Organizes

Proceedings of Conference on Electrochemistry in Industry, Health and Environment - 2020

January 21 – 25, 2020
DAE Convention Centre,
Bhabha Atomic Research Centre, Mumbai

EIHE 2020

DAE-BRNS Sponsored Conference

Editors:

A. K. Satpati
S. K. Ghosh
S. K. Guin
M. K. Dey

Editorial Advisor:

Dr. H. Pal

Indian Society for ElctroAnalytical Chemistry
Mumbai, India
www.iseac.org.in

Indian Society for ElectroAnalytical Chemistry

Being released during

14th Conference of

Indian Society for ElectroAnalytical Chemistry

EIHE 2020

January 21-25, 2020
DAE Convention Centre, Anushaktinagar,
BARC, Mumbai

Editors

A. K. Satpati

S. K. Ghosh

S. K. Guin

M. K. Dey

Editorial Advisor: Dr. H. Pal

Organized by

Indian Society for ElectroAnalytical Chemistry
Mumbai, India
www.iseac.org.in

EIHE 2020

Indian Society for Electro Analytical Chemistry
(ISEAC)

Welcomes you to the International Conference on
Electrochemistry in Industry, Health & Environment

ISBN No. 81-901950-9-3

January 2020

Printed by:
Ebenezer Printing House,
5, Hind Service Industires,
Shivaji Park Sea-face, Dadar (W), Mumbai-400028
Tel.: 24462632 / 24463872, E-mail: outworkeph@gmail.com

डॉ. अजित कुमार मोहान्ती
Dr. Ajit Kumar Mohanty

भारत सरकार
Government of India

निदेशक, भाभा परमाणु अनुसंधान केंद्र
Director, Bhabha Atomic Research Centre
सदस्य, परमाणु ऊर्जा आयोग
Member, Atomic Energy Commission

MESSAGE

I am happy to know that the Chemistry Fraternity, Bhabha Atomic Research Centre, in association with the Indian Society for Electroanalytical Chemistry (ISEAC) is organising an international event *"Conference on Electrochemistry in Industry, Health and Environment (EIHE 2020)"* at DAE Convention Centre, Anushaktinagar, Mumbai, during January 21 to 25, 2020. I am happy to learn that the conference is being co-sponsored by the Board of Research in Nuclear Sciences (BRNS) and the International Society for Electrochemistry (ISE).

Electrochemistry and the associated subject has provided major break-through in many industrial challenges due to its close association with technologies like, Li-ion battery, redox flow battery, supercapacitors, solar energy harvesting devices, biomedical sensors, sensor for environmental monitoring, electrochemical synthesis, electrochemical deposition of materials and so on. Consequently, the subject has emerged as the most important research interest among the scientific and engineering fraternity across the globe. Research in the field of molten salt electrochemistry has been among the important scientific and technological projects in recent years on which many scientific institutes are working on. Number of devices use electrochemical principles at various stages of their operations and functioning. Electrochemical techniques have also been utilized in the preparation and characterization of some of advanced radiopharmaceuticals. I am very happy to know that the present conference has covered a good portion of the electrochemical sciences and technologies in its scope. It is also my pleasure that electrochemical sciences and technologies are pursued in our institute very extensively, covering almost all of its dimensions, from laboratory scale studies to the industrial scale applications.

I convey my best wishes to the organizers for a very successful scientific and technical event. I am sure that the conference will come out with many new ideas and understandings to carry forward our quest in the electrochemical sciences.

I wish the conference EIHE 2020 a grand success.

Ajit Kumar Mohanty

(Dr. Ajit Kumar Mohanty)

भाभा परमाणु अनुसंधान केंद्र, ट्रॉम्बे, मुंबई- 400 085, भारत • Bhabha Atomic Research Centre, Trombay, Mumbai 400 085, India
दूरभाष/Phone:+(91) (22) 2550 5300, 2551 1910 • फैक्स/Fax: +(91) (22) 2559 2107, 2550 5151
ई-मेल/E-mail: ajitkm@barc.gov.in / director@barc.gov.in

ISO 9001:2015
ORGANISATION

डॉ. यू. कामाची मुदली
DR. U. KAMACHI MUDALI
विशिष्ठ वैज्ञानिक
Distinguished Scientist
अध्यक्ष एवं मुख्य कार्यकारी
Chairman & Chief Executive

सत्यमेव जयते

भारत सरकार
परमाणु ऊर्जा विभाग
भारी पानी बोर्ड
GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
HEAVY WATER BOARD

विक्रम साराभाई भवन,
अणुशक्तिनगर,
मुंबई - 400 094.
Vikram Sarabhai Bhavan,
Anushaktinagar,
Mumbai - 400 094.
Website : www.hwb.gov.in
Fax : (022) 2556 3360 / 2556 3243
Direct Number : (022) 2556 0870
2548 6505
Email : ce@mum.hwb.gov.in

Message

I am delighted to learn that Indian Society for Electro Analytical Chemistry (ISEAC) is organizing an International Conference on ***"Electrochemistry in Industry, Health and Environment, EIHE -2020"*** in association with DAE, BARC & BRNS during January 21 to 25, 2020.

Electrochemistry is an important branch of science with enormous industrial applications in various engineering fields, right from basic electrolysis to high end electro-forming. In the recent past Electrochemistry has also gained importance in the field of energy & power, space exploration, nanotechnology, sensors etc. Electrochemistry has great potential in the field environment protection by contributing pollution detection instruments, recycling of metals, and alternative sources of energy such as hydrogen economy. It also plays role on remediation of polluted air, water and soils etc. Heavy Water Board is also making use of electrochemistry in several high-end applications like electro-wining of Boron, Sodium production, Deuterium gas, Oxygen 18 water and Elctro-analytical chemistry. The global Electrochemistry Market which is segmented on the basis of products, technologies, end users, and regions, is growing at high rate for electrochemical instruments, distributed energy storage systems, batteries, ionic liquids, nanotechnology products and gas sensors.

EIHE-2020 will be benefitting a large group of scientists and technocrats from various aspects of electrochemistry by providing a common platform to share the latest trend and development in this field. Emerging topics such as nanoscale and molecular electrochemistry, bio-sensor for health, electrochemistry in pharmaceuticals and drugs will be discussed during the conference which will ignite the hidden potential to create bright future in those areas.

I am sure that the outcome of this Conference would be very useful to abreast the researchers and participants on the latest development across the globe in the field of Electrochemistry in Industry, Health and Environment. It is also a matter of great pleasure that on this occasion a conference proceedings containing abstract of paper is also being published.

I wish the organizing team all the best for a magnificent success of "EIHE-2020".

U Kamachi Mudali
10/12/19
(Dr. U. Kamachi Mudali)

डॉ॰ संजीव श्री. कट्टी
महानिदेशक
Dr. Sanjeev S. Katti
Director General

ओएनजीसी एनर्जी सेन्टर
आठवीं तल, कोर–3एवं4, स्कोप मीनार, लक्ष्मी नगर, दिल्ली–110092
दूरभाष: +91–11–22406625 , फैक्स: +91–11–22011783
ONGC Energy Centre
8th Floor, Core-3&4, SCOPE Minar, Laxmi Nagar, Delhi - 110092
Phone: +91-11-22406625, Fax: +91-11-22011783
E-mail: Sanjeev_Katti@ongc.co.in

Dear Colleagues,

It is a great pleasure and an honour to extend you a warm welcome to the International Conference under the thematic title of "Conference on Electrochemistry in Industry, Health and Environment" (EIHE 2020) at DAE Convention Centre, Mumbai.

Organized by BARC Analytical Chemistry Division, Chemistry Group (A) in association with Indian Society for Electro-analytical Chemistry (ISEAC), the theme of EIHE 2020 deals with wide spectrum of topics of mutual interest to industry and academia as electrochemical science & technology needs to assume bigger responsibility with focused efforts beyond and during the envisaged energy transitions in this century.

With nearly 400 participants representing many leading global organizations, the Conference is all set to provide an exclusive technical forum for participants to discuss, deliberate, exchange and explore critical areas of collaboration including Sensors and Biosensors, Electrochemistry of Biomolecules, Electrochemical Synthesis, Li-ion Battery technology, Supercapacitors, Solar Energy Harvesting, Corrosion, Molten Salt Electrochemistry, etc. It would provide a platform for energetic experience sharing and the best practices in electrochemical sector.

This confluence of great minds from across the industry and academia, over the next few days, would enlighten the participants to comprehensively review their current activities and future plans, acquaint with the global trends, learn about disruptive innovations, and explore new pathways employing electrochemistry in industry, health and environment.

The conference strives to be a focused debating and networking platform. I hope that the presentations and discussions would be both engaging and valuable, and convey my best wishes to all the participants for a very interactive, successful and meaningful conference.

