, Dera, Talcher.

3rd- Mr. Divya Darshan Panigrahi, Saraswati Vidya Mandir, Berhampur.

16. Prof. M. K. Rout Memorial Essay Competition- 2019 **:**

1st-Mr. Dibyajyoti Mohanty,

Utkal University, Bhubaneswar

2nd-Miss Nibedita Barik, Vikram Deb (Autonomous) College, Jeypore

3rd-Miss Trishala Giri, College of Basic Sciences and Humanities (OUAT), Bhubaneswar

3rd-Miss Jasmine Panigrahi, Sushilavati Government Women's, Rourkela

I convey my thanks and gratitude to the members of Award Committee to decide the different awards. The revered members of the award committee are:

(i) Prof. Anadi Charan Dash

(ii) Late Prof. Lalit Narayan Patnaik

(iii) Dr. (Mrs.) Subasini Lenka

(iv) Prof. Satyaban Jena

(v) Prof. Prakash Kumar Mohanty

(vi) Dr. C. R. Mishra (included due to sudden demise of Prof. L. N. Patnaik)

I also offer my thanks to Dr. Subhra Prakash Das, Associate Professor in English (Retd), Ravenshaw University, Cuttack who has taken all pain to evaluate the scripts on essays of Prof. M. K. Rout Essay Competition-2019.

The Orissa Chemical Society has been conducting Chemistry Olympiad for +2 Science students (equivalent to 11th and 12th standard of CBSE) of the state from the year 2003. This year the Olympiad Co-Ordinator Dr. P. K. Dash, Reader in Chemistry, Bhadrak Autonomous College and Deputy Co-Ordinator Dr. Asit Parija, Reader in Chemistry, Salipur Autonomous College, Salipur

have left no stone unturned to conduct it successfully and about more than 3100 students have appeared the Olympiad exam out of which 20 students will be given certificate and cash prize and all other students will be given participation certificate. The best three students will be given prize in the Annual Conference.

This year 22nd Regional Conference of Orissa Chemical Society was held on 3rd November 2019 at Kendrapara Autonomous College, Kendrapara and the theme was **"Green Chemistry: Solution To Environmental Crisis''**. The Hon'ble Dean, Academic Research at IIT Madras Prof. Ashok Kumar Mishra, FNASc was the Chief Guest.

On behalf of the society I convey my heartfelt thanks and gratitude to the Vice-chancellor of Veer Surendra Sai University of Technology (VSSUT) Burla, Prof. Atal Chaudhuri for his keen interest and love towards Orissa Chemical Society to hold the Annual conference for this year (2019). I also convey my thanks to the HoD Chemistry and Chairman of the conference Prof. Sukalyan Dash and Convenor Prof. Sarat Kumar Swain & the Organising Secretary Dr. Achyut Kumar Panda, Joint Secretaries Dr. Monalisa Mohapatra and Dr. Arun K. Barick, Treasurer Dr. Bigyan R. Jail and other faculty and staff members who have taken lot of pain to organise this conference successfully. I hope their interest and love for Orissa Chemical Society will continue for all times to come.

Last but not the least I also convey my thanks to the students of both U.G, P.G and research scholars who have worked hard to make the conference a great success. Before I conclude, I wish everyone a very happy, prosperous and joyful merry Christmas and let the ensuing New Year-2020 embrace you with new dreams and thoughts. Thank you all.

Jai Jagannath

Pravat Kumar Swain
Secretary-Cum-Treasurer,
Orissa Chemical Society

OCS EXECUTIVE COMMITTEE

President
Prof. Ajay Kumar Patnaik
Vice president
Prof. Sarat Kumar Swain
Dr. Arun Kumar Padhy
Dr. Bamakanta Gadanayak
Secretary-cum-treasurer
Pravat Kumar Swain
Joint secretary
Dr. Manabendra Patra
Dr. Pradeep Kumar Jena
Member
Dr. Ajay Kumar Behera
Dr. Ashok K. Roul
Dr. N C Pati
Dr. Gokarneswar Sahoo
Dr. Jaya Prakash Das
Dr. Debasis Mohanty
Dr. Baman Acharya
Prof. Sukalyan Dash
Prof. Ashok Kumar Mishra

LOCAL ORGANIZING COMMITTEE

Patron
Prof. Atal Chaudhuri, Vice Chancellor, VSSUT
Co-patron
Prof Amar Nath Nayak, TEQIP III Coordinator
Prof. U.R.Jena, Dean CDCE
Chairman
Prof. S Dash, HOD, Chemistry
Convener
Prof. Sarat K. Swain
Organizing Secretary
Dr. Achyut K. Panda
Treasurer
Dr.B.R.Jali
Joint Secretaries
Dr.M. Mohapatro, Dr. A.K.Barik

EXECUTIVE MEMBERS

Prof. P.K Kar,
Dept. of Chemistry
Prof. R.B.Panda,
Dept. of Chemistry
Dr. P. Mohapatra,
Dept. of Chemistry
Dr. T.Biswal,
Dept. of Chemistry
Dr. Ramakrishna D.S,
Dept. of Chemistry
Prof. P.C.Swain,
Dean, PGSR
Prof. Sudhanshu Sekhar Das,
Dean, Students' Welfare
Dr. S.K.Paikroy,
HOD, Mathematics

Prof. Bibhuti Bhusan Pati,
Dean, Faculty & Planning
Prof. Pawan Kumar Modi,
Dean, SRIC
Prof P.K Hota,
Prof of Electrical Engg.
Smt. Upama Kalo,
Registrar
Sri Nilam Prakash Kujur,
COF
Prof. P.R.Das,
Dept. of Physics
Prof..M.Panigrahi,
Dept. of Physics
Prof.J.P.Panda,
Dept. of Mathematics

NATIONAL ADVISORY COMMITTEE

Prof. A. K. Mishra, IIT Madras
Prof. P. K. Sahoo, UU, Bhubaneswar
Prof. B. Patel, IIT Guwahati
Prof. S. Thomas, M. G. University, Kerala
Prof. G. B. Nando, IIT Kharagpur
Prof. T. Pal, IIT Kharagpur
Prof. M. Sarkar, Kalyani University.
Prof. S. Banerjee, IIT Kharagpur
Prof. D. K. Chand, IIT Madras
Prof. G. Singh, Delhi University, New Delhi

Prof. D.Maiti, Kolkata University
Prof. R. K. Dey, CU Jharkhand
Prof. A. R. Roy, IIT Delhi
Prof. K. K. Kar, IIT Kanpur
Prof. N. Pradhan, IACS, Kolkata
Dr. P. Mohanty, IIT Roorkee
Dr. D. Pradhan, IIT Kharagpur
Dr. J. Das, IACS, Kolkata
Dr. Rupam Dinda, NIT Rourkela.

ORGANISING SUB-COMMITTEE

Registration Committee

Dr. Monalisa Mohapatra
(Co-Ordinator)
Ms PratimaMahana
Anuradha Biswal
LipsaPriyadarshini
Raisarani Sharma
DeeptiRekhaSahoo
ShubhamBhoi
Rutuparna Mishra
Anjana Sa
Priyanka Sahu
Anusruta Pradhan
Shalini Nanda
Suhasini Mohapatra
Shailee Swarupa Hota
Laxmi priya Singhdeo
Niharika Satapathy
Ankita Rout
Sonali Priyadarshini Pradhan
Niharika Jena
Krishnakanta Choudhary
Sabyasachi Pradhan