Sanjeev S. Katti

Dr. Sanjeev S. Katti
Director General,
ONGC Energy Centre

27 Dec. 2019

Prof. P.D. Naik
Dean

Homi Bhabha National Institute
Training School Complex, Anushaktinagar, Mumbai – 400 094, India
Tel. No: 91-22-25595398, Mob: 9869279233
Email: deanhbni@hbni.ac.in, pdnaik@barc.gov.in

Wish you a very happy and productive new year 2020. As the President, Indian Society for Electroanalytical Chemistry (ISEAC), I welcome you to this International Conference **"Conference on Electrochemistry in Industry, Health and Environment (EIHE 2020)"**.

Electrochemistry and its applications aspects are immensely useful in solving various societal problems. Recently, ISEAC has broadened the scope of the Society to include the activities from all branches of Electrochemical Sciences and Technologies. The main aim of ISEAC is to promote the electrochemistry in India, to disseminate scientific and technological knowledge within the country and to strengthen the national and international cooperation in the area of Electrochemistry. ISEAC with support from our DAE organises one discussion meet and one international conference every alternate year to make available a platform for discussion on the recent development in electrochemistry and allied fields. In addition to that, we also have participated in IYPT 2019 during February 16, 2019, to commemorate the 150 years of the periodic table in DAE.

Our present membership strength is over 300 and we would like all the electrochemist and allied field researchers to be a part of our family. To encourage the researchers to join us as a member, we have kept a life membership fee nominal, Rs. 4000/- and student membership fee is Rs. 1000/- (for 5-year validity).

I am good to see a large number of participants in this international event, EIHE 2020, which indicates the popularity of the symposium among researcher and the importance and interest in the field.

I take this opportunity to thank the authorities of Bhabha Atomic Research Centre for the kind support rendered in the organisation of this event at the beautiful campus of Anushaktinagar.

As president ISEAC, I welcome you all to this international event and wish you all the best in all your future research endeavours.

PDNaik

(P.D. Naik)

Government of India
Bhabha Atomic Research Centre
Chemistry Group

Dr. Haridas Pal
Outstanding Scientist, DAE & Associate Director, CG(A)
Tel: 91-22-25595396; Email: hpalbarc.gov.in

Dear Delegates,

Warm greetings from the Organizing Committee, EIHE 2020. We wish you all a very happy and prosperous new year 2020.

The International Conference under the thematic title "*Electrochemistry for Industry, Health and Environment, EIHE-2020*" is being organized by the Chemistry Fraternity of Bhabha Atomic Research Centre under the auspices of Indian Society for Electroanalytical Chemistry (ISEAC), at the DAE Convention Centre, Anushaktinagar, Mumbai 400094, during January 21 to 25, 2020. Excellence of electrochemistry in wide spectrum has been included under the scope of this conference, incorporating Electrochemical Instrumentation, Battery, Supercapacitor, Solar cell, Electrochemistry in Nonaqueous Solvents, Fundamental and Computational Electrochemistry, Electrochemical Sensors and Biosensors for Health, Medical and Environmental Sciences, Electrodeposition, Electrosynthesis, Electroplating, Electrochemistry in Pharmaceuticals and Drugs, Nanoscale and Molecular Electrochemistry, Electrochemistry in Nuclear Energy, Electrochemical Corrosion and other relevant topics.

This series of international events have been admired by the national and international scientists and we have received huge responses from over 450 participants of eminent scientists, students, industry partners from India and overseas. It is an excellent opportunity to the academia and students to interact with the national and international experts and widening the scope of scientific collaboration in electrochemical sciences.

I welcome all the invited speakers from India and overseas for accepting our invitation. Your presence in the conference will encourage our young researchers and students to take up scientific activity in the exciting fields of electrochemical sciences. I request all the students and young reaches to remain attentive during the scientific deliberation and interact with the experts to enhance your scientific horizon in electrochemistry. We have numbers of best poster and oral presentation awards for the young researchers and I appeal all of them to deliver their best during their poster and oral presentations.

We, as the organizers, have given our utmost efforts to make the best scientific program for the conference and to arrange necessary logistics for your pleasant stay here in Anushaktinagar. If you still find any shortcomings, please bring to our knowledge. We will try our best to short out the issues at best ways possible.

As the chairman of the EIHE 2020 organizing committee, I express my heartiest welcome to all the delegates once again and wish you all the best in all your future endeavors.

HPal 27/12/2019

(Haridas Pal)

Indian Society for ElectroAnalytical Chemistry
(Reg. No. MAH/MUM/1173/2006 GBBSD)
Bhabha Atomic Research Centre, Mumbai - 400085

Dr. Ashis Kumar Satpati
Scientific Officer-G
Secretary, ISEAC and Convener, EIHE-2020
Bhabha Atomic Research Centre, Trombay,
Mumbai 400085, Phone: 022-25590744 (O)
Email: aksatpati@gmail.com

Dear Delegates

Greetings from ISEAC

On behalf of ISEAC and the organising team, I welcome you all in this international event "Electrochemistry for Industry, Health and Environment, EIHE-2020" at Anushaktinagar, Mumbai. I thank all of you for coming here to attend this conference.

We have tried our best to organise this international event, and thank you for your cooperation and enthusiasm. Since its inception, scope of the society has been broadened to cover the entire spectrum of the scientific activities in the field, this has resulted the increased number of life members from the scientific fraternity across various institutes. I take this forum to request all of you to enhance the activities of the society and promote your colleagues and students to become the life member of this organisation.

In addition to the abstract booklet we are coming out with a Souvenir cum Bulletin of ISEAC during this conference containing articles on different aspects of electrochemical science and technology are being published in this volume, I thank all the authors for their contribution in the bulletin. I encourage all of you to participate in writing short articles for this series of Bulletin.

Being stationed at Bhabha Atomic Research Centre, we enjoy the fame of this institute and excellent logistics support, we thank our authorities for the same. I thank Heavy Water Board (HWB), Atomic Energy Regulatory Board (AERB), ONGC Energy Centre, International Society of Electrochemistry (ISE), American Chemical Society (ACS), Royal Chemical Society (RSC) for supporting this event. I sincerely thank all the industrial partners for their support.
I am happy to announce that some selected papers from the abstracts will be published as special volume in **ELECTROANALYSIS**. From this very conference let us collectively make an effort to take the activities of the society forward and a make our presence at the international level. I wish all of you for excellent outcome from your research, ISEAC will provide all possible platform to promote your research activities. Let us join together and bring the fascinating science in the field of ***ELECTROCHEMISTRY*** to its fullest potential for the benefit of the society.

On behalf of the team of organising committee EIHE 2020 and the Secretary, ISEAC, I express my sincere thanks once again to DAE-BRNS, the ISEAC life members, all sponsors and the delegates of EIHE 2020.

01-01-2020

January 01, 2020 (A K Satpati)

Address of Correspondence: Analytical Chemistry Division, 3rd Floor, Modular Labs, Bhabha Atomic Research Centre, Mumbai – 400085, India
Email: electrochembarc@gmail.com, **Web:** www.iseac.org.in
Contact: (+91)22-25590744/0326

International Society of Electrochemistry

associated organization of IUPAC

Chemin de Closelet 2
CH-1006 Lausanne
Switzerland

Fax: +41 21 648 39 75
E-mail: **info@ise-online.org**
Web: **http://www.ise-online.org**

Why you should become an ISE member

ISE members participate fully in the Society's activities which are aimed at

- advancing electrochemical science and technology,
- disseminating scientific and technological knowledge,
- promoting international cooperation in electrochemistry, and
- maintaining a high professional standard among its members.

Through their activity within the ISE, its members acquire international visibility and have opportunities for networking and promotion of their research interests.

Individual ISE members also obtain:

- reduced subscription rates for the official journal of the Society (Electrochimica Acta) and several other important journals: Journal of Electroanalytical Chemistry, Electrochemistry Communications, Bioelectrochemistry, Corrosion Science, Journal of Power Sources, Journal of Applied Electrochemistry, Electrocatalysis, and Journal of Solid State Electrochemistry.
- reduced registration fees for ISE Meetings,
- the opportunity to apply for ISE sponsorship of scientific meetings,
- access to the "members restricted area" of the ISE website,
- access to the full membership directory which contains the addresses of all the members of ISE,
- the opportunity to apply for support from the Presidential Fund,
- updated information on ISE activities.

To facilitate participation in ISE meetings, young members may apply for the Electrochimica Acta and ISE Travel Awards for Young Electrochemists.

How to become an ISE member

Becoming an ISE member is simple: you will find a Membership Application Form on the Society web site (at the address: **http://members.ise-online.org/members/new_members.php**), which you can fill in and submit online. In the application form you will have to select up to three Divisions and indicate two sponsoring ISE members. Should it be difficult for you finding these sponsors, please write to the Executive Secretary of the Society Dr. M. Musiani, e-mail: **marco.musiani@cnr.it**. The membership fee for the calendar year 2018 is 50 Euro (15 Euro for age below 30). Once your application is accepted, the ISE Office will contact you for the payment of the Membership dues.