Reception Committee

Prof. R.B. Panda(Co-Ordinator)
Dr. SukalyanDash
Ms. AnuradhaBiswal
JogendranandaBarik
AnsumanParida
SwapnitaPatra
Shraddha Verma
Priyanka Priyadarsini Mishra
Nimisha Rout
Mitali Sahoo
Jyoshnamayee Parhi
Ankita Mohanty
Trishnatripti Hota
Ankita Pradhan
Pragyan Paramita Debta
Arunima Gouda
Shibani Dash
Soumyashree Sahoo
Subhashree Sahu
Barsha Priyadarshini Sahoo
Alok Kumar Behera
Sameer Kumar Suna

Transportation and Accommodation Committee

Dr. TrinathBiswal (Co-Ordinator)
Dr. Ramakrishna D.S.
Dr. Bigyan Ranjan Jali
Mr. Ajay Sethi
Mr. Gurudutta Mahakud
Ashutosh Majhi
Tankadhar Behera
Rahul Meher
Debajyoti Biswal
Shbhasankar Panigrahy

Refreshment Committee

Dr. Priyaranjan Mohapatra
(Co-Ordinator)
Dr. Bigyan Jali
Mr. Pramod Kumar Sethi
Mr Srikant Mohapatra
Mr. Santosh Mahananda
Mr. Rama Suna
Tankadhar Behera
Sritam Parhi
Sudipti Priyadarsinee
Pragyandeepti Behera

Soumyaranjan Sahoo
Maneesh Acharya
Anantajyoti Acharya
Subasish Rana
NihalRanjanNaik

Stage management and Cultural

Dr. Achyut K Panda (Co-Ordinator)
Jogendrananda Barik
Kadambini Biswal
Sunisa Sahu
Akanksha Das
Sunil Nayak
Aditi Rath
Itismita Sukla
Laxmipriya Singhdeo

Photography and Media

Prof. P. K. Kar (Co-Ordinator)
Dr. Arun K Barick
Rahul Meher
Diptibala Pradhan
BhubaneswariSahoo
SupriyaKar
Asha Purna Swain
JayshreeMohanta
Subhalaxmi Das
Sagarika Padhan
Tripti Khamari
Pratikshya Sarangi
Jimmy Manisha Lakra
SaritaSahu
Anita Rewani
Jyotshnamayee Biswal
ShuvenduShuvankar Purohit
Shweta Shefalee Panigrahi
Jagruti Panda
Niharika Satapathy
Sonalika Mohapatra
Shradha SumanTripathi
Sonali Rout
Soumya Rani Chinda
Subhasmita Das
Subhasis Rana
Bhakti Prasad Sethi
SoubhagyaRanjanSahoo
SabyasachiBhunya

Technical Committee

Prof. S. K. Swain (Co-Ordinator)
Dr.BiswajeetParhi
Pankaj Kumar Pattnaik
Bhakta CharanBhoi

Publication Committee

Prof. P.K. Kar (Co-Ordinator)
Dr. A.K. Panda
Dr. Monalisa Mohapatra
Dr. A. K. Barick

From the editor's desk.....

Materials Engineering and Materials Science is an interesting, multi-disciplinary area to study. In studying materials, there are elements of physics, mathematics, biology and chemistry, all taught in a cohesive, and self-contained way within the course. This makes for a varied and stimulating experience, giving you the tools to make a real difference in industry and research. Some of the themes prominent at the moment are biomaterials, nanomaterials, advanced manufacturing, smart materials, composites, energy generation and storage, green and sustainable materials. The ability to create new materials and to make existing materials perform better is the key to many advances in areas of science and engineering, be it in industry or research organizations. New materials have emerged from research in the field of medicine, communication, physical sciences. As a result of development in material science and technology society is marching on towards uncharted path be it in astronomy, surgery, finding life on other planets. As we move on nature possess new challenges for material scientists to tame its effects. Research is going on to develop new materials in the field of energy generation substituting fossil fuel, waste disposal, sustainable development, rocket technology, cheaper communication, potable drinking water, target medicine.

On this backdrop, Department of Chemistry of Veer Surendra Sai University of Technology, Burla is organizing a 33rd Annual Conference of Orissa Chemical Society & National Conference on "Recent Advancement in Material Sciences" (RAIMS–2019). RAIMS 2019 is the fifth such event of RAIMS series being organized successfully since 2013 and could attract renowned scientists and academicians during last four series. This year the event is being organized with the Annual Conference of Orissa Chemical Society and aims to bring together academicians, leading engineers, industry researchers and research scholars to share their experience, expertise and research results of their respective research areas.This conference would alsoprovidea premier interdisciplinary forum for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns, practical challenges encountered and the solutions adopted in this field. On this occasion, a session on the Periodic table is being delivered by three eminent speakers from different parts of country are invited to establish and celebrate the 150 years of Periodic table year 2019. The students of different school and colleges are invited for participation toward propagation of knowledge regarding importance of periodic table in chemistry.

Editorial team has given their optimum effort to present the content of the proceedings in systematic manner. Typographical errors if any are unintentional and highly regretted.

Prof. S. K. Swain
Dr. A.K. Panda
Dr. Monalisa Mohapatra
Dr. A. K. Barick

Organisers: A Profile

The Department of Chemistry was established in 1956 with the establishment of University College of Engineering (UCE Burla), presently transformed to Veer Surendra Sai University of Technology, a UGC Recognized Unitary Technical University Established by Government of Odisha in 2009. It is one of the oldest Chemistry Departments in the State started under the founder headship of Late Prof. Sripati Pani. The department has been engaged in providing highest level and quality of academic education. The main focus of the teaching and research in the department is centred on interdisciplinary themes, which have gained attention and appreciation. This department features a 12-member faculty with expertise in frontier areas of research. Active research in the areas of design of Nano hybrid materials, synthesis of Biomaterials, Nanohydrogels, synthesis, characterization and applications of Quantum Dots and Graphene based nanocomposites, Physico-organic chemistry, Corrosion chemistry, Alternate/Renewable energy, Polymer chemistry, Catalysis, Asymmetric synthesis Environmental chemistry, Photochemistry, Biophysical Chemistry, Fluorescence Spectroscopy, Supramolecular Chemistry, X-ray crystallography, Crystal engineering etc. are being pursued. The faculty members have contributed towards the publication of 4 patents, over 10 books and more than 250 research papers in the peer reviewed journals. There are about 10 research projects sponsored by various Government organizations (UGC, DST, CSIR, AICTE, BRNS-DAE, and DBT) and many consultancies from nearby industries.

The Department infuses the fundamentals of Chemistry to the students at B Tech level. In addition, it offers 2 year M.Sc. (Organic Chemistry, intake capacity-18) from 2018, 2 year M.Sc. (Industrial Chemistry, intake capacity-18), 5-Year Integrated M.Sc. (Intake capacity-18), M.Phil. (Intake capacity-08), and Ph.D. programme (Continuing-25). Students get admission in to the Masters programme through career marks. Integrated M. Sc. students get admission on the basis of the university entrance test. One of the unique features of the postgraduate course in the department is, it offers courses from emerging areas of Chemical Science such as Nano chemistry, Green Chemistry, Supramolecular Chemistry in addition to core courses as per UGC norms to cater the industry and academia requirements. In addition, credits for seminar talk and project is compulsory for the partial fulfilment for the award of degree. In this period, the students acquire opportunity to improve their communication skill and perform basic research in frontier areas. Furthermore, research scholars are enrolled in the department leading to degree.