Information on the International Society of Electrochemistry

Go to
www.ise-online.org

Indian Society for ElectroAnalytical Chemistry

Reg. No. MAH/MUM/1173/2006 GBBSD

*(**Website:**www.iseac.org.in; **Email:**electrochembarc@gmail.com)*

The motivation to commence a national forum in the name of Indian Society for ElectroAnalytical Chemistry (ISEAC) came from the discussion in the Workshop cum Seminar on ElectroAnalytical Chemistry and Allied Topics (ELAC 2000) held at BARC, Mumbai during November 27 to December 1 in 2000. ISEAC, a non-profit-making organization, was officially founded on October 1, 2003 to provide a common platform to all the Indian scientists and scholars working in the field of ElectroAnalytical Chemistry within the country from various Universities or Institutes or Industries. With the progress of the Electrochemistry in India, the Scope of the Society has broadened enough to include the all branches of Electrochemical Sciences and Technologies. ISEAC aims to promote the electrochemistry in India, to disseminate scientific and technological knowledge within the country and to advance both national and international cooperation in the area of Electrochemistry.

Since foundation, the Society has evolved magnificently to represent a truly National Organization and at present, it comprises more than 250 life-members from different parts of India and Overseas. The Executive committee of ISEAC, which manages all the activities of ISEAC, is being elected triennially by all the members of ISEAC.

International Events organized by ISEAC:

ISEAC organizes International Conferences, Discussion Meets and Workshop cum Symposium on Electrochemistry and allied topics in association with the Departments of Government of India, International Society of Electrochemistry and other Scientific Organizations and Industries. ISEAC has organized thirteen International Events in India:

1. *International Conference on Electrochemistry in Industry Health and Environments (EIHE 2020) at DEA Convention Centre, Anushaktinagar, Mumbai during January 21-25, 2020*
2. *International Conference on Electrochemistry in Advanced Materials, Corrosion and Radiopharmaceuticals (CEAMCR-2018) at DEA Convention Centre, Anushaktinagar, Mumbai during February 15-17, 2018.*
3. *Twelfth ISEAC Discussion Meet in Electrochemistry (12th ISEAC-DM-2016) held at The Acres Club, Chembur, Mumbai during December 7-8, 2016.*
4. *Eleventh ISEAC International Discussion Meet on Electrochemistry and its Applications (ISEAC-DM-2014) held at Hotel Radisson Blu, Amritsar during February 20-25, 2014.*
5. *Fifth ISEAC Triennial International Conference on Advances and Recent Trends in Electrochemistry (ELAC-2013) held at Sitara Hotel, Ramoji Film City, Hyderabad during January 16-20, 2013.*
6. *ISEAC International Symposium cum Workshop on Electrochemistry (ISEAC-WS-2011) at Cidade de Goa, Dona Paula, Goa during December 7-10, 2011.*
7. *Fourth ISEAC International Discussion Meet on Electrochemistry and its Applications (DM-ISEAC-2011) at Mascot Hotel, Thiruvananthapuram, Kerala during February 7-10, 2011.*

8. *Fourth International Conference on ElectroAnalytical Chemistry and Allied Topics (ELAC-2013) at Toshali Sands, Puri, Orissa during March 16-18, 2010.*
9. *Discussion Meet on ElectroAnalytical Techniques and Their Applications (DM-ELANTE-2008) held at Tea County, Munnar, Kerala during February 25-28, 2008.*
10. *Third International Conference on ElectroAnalytical Chemistry and Allied Topics (ELAC-2007) at Toshali Royal View Resort, Shilon Bagh, Shimla during March 10-15, 2007.*
11. *Discussion Meet on Role of Electrochemistry in Biosensors, Nanomaterials, Fuel Cells and Ionic Liquids (DM-BNFL-2006) held at Bhabha Atomic Research Centre, Mumbai during September 24-25, 2006.*
12. *Discussion Meet on Coulometry (DM-COUL-2005) at Bhabha Atomic Research Centre, Mumbai on May 5, 2005.*
13. *Second International Conference on ElectroAnalytical Chemistry and Allied Topics (ELAC-2004) held at The International Centre, Dona Paula, Goa during January 18-23, 2004.*
14. *Workshop cum Seminar on ElectroAnalytical Chemistry and Allied Topics (ELAC-2000) held at Bhabha Atomic Research Centre, Mumbai during November 27 – December 1, 2000.*

Objectives of ISEAC:

- Promote the growth of Electrochemistry in India.
- Provide a common world-wide platform to the experts, scientists and scholars working in the area of Electrochemistry and its Allied Sciences.
- Disseminate scientific and technological knowledge in the area of Electrochemistry to advance both national and international collaborations.
- Share the information on Electrochemistry with other International Societies viz. European Society for Electroanalytical Chemistry (ESEAC), Society for Electroanalytical Chemistry (SEAC) and International Society of Electrochemistry (ISE), Bioelectrochemical Society (BES).
- Work in harmony with other Indian Electrochemical Societies viz. Society for the Advancement of Electrochemical Science and Technology (SAEST) based at CECRI, Karaikudi and Electrochemical Society of India (ECSI) based at Indian Institute of Science, Bengaluru.
- Provide incentive by way of awards to researchers for the best thesis, the best paper published in the journal and the best paper presented in National and International Conferences/Symposia.
- Encourage young as well as experienced Indian researchers for participation in International Electrochemistry Conferences by providing partial funds, if possible.

Procedure to join ISEAC:

ISEAC has the provision for individual to join as Life-members and for company to join as Corporate Member. The Life-membership fee w.e.f. April 1, 2011 is Rs. 4000/- (Rs. Four thousands only) for Indians and € 300/- (Euro three hundred only)for others. The Fee has to be transferred electronically (NEFT or wire transfer) to ISEAC Bank Account and then you have

to sign-up through "Join ISEAC as Life-Member" icon available on www.iseac.org.in with the fund transfer details.

Name of Bank: ***State Bank of India, BARC Branch, Mumbai-400 085, India***
Branch code: ***1268***
Beneficiary name: ***Indian Society for ElectroAnalytical Chemistry (ISEAC)***
Account number: ***34209997299***
BIC (Swift Code): ***SBININBB508***
IFSC code (for within India): ***SBIN0001268***
Please contact us for any further information:

The Secretary,
Indian Society for ElectroAnalytical Chemistry (ISEAC)
Analytical Chemistry Division,
Bhabha Atomic Research Centre, Trombay,
Mumbai – 400 085, India
Email: electrochembarc@gmail.com;
web.: www.iseac.org.in
Phone: +91-22-2559 0744 (office hours only); +91-9969053269, 9969053269 (after office hours)
You are Welcome to Join ISEAC

EIHE-2020

DAE-BRNS

Conference on Electrochemistry for Industry, Health and Environment

January21-25, 2020

DAE Convention Centre, Anushaktinagar, Mumbai – 400094, India

Selected unpublished contributions from this Conference will be evaluated and published as Full Length Peer-Reviewed Articles (without any Article Processing Charges) in the Special Issue

"Advancements of Electroanalysis in India"

in the International Journal (Wiley)

ELECTROANALYSIS

An International Journal Devoted to Electroanalysis, Sensors and Bioelectronic Devices

Please Mark your Poster/Oral Presentation with"EA"(Available at the Registration Desk)if you are interested to publish in this Special Issueand send a Request Email toelectrochembarc@gmail.comwith a copy to Dr. Saurav K. Guin (sauravkrguin@yahoo.co.in,skguin@barc.gov.in)andDr. A. K. Satpatiasatpati@barc.gov.in

EIHE-2020

DAE-BRNS

Conference on Electrochemistry for Industry, Health and Environment

January21-25, 2020

DAE Convention Centre, Anushaktinagar, Mumbai – 400094, India

Organised by

In association with

and

Academic Partners

EIHE-2020

DAE-BRNS

Conference on Electrochemistry for Industry, Health and Environment

January 21-25, 2020

DAE Convention Centre, Anushaktinagar, Mumbai – 400094, India

Program

January 20, 2020; Monday		
16:00 - 18:30	:	**Registration** at *DAE Convention Centre*
20:00 Onwards	:	**Dinner for Out-Station Delegates** at TSH, Anushaktinagar
January 21, 2020; Tuesday		
08:00 – 09:15	:	**Registration**at *DAE Convention Centre*
09:30 – 09:45	:	**Inauguration of the Conference** (**Auditorium A**)
09:45 – 10:15	:	*Inaugural Lecture-1*; **Padmashree Prof. Srikumar Banerjee**
(**Auditorium A**)		Chancellor, HomiBhabha National Institute & Former Chairman, Atomic Energy Commission
10:15 – 10:45	:	*Inaugural Lecture-2*; **Prof. U. KamachiMudali**
(**Auditorium A**)		Chairman & Chief Executive, Heavy Water Board
10:45 – 11:15	:	*Inaugural Lecture-3*;**Dr. Sanjeev S. Katti**
(**Auditorium A**)		Director General, ONGC Energy Centre
11:15 - 11:45	:	**High Tea and Group Photograph**at ***Lobby***
11:45 - 13:05	:	**Session 1; *Chairperson: Dr. P. D. Naik***
(**Auditorium A**)		**IT-30; Prof. P. Vadgama**, Queen Mary University of London, United Kingdom *Enzyme Electrodes for Continuous Monitoring in Medicine: Challenges and Opportunities*
		IT-48; Prof. R. Kataky, Durham University, United Kingdom *Biological Interactions at Soft Interfaces*
13:05 – 14:00	:	**Lunch** at *Dining Hall*
14:00 –16:00	:	**Session 2; *Chairperson*: *Dr. H. Pal***
(**Auditorium A**)		**IT-41; Dr. Chinmoy Ranjan**, IISC, Bangaluru *Enhanced Electrochemical Water Oxidation Activity of Gold Supported Cobalt-Chromium Oxide*