MEMBERS OF THE CHEMISTRY DEPARTMENT

Prof Sarat Kumar Swain
Professor of Chemistry and
Dean Academic Affair,
VSSUT

Prof Pravin Kumar Kar
Professor

Prof Rahas bihari Panda
Professor

Dr Sukalyan Dash
Professor& Head
Chemistry

Dr Trinath Biswal
Associate Professor

Dr Priyaranjan Mohapatra
Associate Professor

Dr. Achyut Kumar Panda
Associate Professor& Head
Chemical Engg

Dr Ramakrishna D S
Assistant Professor

Dr. Monalisa Mohapatra
Assistant Professor

Dr. Aruna Kumar Barick
Assistant Professor

Dr. Bigyan Ranjan Jali
Assistant Professor

PROGRAMME

Conference Venue: Biju Patnaik e-Learning Centre

Monday, 23rd December, 2019

Pre-Conference Sessions and Opening Reception *Coordinator: Dr.Achyut Kumar Panda*	
6:00 PM-9.00 PM	Pre-conference Registration
8:00 PM-9.00 PM	Executive body meeting of OCS
9PM	Working Dinner

Tuesday, 24thDecember, 2019

Pre-Conference Sessions and Opening Reception *Coordinator: Dr.Monalisa Mohapatra*		
08:00 AM-09.00 AM	Breakfast	
08:00 AM-10.00 AM	Pre-conference Registration	
10:00 AM-11.30 AM	Inaugural Session	
Conference Process		
Technical Session 01 Chairperson: Prof Ajay K. Patnaik Coordinator: Dr. Trinath Biswal		
11:45AM-12.25 PM	Prof.M.K.Rout Memorial lecture	Prof. Dilip K. Maiti, FRS Catalysis and Materials Division, University of Calcutta, 92 A. P. C. Road, Kolkata *Talk Title: Diverse Organic Synthesis, Functional Materials for Nanoelectronics, Sensors and Smart Devices*
Technical Session 02 Chairperson: Dr.S. C. Das Coordinator: Prof. S. K. Swain		
12:25PM-1.00 PM	Talks on Periodic Table (*Celebration of 2019 as International Year of the Periodic Table*)	i) Nageswara Rao Gollapalli, Former Vice-Chancellor of Andhra University *Talk Title:Evolution of Periodic Table*
1.00 PM-1.15PM		ii) Prof. H.C.Rai, Ex-professor , B.R.A.Bihar University, Muzaffarpur *Talk Title: Precursors, cocursors and reinforcers of Mendeleev's Periodic Table*
1.15 PM-1.30PM		iii) Prof.Balaram Sahoo, Retd. Prof. IIT Kharagpur
1.30 PM- 2-30PM	Lunch Break (In front of Biju Patnaik e-learning center)	

Technical Session 03 Chairperson: Prof.Dilip K. Maiti Coordinator: Dr. Bigyan Jali			
2.30 PM- 3-00 PM	Key Note Address-01	Chemistry of Pb(II) in Light Emitting Perovskite Nanocrystals	Prof. Narayan Pradhan School of Materials Sciences, IACS, Kolkata, 700032 INDIA
3.00 PM- 3-25PM	*IL-01*	Generating white-light emission from a single nano-assembly with its potential application in the detection of alkaline phosphatase activity in biological samples	Dr. Suban K Sahoo, Department of Applied Chemistry, SV National Institute of Technology (SVNIT), Surat, Gujarat
3.25 PM- 3.40 PM	*AP-01*	Prof.R.C.Tripathy Memorial award Presentation (outside the state)	Dr. Bishnu P. Biswal Max Planck Institute for Solid State Research, Germany
3.40 PM- 3.55 PM	*AP-02*	Prof. Dayanidhi Patnaik Memorial award Presentation	Ms. Monidipa Konar National Institute of Technology, Rourkela
3.55 PM- 4.00 PM	Tea Break		
Technical Session 04 Chairperson:Prof. B.K.Mishra Coordinator: Prof. Sukalayan Dash			
4.00 PM- 4.15 PM	AP-03	Prof. GB Behera best PhD thesis award presentation	Dr. Srikanta Moharana Sambalpur University, Burla
4.15PM – 4.30 PM	AP-04	Kulamani Das Memorial award presentation	Mr. L. Satish K. Achary NIT, Rourkela
4.30PM – 4.40 PM	OP-01	Ultrasensitive Detection of Aqueous Cu^{2+} Ions by a Coumarin-Salicylidene based AIEgen†	Subrata Kumar Padhan Sambalpur University, Burla
4.40PM – 4.50 PM	OP-02	Pyrophosphate ion sensing by a Zn(ll)-terpyridine complex in aqueous medium at physiological pH	Aditya Kumar Purohit, VSSUT Burla
4. 50PM – 5.00 PM	OP-03	MnCo2O4 Decorated rGO/gC3N4-based Sensor for Highly Selective and Sensitive Detection of Chlorpyrifos	BanalataMaji, National Institute of Technology, Rourkela
Technical Session 05 Chairperson: Prof. Nigamananda Das Coordinator:Dr. Arun Barick			
5. 00PM – 5.10 PM	OP-04	Adsorptive Removal of Congo Red dye from Aqueous Solution using Mg-doped ZnO Nanoparticles: Kinetics, Thermodynamics and Isothermal Insights	Pragyan P. Rath KIIT deemed to be University, Bhubaneswar
5. 10PM – 5.20 PM	OP-05	Preparation of High-performance Graphene Geopolymer Composites	R.S. Krishna, Dr. Ambedkar Memorial Institute of Information Technology and Management Science, Rourkela

5. 20PM – 5.30 PM	OP-06	Effect of Phosphate on Iron Mineralization and Mobilization in Non-hemeBacterioferritin B from *Mycobacterium tuberculosis*	AkankshikaParida, National Institute of Technology, Rourkela
5. 30PM – 5.40 PM	OP-07	Incorporation of Silver Nitrate into embedded Nano Boron Nitride for the Preparation of Polyethyl Methacrylate/Polyvinyl Alcohol Nanocomposite Layered Material	Jayaprakash Behera, VSSUT, Burla
5. 40PM – 5.50 PM	OP-08	Reaction of 2,4,5-trisubstituted-1-hydroxy Imidazoles with Epichlorohydrin	M. Panda, Central University of Jharkhand, Ranchi
5. 50PM – 6.00 PM	OP-09	Experimental and Theoretical Studies on the Structure of 2-chloro (o-hydroxyBenzylideneaniline)	Supriya P. Biswal, Sambalpur UniversityBurla,
6. 00PM – 6.10 PM	OP-10	Impact of Inclusion Complexes of 2(([1,3,4] Thiadiazino [6,5- b] indol-3-ylimino) methyl) Phenol and Its Derivatives with β –Cyclodextrin: Spectral, Thermal and Antimicrobial Study	RabinarayanaSahu Berhampur University, Berhampur
6. 10PM – 6.20 PM	OP-11	Functionalization of Ferrocene by Hydrazone and Thiosemicarbazone Fragments: Significant Cyclopalladation and Biological Properties Study	TulasiBarik National Institute of Technology, Rourkela
6. 20PM – 6.30 PM	OP-12	Removal of Some Cationic Dyes from Organic Medium by the Application of unmodified Silica	Raisarani Sharma, VSSUT, Burla, Sambalpur
6. 30PM – 7.30 PM	OCS General Body Meeting		
7.30PM- 9.00PM	Cultural Programme		
8.00 PM -10 PM	Dinner		

Wednesday, 25thDecember, 2019

8.00AM-9.00AM	Breakfast	e-Learning Centre, VSSUT
Technical Session 06 Chairperson: Prof. G.B.Behera Coordinator: Dr. Priyaranjan Mohapatra		
9:30 AM-10.15 AM	Prof.S.R.Mohanty Lecture	Prof (Dr.) Jai Pal Mittal Distinguished Professor, Chairman, Academic Board. University of Mumbai - Department of Atomic Energy, Centre for excellence in basic sciences
Technical Session 07 Chairperson: Prof. Nageswara Rao Gollapalli Coordinator: Dr.Ramakrishna DS		
10:15AM-10.40 AM	Key Note Adress-02	Emerging Facets of Nitrogen Centered Radicals	Prof. Bhisma K. Patel Department of Chemistry, IIT Guwahati