		IT-2; Dr. Subir Kumar Ghosh,BARC, Mumbai *Zincating: A Simple Galvanic Displacement Process Plays Crucial Role in Obtaining Adherent UO_2 Thin Films on Al Surface Paving the Way for Fabrication of High Sensitivity Neutron Detectors*
		IT-7; Dr. A. K. Satpati, BARC, Mumbai *Electrochemical Characteristics of Cathode and Anode Materials to Generate Hydrogen from Water*
		IT-46; Dr. Saurav K. Guin, BARC, Mumbai *Functional Carbon Nanomaterials for Electrocatalysis*
16:00 – 16:15	:	**Tea** at ***Lobby***
16:15 – 18:15	:	**Session 3; *Oral Presentations***

Auditorium A ***Chairperson*: *Dr. Ashok Arya,*** ***Dr. Ritu Kataky* OP- 1 to 10**	**Auditorium B** ***Chairperson*: *Dr. A. K. Tripathi,*** ***Dr. Chinmoy Ranjan*** **OP- 11 to 20**
20:00 Onwards : **Dinner** at TSH, Anushaktinagar	

January 22, 2020; Wednesday		
09:00 – 11:00	:	**Session 4; *Chairperson*: *Dr. J. P. Mittal, Dr. A. V. R. Reddy***
(**Auditorium A**)		**IT-1; Dr. V. Jayaraman**, IGCAR, Kalpakkam *Estimation of Metal Concentration in VapourPhase by Measuring Oxygen Partial Pressure*
		IT-43; Dr. Christine Kranz, Ulm University, Germany *Miniaturized Electrochemical Biosensors*
		IT-52; Prof.Sagar Mitra, IIT-Bombay *Metal-Sulfur Battery: Chemistry, Mechanism and Technology to Handle*
		IT-47; Prof.Santosh Haram, Savitribai Phule Pune University, Pune *Investigation of Novel Nano-structures for the Methanol Oxidation Reaction*
11:00 – 11:15	:	**Tea** at ***Lobby***
11:15 – 13:00	:	**Session 5; Invited Talks**

Auditorium A	**Auditorium B**
Chairperson*: *Dr. Awadhesh Kumar, Prof. Santosh Haram, **IT-16; Dr. Nishith Verma**, IIT-Kanpur *Simultaneous Electrochemical Measurements of Creatinine, Cholesterol and Glucose using a Multi-array Sensor with Different Recognition Elements* **IT-37; Dr. V. Dharuman**, Alagappa University *Liposome Platforms for Electrochemical Biosensing* **IT-17; Dr. Nagaraj P. Shetti**, KLEIT, Hubballi *Carbon NanomaterialsBased Electrochemical Sensors*	***Chairperson*: *Dr. S. Kapoor, Prof. Sagar Mitra*** **IT-32; Dr. M. Anbu Kulandainathan**, CSIR-CECRI, Karaikudi *Electrochemical Reduction of N_2Under Ambient Conditions on Aminated Graphene Quantum Dots (aGQDs) and Pyrolytic Graphite (PG) Powder towards Ammonia Synthesis* **IT-33; Dr. J. N. Behera**, NISER, Bhubaneswar *Metal Chalchogenides as Electrocatalyst for Electrochemical Oxygen and Hydrogen Evolution Reactions* **IT-20; Dr. Shailendra K. Jha**, CSIR-CECRI, Karaikudi *Elucidation of Enigmatic Response of Designed Electrochemical Micro- and Nanostructured Materials for Electroanalytic and Electrocatalytic Applications*

13:00 – 14:00 : **Lunch** at *Dining Hall*

14:00 – 16:00 : **Poster Presentations: P-1** to **P-82** at ***Poster Hall***and **Running Tea** during **15:30-16:00**

16:00 – 17:30 : **Session 6; Invited Talks**

Auditorium A	**Auditorium B**
Chairperson*: *Dr. Sunil K. Ghosh, Dr. V. Dharuman **IT-28; Prof. Sunita Kumbhat**, JNV University, Jodhpur *Ready to use EC Sensor Strip for Point-Of-Care Monitoring* **IT-38; Dr. Nagappa Teradal**, GE Society's J.S.S. Arts, Science and Commerce College, Gokak *Porous Graphene Oxide and Its Composites for Sensitive* *and Selective Sensing of VOCs and Organophosphate Gases* **IT-13; Prof. Kothandaraman Ramanujam**, IIT-Madras *Solvent Filled Multiwalled Carbon Nanotubes for Sensor* *and Battery Applications*	***Chairperson*: *Dr. C. P. Kaushik, Dr. J. N. Behera*** **IT-10; Prof. Rajakumar Ananthakrishnan**, IIT-Kharagpur *Eu-Doped CuMgAl-Mixed Meatal Oxide as a Photo-redox Catalyst for Simultaneous Removal of Aqueous Organic and Inorganic Pollutants* **IT-54; Dr. S.B. Arya**, NITK, Surathkal *Role of Metallic Passivity on Electrochemical Corrosion behaviour: DC and AC Corrosion techniques* **IT-42; Dr. Asit Baran Panda**, CSIR-CSMCRI *Porous Hollow Spheres: Unique Materials for Electrochemical Energy Storage and Conversion*

17:30 – 18:00	:	**Session 7;** ***Chairperson: Dr. S.K.Sarkar and Dr. A.K.Satpati***	
(**Auditorium B**)		*Presentations of Advancements of Electrochemical Instrumentations by Participating Companies*	
19:00 – 20:00	:	**Felicitation to Conference Chair and Cultural Program**at **Auditorium A**	
20:00 Onwards	:	**Dinner**	at TSH, Anushaktinagar
January 23, 2020; Thursday			
09:00 - 11:00	:	**Session 8;** ***Chairperson: Dr. V. P. Venugopalam, Dr. Christine Kranz***	
(**Auditorium A**)		**IT-25; Prof.Carsten Schwandt**, University of Nizwa, Oman *New Research Lines in the Synthesis of Alloys and Compounds via the FFC-Cambridge Electro-deoxidation Process*	
		IT-4; Dr. S.Rangarajan, BARC, Kalpakkam *Applications of Electrochemistry in the R & D Activities of Water Chemistry for Nuclear Power Plants*	
		IT-35; Dr. RochishThaokar, IIT-Bombay *Transient Bulk Charge in Electrochemical Systems at Very High Voltages*	
		IT-19; Prof. Manoj Neergat, IIT-Bombay *Electrochemical Science and Technology in Solving Recent Scientific Challenges*	
11:00 – 11:15	:	**Tea** at ***Lobby***	
11:15 – 13:15	:	**Session 9; Oral Presentations**	

Auditorium A	**Auditorium B**
Chairperson: Dr. S. Kannan, Ashok K. Sundramoorthy	***Chairperson: Dr. T. Ghanti, Prof. Annamalai Senthil Kumar***
OP- 21 to 30	**OP- 31 to 40**

13:15 – 14:00	:	**Lunch** at *Dining Hall*
14:00 – 16:00	:	**Poster PresentationsP-83** to **P-164** at ***Poster Hall*** and **Running Tea** during **15:30-16:00**
16:00 – 17:00	:	**Session 10; Invited Talks**

Auditorium A ***Chairperson*:Dr. R. K. Vatsa, Dr. DipankarKoley** **IT-21; Prof.AnnamalaiSenthil Kumar**, VIT, Vellore *Development of Simple Electrochemical Sensors for Tea (Polyphenol) Quality Testing* **IT-22; Dr. Ashok K. Sundramoorthy**, SRM Institute of Science and Technology, Kattankulathur *Semiconducting SWCNTs Based Field-Effect Transistor for Femtomolar Detection of Carbamate Pesticides (Carbaryl and Carbofuran)*	**Auditorium B** ***Chairperson*: Dr. S. C. Parida, Dr. S. Rangarajan** **IT-12; Prof. Deepa Khushalani**, TIFR, Mumbai *New Materials for Energy Storage* **IT-14; Dr. Poulomi Roy**, CSIR–CMERI *Nanostructured Bismuth Molybdenum Oxide: A Novel Electrocatalyst for Oxygen Evolution*

17:00 – 18:30 : **Session 11; Short Lectures**	
Auditorium A ***Chairperson*: Dr. P. K. Mahapatra, Dr. Ashok K. Sundramoorthy** **SL- 1 to 6**	**Auditorium B** ***Chairperson*: Dr. A. Dash, Dr. Poulomi Roy** **SL- 7 to 12**

20:00 Onwards	:	**Dinner** at TSH, Anushaktinagar
		January 24, 2020; Friday
09:00 - 11:00	:	**Session 12; *Chairperson: Prof. P. Vadgama, Prof. S. Ramanathan***
(**Auditorium A**)		**IT-29; Prof. Raj Ganesh S. Pala**, IIT-Kanpur *Interfacial Engineering of Non-Native Structures in Lithium ion Batteries and Photoelectrochemistry*
		IT-55; Prof. Suddhasatwa Basu, CSIR-IMMT, Bhubaneswar *Simultaneous Detection of Neurochemicals by a Microfluidic Device*
		IT-6; Dr. Stijn F. L. Mertens, Lancaster University, United Kingdom *Nanostructuring and Selective Electrochemical Sensing using Covalent Grafting of Diazonium Compounds*
		IT-9; Dr. Dipankar Koley, Oregon State University, USA Conductive ion-selective electrode membrane: a new type of solid-state micro-ISEs
11:00 – 11:15	:	**Tea** at ***Lobby***
11:15 – 13:00	:	**Session 13;Invited Talks**

Auditorium A	Auditorium B
Chairperson:Prof. C. S. Pundir, Dr. S. Senthil Kumar	***Chairperson: Dr. Stijn F. L. Mertens, Dr. Prakash Chandra Mondal***
IT-3; Prof.S. Ramanathan, IIT-Madras *Detailed Mechanism Analysis of Electrochemical Reactions using Electrochemical Impedance Spectroscopy*	**IT-53; Prof. R. Ramaraj**, Madurai Kamaraj University, Madurai *Nanostructured Materials Modified Electrodes and their Applications in Catalysis and Sensors*
IT-27; Dr. Amit Paul, IISER, Bhopal Role of Pore Size in Electrochemical Supercapacitor and Electrocatalysis	**IT-5; Dr. Chinmoy Bhattacharya**, IIEST, Shibpur *Photoelectrochemical Oxidation of Water Using Bi-Based Metal Oxide Semiconductors*
***IT-26;* Dr. Muhammed Musthafa O T**, IISER, Pune Isomerism-Activity Relation in Molecular Electrocatalysis	***IT-44;* Dr. Bhaskar R. Sathe**, Dr. BabasahebAmbedkarMarathwada University, Aurangabad *Functional Nanoelectrodes for Hydrogen Generation and Fuel Cell Reactions*

13:00 – 14:00	:	**Lunch** at *Dining Hall*
14:00 – 16:00	:	**Poster Presentations: P-165** to **P-244** at ***Poster Hall*** and **Running Tea** during **15:30-16:00**
16:00 – 17:00	:	**Session 14; Invited Talks**

Auditorium A	Auditorium B
Chairperson: Dr. R. Tiwari, Prof. R. Ramaraj	***Chairperson: Prof. Raj Ganesh S. Pala, Dr. Renu Agarwal***
IT-8; Dr. Prakash Chandra Mondal, IIT-Kanpur *Versatile Electrochemical Approaches Towards Molecular Electronic Devices*	**IT-51; Dr. Vivek Polshettiwar**, TIFR, Mumbai *Plasmonic Colloidosomes of Black Gold for Solar Energy Harvesting and Hotspots Directed Catalysis for CO_2 to Fuel Conversion*
IT-11; Prof. C. S. Pundir, M.D. University, Rohtak *Enzyme Nanoparticles for Improved Electrochemical Biosensors*	**IT-23; Dr. S. Senthil Kumar**, CSIR-CECRI, Karaikudi *Activation and Deactivation of Surface Structure of Gold Probed by ECL*

17:00 – 19:00 : **Session 15; Oral Presentations**	
Auditorium A	**Auditorium B**
Chairperson: Dr. Bhaskar R. Sathe, Dr. Amit Paul	***Chairperson: Dr. Chinmoy Bhattacharya,***
OP- 41 to 50	**OP- 51 to 59, PP-175**

20:00 Onwards	:	**Dinner** at TSH, Anushaktinagar
January 25, 2020; Saturday		
09:00 - 11:00	:	**Session 16;** ***Chairperson: Dr. P. K. Pujari,Prof. Rama Kant***
(Auditorium A)		**Special Talk; Shri A. K. Balasubrahmanian**, Technical Director, NPCIL
		IT-49; Prof. Sangaraju Shanmugam, DGIST, Daegu, South Korea *Recent Advances in Catalysts Development for Fuel Cells and Water Electrolysis*
		IT-40; Dr. A. K. Tyagi, BARC, Mumbai *Design of Electro-active Materials by Structure-property Correlation*
		IT-50; Dr. D. Parvatalu, ONGC Energy Centre *Electrochemical Applications for Clean & Green Energy Technologies*
11:00 – 11:15	:	**Tea** at ***Lobby***
11:15 – 13:15	:	**Session 17;Invited Talks**

Auditorium A	**Auditorium B**
Chairperson:Prof.SunitaKumbhat, Dr. Swapan K. Ghosh	***Chairperson:Dr. S. K. Aggarwal,Dr. D. Parvatalu***
IT-24; Prof.G. Ranga Rao, IIT-Madras *Electrochemical Applications of Activated Porous ZrC*	***IT-15;*** **Dr. Dimple P. Dutta**, BARC, Mumbai *Synthesis and electrochemical characterization of anode materials for sodium ion batteries*
IT-58; Prof. Rama Kant, Delhi University EIS Response of Disordered and Nanostructured Electrodes: Theoretical Aspects	**IT-39; Dr. SanketGoel**, BITS-Pilani, Hyderabad *Additively Manufactured Microfluidic Devices Integrated with Diverse Detection Schemes for Biomedical Applications*
IT-34; Dr. Arindam Sarkar, IIT-Bombay *Correlating chemical and electrochemical catalysis*	**IT-45; Dr. Divesh N. Srivastava**, CSIR-CSMCRI *Plastic Chip Electrode: A General-purpose Electrode Platform*
IT-36; Dr. T. Maiyalagan, SRM Institute of Science and Technology, Kattankulathur *Non-Noble Metal Electrocatalysts for Hydrogen Generation*	**IT-31; Dr. Suman Singh**, CSIR-CSIO, Chandigarh Organic Frameworks as Emerging Electrochemical Platforms for Persistent Water Pollutants

13:15 – 14:15	:	**Lunch** at *Dining Hall*
14:15 – 15:15	:	**Session 18;Invited Talks**

Auditorium A	**Auditorium B**
Chairperson:Shri M. L. Sahu	***Chairperson:Prof.G. Ranga Rao***
IT-56; Dr. M. K. Sharma, BARC, Mumbai *Development of New Electrochemical Methods for Chemical Quality Control of the Nuclear Fuels and Recovery of Fissile Materials from the Analytical Waste*	**IT-57; Dr. S. N. Sawant**, BARC, Mumbai *Electrochemical Sensors for Medical Diagnostic Applications*
IT-59; Shri Jitendra Kumar Mishra, HWB, Baroda *Corrosion of Metals in Sodium Production Electrolysis Cell*	**IT-18; Dr. Sanghamitra Chatterjee**, Institute of Chemical Technology, Mumbai *Effortless Devising and Theranostic Applications of Nanomaterial Modified Sensors: State of The Art*

15:30 – 16:30 : **Valedictory Function**at **Auditorium A**

Breakfast Arrangements for Delegates from outside BARC(21/01/2020 to 26/01/2020):

Delegates staying in New Bachelor Hostel and Training School Hostel-Guest House:

07:30 AM – 8:30 AM : *The Canteen on the Ground Floor of Training School Hostel-Guest House*

Delegates staying in Convention Centre, HBCSE Hostel, NPCIL Guest House and Dormitory Flats in Anushaktinagar:

07:30 AM – 8:30 AM : *Dining Hall at the Convention Centre*

Content Page

IT-14	Nanostructured Bismuth Molybdenum Oxide: A Novel Electrocatalyst for Oxygen Evolution *Poulomi Roy*
IT-15	Synthesis and electrochemical characterization of anode materials for sodium ion batteries *Dimple P. Dutta*
IT-16	Simultaneous electrochemical measurements of creatinine, cholesterol and glucose using a multi-array sensor with different recognition elements *Pallab Kumar Bairagi, SurabhiShrivastava, NishithVerma*
IT-17	Carbon Nanomaterials-Based Electrochemical Sensors *Nagaraj P. Shetti*
IT-18	Effortless Devising and Theranostic Applications of Nanomaterial Modified Sensors: State of The Art *Sanghamitra Chatterjee*
IT-19	Electrochemical Science and Technology in Solving Recent Scientific Challenges *Manoj Neergat*
IT-20	Elucidation of Enigmatic Response of Designed Electrochemical Micro- and Nanostructured Materials for Electroanalytic and Electrocatalytic Applications *Shailendra K. Jha*
IT-21	Development of Simple Electrochemical Sensors for Tea (Polyphenol) Quality Testing *Annamalai Senthil Kumar*
IT-22	Semiconducting SWCNTs Based Field-Effect Transistor for Femtomolar Detection of Carbamate Pesticides (Carbaryl and Carbofuran) *T.H. Vignesh Kumar, R.Jerome and Ashok K. Sundramoorthy*
IT-23	Activation and deactivation of surface structure of gold probed by ECL *S. SenthilKumar*
IT-24	Electrochemical applications of activated porous ZrC *G. Ranga Rao*
IT-25	New Research Lines in the Synthesis of Alloys and Compounds via the FFC-Cambridge Electro-deoxidation Process *Carsten Schwandt*
IT-26	Isomerism-Activity Relation in Molecular Electrocatalysis *Muhammed Musthafa O T*
IT-27	Role of Pore Size in Electrochemical Supercapacitor and Electrocatalysis *Amit Paul*
IT-28	Ready to use EC Sensor Strip for Point-Of-Care Monitoring *SunitaKumbhat*