10:40 AM-10.55 AM	*AP-05*	Prof.R.C.Tripathy Memorial award Presentation (Inside the state)	Dr. Bibhuti Bhusan Parida Berhampur University, Berhampur
10.55 AM-11.10 AM	*AP-06*	Prof. Donald S Matteson and Prof.P.K.Jesthy award Presentation	Dr.Santosh Kumar Behera Indian Institute of Science, Bangalore
11.10 AM-11.20 AM	*Tea Break*		
Technical Session 08 Coordinators: Dr. Priyaranjan Mohapatra & Bigyan Jali			
11.20AM-1.00 PM	Poster Presentation		
Technical Session 09 Chairperson: Prof.B.K. Patel Coordinator:Dr.Bigyan Jali			
2.00PM-2.25PM	*IL-02*	Designing of Nano-biomaterials for Therapeutic Applications	Dr. Sangram Keshari Samal Laboratory of Biomaterials and Regenerative Medicine for Advanced Therapies, ICMR-Regional Medical Research Center, Bhubaneswar
2.25PM-2.40PM	*AP-07*	Prof.Sripati Pani Memorial award Presentation	Mr. Abhinav Mohanty National Institute of Technology, Rourkela
2.40 PM-2.50 PM	OP-13	Partitioning Addition and Substitution Reaction: Effect of Solvent	Lopamudra Satpathy Sambalpur University, Burla
2.50 PM- 3.00 PM	OP-14	Room Temperature Synthesis of Nanoporous SBA-1	N. Parida Utkal University, Bhubaneswar
3.00 PM-3.10PM	OP-15	Membrane Cholesterol Modulates Oligomeric Status and Peptide-membrane Interaction of Severe Acute Respiratory Syndrome Coronavirus Fusion Peptide	Geetanjali Meher Sambalpur University, Burla
3.10 PM-3.20PM	OP-16	Synthesis and Evaluation of Dendritic CarboranylGlycoconjugates: Promising Dual Mode Candidates for Cancer Treatment	BiswaRanjan Swain Ravenshaw University, Cuttack
Technical Session 10 Chairperson: Prof.A.K.Behera Coordinator: Dr. Trinath Biswal			
3.20 PM-3.30PM	OP-17	Effect of Different Functional Groups in UiO-66 Metal Organic Frameworks for the Adsorption of Anionic Dyes: An Experimental and Molecular Docking Study	Jagannath Panda KIIT Deemed University, Bhubaneswar
3.30 PM-3.40PM	OP-18	Optoelectronic Materials based on Donor-Acceptor Conjugated Systems	Barada P. Dash Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar

3.40 PM-3.50PM	OP-19	Removal of Congo Red Dye from Aqueous Solution using Zinc Oxide Nanoparticles derived from Tulsi Leaf (Ocimum Sanctum): A Green Approach	AnsumanNayak GIET University, Gunupur
3.50 PM-4.00PM	OP-20	OH/HO_2 Radical Measurements in the Troposphere	Manas Ranjan Dash National Institute of Technology, Raipur
4.00 PM-4.10PM	OP-21	Synthesis and Magnetic Behaviour of Mg-Zn Nano Ferrites by Using Aloe Vera Extract Solution	Himansulal Nayak CBS&H, OUAT Bhubaneswar
4.10 PM-4.20PM	OP-22	Microwave assisted Synthesis of Thiazolo-Pyrimidine Derivatives	Sabita Shroff Sambalpur University, Burla
4.20 PM-4.30PM	OP-23	Photovoltaic Performance of Natural Dye sensitised Ni-Cd-S Photoelectrode fabricated by Dip Coating Technique	B.B. Panda Department of Chemistry, IGIT, Sarang, Dhenkanal
4.30 PM-4.40PM	OP-24	Kinetic and thermodynamic study for the co-pyrolysis of beeswax and plastic wastes	Narayan Gouda CUTM Paralakhemundi
4.40 PM-4.50PM	OP-25	Removal of Cationic Dye by using Polyaniline/Maleic Acid Composite	Nehapadma Mohanty Utkal University, Bhubaneswar
4.50 PM-5.30PM	***Valedictory Function***		