IT-29	Interfacial engineering of Non-Native Structures in Lithium ion Batteries and Photoelectrochemistry *Raj Ganesh S Pala, Rashmi, P. K. Gupta, A. Bhandari, S. Sivakumar and J. Bhattacharya*
IT-30	Enzyme electrodes for continuous monitoring in Medicine: challenges and opportunities *L. Yang, I. C. Lopes, A Zebda, P. Vadgama*
IT-31	Organic frameworks as emerging electrochemical platforms for persistent water pollutants *Reetu Rani, Akash Deep, Boris Mizaikoff, Suman Singh*
IT-32	Electrochemical reduction of N_2 under ambient conditions on Aminated Graphene Quantum Dots (aGQDs) and Pyrolytic Graphite (PG) Powder towards ammonia synthesis *L. Earnest Raj, S. Karuppusamy, M. Anbu Kulandainathan*
IT-33	Metal chalchogenides as electrocatalyst for electrochemical oxygen and hydrogen evolution reactions *J. N. Behera*
IT-34	Correlating chemical and electrochemical catalysis *Arindam Sarkar*
IT-35	Transient bulk charge in electrochemical systems at very high voltages *PramodtSrinivasula, Rochish Thaokar*
IT-36	Non-Noble Metal Electrocatalysts for Hydrogen Generation *T.Maiyalagan*
IT-37	Liposome platforms for Electrochemical Biosensing *V. Dharuman*
IT-38	Porous Graphene Oxide and Its Composites for Sensitive and Selective Sensing of VOCs and Organophosphate Gases *Nagappa L. Teradal and RazJelinek*
IT-39	Additively Manufactured Microfluidic Devices Integrated with Diverse Detection Schemes for Biomedical Applications *Sanket Goel*
IT-40	Design of electro-active materials by structure-property correlation *A. K. Tyagi*
IT-41	Enhanced electrochemical water oxidation activity of gold supported cobalt-chromium oxide *Abhinaba Das, Bapuji Mohapatra, Vipin Kamboj, Chinmoy Ranjan*
IT-42	Porous Hollow Spheres: Unique Materials for Electrochemical Energy Storage and Conversion *AsitBaran Panda*

IT-43	Miniaturized Electrochemical Biosensors *Christine Kranz*
IT-44	Functional Nanoelectrodes for Hydrogen Generation and Fuel Cell Reactions *Bhaskar R. Sathe*
IT-45	Plastic Chip Electrode: A General-purpose Electrode Platform *Divesh N. Srivastava*
IT-46	Functional Carbon Nanomaterials for Electrocatalysis *Saurav K. Guin*
IT-47	Investigation of Novel Nano-structures for the Methanol Oxidation Reaction *Durgasha Paudyal, Vrushali Joshi, Ambrose Melvin, Deepa Khushalani and Santosh Haram*
IT-48	Biological Interactions at Soft Interfaces *R.Kataky, R. Campos, P.Lopes, Y.Bunga, B.Silwane, N.Ntolo*
IT-49	Recent Advances in Catalysts Development for Fuel Cells and Water Electrolysis *SangarajuShanmugam*
IT-50	Electrochemical Applications for Clean & Green Energy Technologies *D. Parvatalu*
IT-51	Plasmoniccolloidosomes of black gold for solar energy harvesting and hotspots directed catalysis for CO_2 to fuel conversion *Vivek Polshettiwar*
IT-52	Metal-Sulfur Battery: Chemistry, Mechanism and Technology to Handle *Sagar Mitra, Arnab Ghosh, Ajit Kumar*
IT-53	Nanostructured Materials Modified Electrodes and their Applicationsin Catalysis and Sensors *R. Praveen and R. Ramaraj*
IT-54	Role of Metallic Passivity on Electrochemical Corrosion behaviour: DC and AC Corrosion techniques *S.B. Arya*
IT-55	Simultaneous Detection of Neurochemicals by a Microfluidic Device *Appan Roy Choudhury, Sandeep Jha, Suddhasatwa Basu*
IT-56	Development of New Electrochemical Methods for Chemical Quality Control of the Nuclear Fuels and Recovery of Fissile Materials from the Analytical Waste *Rahul Agarwal and Manoj Kumar Sharma*
IT-57	Electrochemical sensors for medical diagnostic applications *Shilpa N. Sawant*
IT-58	EIS Response of Disordered and Nanostructured Electrodes: Theoretical Aspects *Rama Kant*
IT-59	Corrosion of Metals in Sodium Production Electrolysis Cell *Jitendra Kumar Mishra*

Invited Short Lecture	
SL-1	Kinetic and spectroscopic aspects of hypervalent iodine oxidants synthesis *Balamurugan Devadas, Jan Svoboda, Martin Krupička, Jaroslav Kvíčala and Tomas Bystron*
SL-2	Probing the role of Artificially designed solid electrolyte interphase for mitigating degradation challenges associated with High energy, Li and Mn Rich NCM *Rosy*
SL-3	Construction of an Amperometric Cholesterol Biosensor Based on Immobilization of Cholesterol Oxidase onto Titanium Dioxide Nanoparticles *Bhawna Batra, Sumit, Minakshi Sharma*
SL-4	Corrosion Evaluation of 2.25Cr-1Mo Alloy for Eutectic LiCl-KCl Molten Salt of Pyrochemical Reprocessing by Electrochemical Techniques *Ch. Jagadeeswara Rao, S. Ningshen, John Philip*
SL-5	Carbon/CuO nanosphere-anchored g-C_3N_4 nanosheets as ternary electrode material for supercapacitors *S.V. Prabhakar Vattikuti and Jaesool Shim*
SL-6	Porous Organic Polymer derived N-rich metal nanoparticles doped amorphous catalyst for electochemical reduction of CO_2 *Venkatachalam Rajagopal, Murugavel Kathiresan,Vembu Suryanarayanan*
SL-7	Lab on a chip model for BCR ABL negative MPNs *Suman Lata, Seema Tyagi, Ravi Ranjan, Manoranjan Mahapatra, Tulika Seth, Renu Saxena*
SL-8	Electrochemical Energy Conversion and Energy Storage Applications by Functional Nanomaterials *Sasanka Deka*
SL-9	Mo_2C nano composite : A potential lithium ion battery anode *B. P. Mandal, K. Halankar, A. K. Tyagi*
SL-10	Predicting Irradiation Behaviour Of Rare Earth Pyrochlores Down The Lanthanide Series *Aparna Banerjee*
SL-11	Studying The Electrochemical Corrosion Behaviour Inside Coatings In Cathodically Polarised Pipelines Â€“Dac And Cp Shielding *Rituraj Mishra*

Poster Presentation	
PP-1	A pH dependent high voltage aqueous supercapacitor with dual electrolytes *Soumodip Sur, Alagar Raja Kottaichamy, Zahid Manzoor Bhat, Mruthyunjayachari Chattanahalli Devendrachari, Ravikumar Thimmapier.*

PP-2	Development of the ReO_3/Graphene Nanocomposites for the Simultaneous Determination of the Dopamine, Uric Acid and Ascorbic Acid *Sriram Kumar, Priyanka R. Ipte, Srikant Sahoo, Milan Kumar Dey, Prem Kumar Mishra and Ashis Kumar Satpati*
PP-3	Sensitive Voltammetric Determination of L-Tryptophan at Polymer Modified Carbon Nanotube Paste Electrode *N.S. Prinith*
PP-4	Voltammetric detection of Paracetamol by using Carbon Nanotube Modified electrode as an Electrochemical Sensor *Charithra M. M*
PP-5	Cyclic voltammetric sensing of Ciprofloxacin at Surfactant and Polymer Modified Carbon Paste Electrode *Pushpanjali P A*
PP-6	Improvement of Specific capacitance of Electrodeposited Cobalt Hydroxide ($Co(OH)_2$) by Low Energy Plasma Treatment on Supercapacitor Application *S. Sahoo and A. K. Satpati*
PP-7	Reinvestigation of $CoFe_2O_4$ electrocatalytic activity: Insights of OER dependency on morphology and size *supriya rana*
PP-8	Electrochemical Oxidation of 2-Oxindoles-3-alkylcarboxylates: Total Synthesis of C_2-Symmetric Dimeric Pyrroloindoline Alkaloids, Folicanthine and Chimonanthine *Sulekha, Avishek Roy*
PP-9	Graphene-MoS_2 van der Waals Heterostructures for Stable Electrochemical Sensors *Kiran Kumar Tadi, Stelbin P. Figerez, Rahul Sharma, Krishna Rani Sahoo, T. N. Narayanan*
PP-10	Study of morphological and electrical properties of Cobalt doped Nickel oxide thin film prepared by facile sol-gel method *Tithi Sen*
PP-11	Improved amperometric detection of lactose in milk samples with enzyme nanoparticles *Jyoti Ahlawat, Vishakha Aggarwal, Ranjana Jaiwal, C.S. Pundir*
PP-12	Pyrazole containing schiff base as new anti-inflammatory active compounds *Hanan Elnagdy*
PP-13	A Novel Sensor for Detection of Methdilazine using Calcium-doped Zinc oxide Fabricated Carbon Electrode *Shweta J. Malode*
PP-14	Electrochemical Sensing of Heavy Metal Ions By Modifying The Electrode with Organic-Inorganic Composite *Randeep Kaur, Ranjeet Kaur, Shweta Rana, Navneet Kaur*

PP-15	Turning trash into treasure: Waste derived N-doped porous carbon for energy applications *Namrata Deka, Jayshree Barman*
PP-16	Electrochemical Analysis of Indigo carmine at Polymer Layered Carbon nanotube Paste Electrode *Hareesha .N and Manjunatha J.G*
PP-17	Electrochemically synthesized cabbage like Pb structures and it application in electrochemical oxygen sensor *Dharini Bhagat, Manmohansingh Waldiya, Indrajit Mukhopadhyay*
PP-18	Graphene/NiO modified carbon paste electrode for the detection of Dopamine in presence of ascorbic acid and uric acid *Tony Thomas*
PP-19	Defect of multiwall carbon nanotube catalyst on melamine foam; a strategy for oxygen reduction reaction on alkaline and acid medium *Phiralang Marbaniang*
PP-20	Effect of Al-substitution on the electrochemical performance of O_3-type NaNMC as a cathode material for NIBs *Kirankumar V*
PP-21	Amperometric lysine biosensor based on lysine oxidase nanoparticles immobilised onto graphene oxides nanoparticles modified pencil graphite electrode *Bhawna Nohwal, Reeti Chaudhary and C.S.Pundir*
PP-22	Fabrication and Electrochemical Investigations of Rechargeable Li-Ion Cell with Li and Mn Rich Layered Oxide Cathode in Pouch Cell Configuration *Kirtan Sahoo, A. Srinivas Kumar, S. B. Majumder*
PP-23	An electrochemical impedimetric immunosensor based on core-shell nanoparticles modified layer for detecting iron regulatory protein hepcidin in human serum *Shilpa Rana, Nirmal Prabhakar*
PP-24	Highly Sensitive Determination of Antiviral Drug Acyclovir in Pharmaceuticals and Real Samples Utilizing Electrocatalytic Properties of Carbon Nanotubes Composite *Pravin Tarlekar, Sanghamitra Chatterjee*
PP-25	Aptamer based electrochemical detection of MUC1 using Au-Pt bimetallic nanoparticles decorated CGO/FTO as a biosensing platform *Anu Bharti, Navneet Agnihotri, Nirmal Prabhakar*
PP-26	Development of electrochemical immunosensor for the detection of 25 hydroxy Vitamin D_3. *Amandeep Kaur, Prof. Ganga Ram Chaudhary and Nirmal Prabhakar*

PP-27	First report on dissolution and electrochemical characterization of UO_3 in 1-decyl-3-methylimidazolium based DES *Ashutosh Srivastava, Jisha S. Pillai, M.S. Murali*
PP-28	Surface Charge Modulation of Perovskite Oxide at the Crystalline Junction with Layered Double Hydroxide for Durable Rechargeable Zinc-air Battery *Rahul Majee, Quazi Arif Islam and Sayan Bhattacharyya*
PP-29	Synthesis of $CuCo_2O_4$ embedded N-doped carbon nanotubes composite for high performance all solid state asymmetric supercapacitors *Nemi Chand Mawari*
PP-30	Potentiometric biosensor based PPO enzyme immobilized on PVP encapsulated Ag doped Cu nanoparticles and PPy nanotubes for the detection of dopamine. *Sandeep S, Chethana M H, Santhosh A S, Kumara Swamy N, Melo J*
PP-31	Simple sonochemical synthesis of $SrCuO_2$ assisted GCN Nano composite for the sensitive electrochemical detection of 4-AAP *Sachith B M, Hariprasad B R, Sandeep S, Karthik C S, Mallu P*
PP-32	Synthesis of $SrFeO_2$ micro grains and their application as a transducer material in electrochemical detection of anti-inflammatory drug *Sachith B M, Manikanta P, Sandeep S, Karthik C S, Mallu P, Manjunath J G*
PP-33	Investigations on electro-catalytic behavior of graphene nanoribbon-Fe doped gC_3N_4 nanocomposite *Sanjay B.P, Sandeep S, Kumara Swamy N*
PP-34	Construction of novel electrochemical Nanosensor using cellulose nanowires and silver nanoparticles and its application for the simultaneous determination of paracetamol and ascorbic acid *Santhosh A S, Sandeep S, Nandini S, Nalini S, Kumara Swamy N, Suresh G S*
PP-35	Mechanistic Analysis of Hydrogen Evolution Reaction Using Inverted Rotating Disc Electrode *R Saibi and S Ramanathan*
PP-36	Tuning the Synergistic Effects of Metallic VSe_2 and Carbon Nanotubes for High Power Density Supercapacitor *Sree Raj K A*
PP-37	High Performance Supercapacitor Electrodes based on Spinel $NiCo_2O_4$@MWCNT composite *Mansi Pathak*
PP-38	All Climate Capable Acid-Base Free High Performance Aqueous Rechargeable Quinhydrone-Zinc Battery *Sanjay N. Bariya, Saurabh S. Soni*
PP-39	Studies on electrochemical separation of hydrogen from helium *Sandeep K C, D Mandal, Sadhana Mohan, Sanjay Mahajani*

PP-40	A Novel polymer film modified Graphene Based Voltammetric Sensor for the Electrochemical Determination of Catechol *Manjunatha J G*
PP-41	Highly sensitive immunosensor based on silver nanoparticle for electrochemical determination of cancer biomarker *Anu Prathap M. Udayan and Shilpa N. Sawant*
PP-42	Deposition of impervious Al_2O_3 films over Stainless Steel Substrate Using Atomic Layer Deposition and it Stability in Solution *Abhishek Sharma, Sudipa Manna, S. Sahoo and A.K.Satpati*
PP-43	Influence of the Substrate Temperature on Microstructural and Electrochemical Supercapacitive Properties of Sputter Deposited Cr Doped CuO Thin Films *G. Durai, S. Arulmani, S. Anandan and P. Vinoth Kumar*
PP-44	Microfluidic Electrochemical Platform with Ink-jetted Electrodes for Multiple Chemicals / Biochemical Sensing *Jaligam Murali Mohan, Khairunnisa Amreen, Arshad Javed, Satish Kumar Dubey, Sanket Goel*
PP-45	Safety and Electrochemical Performance of Lithium-Rich Layered Cathode Materials for Lithium-ion BatterySuitable for Electric vehicle Applications *M Jayachandran*
PP-46	Electrochemically Exfoliated High Quality Graphene Oxide-$NiCo_2O_4$ Nanocomposite Electrode Materials for Supercapacitors *Samhita Pappu, Surendra K. Martha, Tata N. Rao, Bulusu V. Sarada*
PP-47	Development of Membraneless Paper-Pencil Microfluidic Hydrazine Fuel Cell for Energy Harvesting and Sensing *Lanka Tata Rao, Saurabh Gurunath Kulkarni, Satish Kumar Dubey, Arshad Javed, and Sanket Goel*
PP-48	Releasing of Fe Impurity in Carbon Nanomaterial and its in-situ Derivatization and Scanning Electrochemical Microscopic Imaging as a Prussian Blue-Electrocatalyst *Sairaman Saikrithika, Yashly Yesudas K*
PP-49	Ruthenium-bipyridyl complex based electrochemiluminescence of different generations of dendrimer@magnetic nanomaterial and its application in biosensing of liver cancer *Priyal Chikhaliwala, Sudeshna Chandra*
PP-50	Selective and enzymeless detection of Parkinson's disease biomarker using electrochemically reduced hematite decorated graphene oxide (Î±-Fe_2O_3@erGO) nanocomposite modified electrode *Georgeena Mathew, B. Neppolian*