CONTENTS

Oral Presentations				
01	OP-01	Subrata Kumar Padhan, Narayan Murmu, SubratMahapatra, M. K. Dalai, and Satya Narayan Sahu	Ultrasensitive Detection of Aqueous Cu^{2+} Ions by a Coumarin-Salicylidene based AIEgen	23
02	OP-02	Aditya Kumar Purohit and Pravin Kumar Kar	Pyrophosphate Ion Sensing by a Zn(ll)-Terpyridine Complex in Aqueous Medium at Physiological pH	24
03	OP-03	BanalataMaji and Priyabrat Dash	$MnCo_2O_4$ Decorated rGO/gC_3N_4-based Sensor for Highly Selective and Sensitive Detection of Chlorpyrifos	24
04	OP-04	Pragyan P. Rath, TanaswiniPatra, and Tapas Ranjan Sahoo	Adsorptive Removal of Congo Red dye from Aqueous Solution using Mg-doped ZnO Nanoparticles: Kinetics, Thermodynamics and Isothermal Insights	25
05	OP-05	R.S. Krishna and J. Mishra	Preparation of High-performance Graphene Geopolymer Composites	26
06	OP-06	Akankshika Parida and Rabindra Kumar Behera	Effect of Phosphate on Iron Mineralization and Mobilization in Non-hemeBacterioferritin B from *Mycobacterium Tuberculosis*	28
07	OP-07	Jayaprakash Behera, Adrushya Jyoti Pattanayak and Sarat K. Swain	Incorporation of Silver Nitrate into embedded Nano Boron Nitride for the Preparation of Polyethyl Methacrylate/Polyvinyl Alcohol Nanocomposite Layered Material	29
08	OP-08	M. Panda, S. Behera, and A.K.Padhy	Reaction of 2,4,5-trisubstituted-1-hydroxy Imidazoles with Epichlorohydrin	29
09	OP-09	Supriya P. Biswal, Prabhudatta Hota, Amitabh Mahapatra, and Pramila K. Misra	Experimental and Theoretical Studies on the Structure of 2-chloro (o-hydroxyBenzylideneaniline)	30
10	OP-10	Rabinarayana Sahu and Bamkanta Garnaik	Impact of Inclusion Complexes of 2(([1,3,4] Thiadiazino [6,5- b] indol-3-ylimino) methyl) Phenol and Its Derivatives with β – Cyclodextrin: Spectral, Thermal and Antimicrobial Study	30
11	OP-11	Tulasi Barik and Saurav Chatterjee	Functionalization of Ferrocene by Hydrazone and Thiosemicarbazone Fragments: Significant Cyclopalladation and Biological Properties Study	31
12	OP-12	Raisarani Sharma, Pravin K Kar, and Sukalyan Dash	Removal of Some Cationic Dyes from Organic Medium by the Application of unmodified Silica	32
13	OP-13	LopamudraSatpathy and Bijay K. Mishra	Partitioning Addition and Substitution Reaction: Effect of Solvent	33
14	OP-14	N. Parida, K. Asha, and S.K. Badamali	Room Temperature Synthesis of Nanoporous SBA-1	34
15	OP-15	Geetanjali Meher, Surajit Bhattacharjya, and Hirak Chakraborty	Membrane Cholesterol Modulates Oligomeric Status and Peptide-membrane Interaction of Severe Acute Respiratory Syndrome Coronavirus Fusion Peptide	34