PP-51	Efficient and High Performance Single-Walled Carbon Nanotubes/TiO_2 Based Nanohybrid Composite Electrode for Aqueous Acidic Electrolyte Supercapacitors *Mamta Sham Lal, Rajashekar Badam, Noriyoshi Matsumi and Sundara Ramaprabhu*
PP-52	Enhanced Catalytic Activity of the Electrochemical Oxygen Evolution Reaction by Iron Promoted Flower Like Bismuth Molybdenum Oxide *Sakila Khatun*
PP-53	A 0.7mm Microtip Pencil Graphite as an Electrochemical sensor for Low volume Detection of dopamine in real samples *Sakthivel Srinivas*
PP-54	Reduced Graphene Oxide supported $NiCo_2O_4$ nano-rods: An efficient, stable and cost-effective electrocatalyst for methanol oxidation reaction *N. Naresh*
PP-55	Dynamic Electrochemical Impedance Spectroscopic Study of Redox Mediation in Li-O_2 Batteries *Guruprasad S Hegde and Ramaprabhu Sundara*
PP-56	Reactive template synthesis of Li 1.2 Mn 0.54 Ni 0.13 Co 0.13 O_2 nanorod cathode for Li ion batteries: Influence of temperature over structural and electrochemical properties *Murugan Vivekanantha,Chenrayan Senthil, Thangaian K esavan, Thamodaran Partheeban, Manickam Sasidharan*
PP-57	Template-free Electrosynthesis of Platinum nanostructures for Catalysing Electron Transfer Reaction of Plutonium *Arvind S. Ambolikar, Saurav K. Guin*
PP-58	Electrochemical determination of herbicide, amitrole at WO_3.0.33H_2O modified carbon electrode for environmental applications *Somashekhar Tigadi, Davalasab Ilager, Sharad. G. Joshi, Nagaraj P. Shetti*
PP-59	A novel sensor for detection of linuron using composite of MWCNT and TiO_2 modified electrode *Muralidhar R. Gudagudi, Davalasab Ilager, Sharad. G. Joshi, Nagaraj P. Shetti*
PP-60	Electrochemical detection and degradation of herbicide, amitrole at rGO TiO_2 composite modified electrode *Bibi ameena Menasagi, Davalasab Ilager, Sharad. G. Joshi, Nagaraj P. Shetti*
PP-61	MWCNT and TiO_2 composite modified electrode as an electrochemical sensor for the detection of fungicide, carbendazim *Atharkhan I. Kittur, Davalasab Ilager, Sharad. G. Joshi, Nagaraj P. Shetti*
PP-62	Modulating photoelectrochemical water oxidation kinetics utilizing h-BN quantum dots as an efficient hole extractor on fluorine doped hematite photoanode *Tushar Kanta Sahu*

PP-63	Real-time quantification of 6-mercaptopurine anti-cancer drug in pharmaceuticals and human fluids at f-MWCNT/modified carbon paste amperometric sensor *Manasa G, Clinto Raj, Ashis K Satpati, Ronald J Mascarenhas*
PP-64	Embedding $Ni_3V_2O_8$ nanocubes on electrospun nanofibers for electrocatalytic water oxidation *S.Sam Sankar and Subrata Kundu*
PP-65	Electrochemical Studies of Polyaniline-Vanadium Oxide Nanocomposites as Hybrid Materials *Sugam J Shivhare, Supriya Vyas and Vivekanand S. Bagal*
PP-66	Electrodeposition of Adherent Nano-Ni Coating on Al *Jalaj Varshney, Vivek Pachchigar, Subir Kumar Ghosh and Vivekanand Kain*
PP-67	Selective detection of SO_2 and H_2S gas by AC impedance studies *Sipra Choudhury, C. A. Betty, Priti Yadav*
PP-68	In situ preparation of BiOI/BiOCl junction for enhanced photocatalytic degradation of RhB *Malay Chakraborty, Kamal Kanti Bera, Swapan Kumar Bhattacharya*
PP-69	Ferrocene functionalized PAMAM dendrimer encapsulated with gold nanoparticles and its electrochemical sensing of 4-aminophenol *M. Elancheziyan and S. Senthilkumar*
PP-70	Quaternary Ammonium Based Carboxyl Functionalized Ionic Liquid for Covalent Immobilization of Horseradish Peroxidase and Development of Electrochemical Hydrogen Peroxide Biosensor *M. Murphy, K. Thenmozhi and S. Senthilkumar*
PP-71	Cobalt Tungsten Oxide Hydroxide Hydrate on DNA Scaffold: Bi-Functional catalyst for Oxygen Evolution Reaction and Biomass conversion *Sangeetha Kumaravel*
PP-72	Effect of alkynediols on the interfacial pH and morphological evolution during the electrodeposition of cobalt *M. Kiruba and C. Jeyabharathi*
PP-73	Theory for Admittance Voltammetry of Reversible Electron Transfer Process at Rough and Fractal Electrodes *Manish Kumar, Rama Kant*
PP-74	High Efficiency Dye-sensitized Solar Cells with VOC-JSC Trade off Eradication by Interfacial Engineering of Photoanode|electrolyte Interface *G. Anantharaj, S. Anantharaj, S. karuppuchammy, V. Saranyan*
PP-75	In-situ pyrolytic synthesis of zinc stannate-graphitic carbon nitride nanohybrid and its analytical performance in electrochemical detection of nitrobenzene *S.Vinoth, P. Mary Rajaitha, R.Ramaraj and A.Pandikumar*

PP-76	Ruthenium bipyridine interacted graphene oxide architectured biosensor platform for diagnosis of dengue infection biomarker *Pandiyaraj Kanagavalli, Gaurav Pandey, Murugan Veerapandian*
PP-77	Fabrication of TiO_2 covered $BaSnO_3$ Based Photoanode for Dye-Sensitized Solar Cells *K. B. Bhojanaa and A. Pandikumar*
PP-78	Un-usual Electrochemistry and Solid-state Electrochemiluminescence of Electrochemically Immobilized Ru (bpy) $_3^{2+}$ on Nafion coated Nanoporous gold electrode *Chikkili Venkateswara Raju and Shanmugam Senthil Kumar*
PP-79	Electrochemical investigations on Cobalt dissolution in glycine for chemical mechanical planarization applications *Twinkle Paul, Ankitha Theres George*
PP-80	Facile synthesis and gas sensing studies of Ni doped SnO_2 nanoparticles *Mital Nanda, Soumitra Das, K.G. Girija and R.K. Vatsa*
PP-81	Electrochemical Detection of Alloxan on Reduced Graphene oxide Modified Glassy Carbon Electrode *Selvaraj Paramasivam, Chikkili Venkateswara Raju, Sandhu Hemalatha, Jayaraman Mathiyarasu and Shanmugam Senthil Kumar*
PP-82	Effect of Diamond Particle Incorporation on Hardness and Corrosion Behaviour of NiW-Diamond Nanocomposite Coatings *Charu Srivastava*
PP-83	Electrochemical detection and degradation carbendazim at graphene oxide modified electrode and its environmental applications *Abhishek Madiwalar, Madhumati S. Dhaduti, Davalasab Ilager, Nagaraj P. Shetti*
PP-84	A novel electrochemical sensor based on the $Fe.WO_3$ and cationic surfactant for the detection and degradation of paraquat *Srikar S. Bandekar, Madhumati S. Dhaduti, Davalasab Ilager, Nagaraj P. Shetti*
PP-85	Coreshell modified electrochemical sensor for the detection of fungicide, Carbendazim and its environmental applications *Anusha M. Tashikhani, Madhumati S. Dhaduti, Davalasab Ilager, Nagaraj P. Shetti*
PP-86	Potentiostatic Regeneration of Oxygen Reduction Activity in MnOx @ Graphene Hybrid Nanostructures *Swarna P Mantry, Biswaranjan D Mohapatra, Nibedita Behera, Patitapaban Mishra, Purnendu Parhi, Kumar S. K. Varadwaj*
PP-87	Modeling of corrosion inhibiting molecule like benzotriazole on copper using atomistic simulations *Unnimaya K P, Shekhar Hansda*

PP-88	Electrodeposition of Samarium-Nickel Alloy Using Choline Chloride-Ethylene Glycol Eutectic Mixture *C. Andrew, V. Rajendran, M. Jayakumar*
PP-89	Graphite Oxide Bulk Modified Carbon Paste Electrode: Nanomolar Real Sample Sensor for the Epinephrine in Ternary Mixtures *Teena Joseph and Nygil Thomas*
PP-90	Numerical Analysis on Electrochemical Frequency Modulation (EFM) Technique: Effect of Solution Resistance and Double Layer Capacitance *P. M. Ranjith, A. K. Tangirala, S. Ramanathan*
PP-91	A Study of Phthalocyanines as an effective corrosion inhibitor for Copper *Amuthan D, Shivakami AR*
PP-92	A facile and novel synthesis of Molybdenum based MXene (MoXene) For electrochemical pseudo-capacitor *Ankur Gupta*
PP-93	Ion Selective electrode determination of fluoride and chloride in graphite *Harshala Parab, Niyoti Shenoy, Madhusudan Ghosh, Kallola Swain and Sangita D. Kumar*
PP-94	Dissolution and redox speciation of Uranium matrices in Citrate-Malonic acid based DES. *Ashutosh Srivastava, Manjulata Sahu, Ritu Singh, Neetika Rawat, M.K.Saxena*
PP-95	Electrospun Polymer-MWCNT based Composite Carbon Nanofibers for Electrochemical Supercapacitor Applications *Ashish Gupta, Mandeep Singh, S R Dhakate*
PP-96	Electrochemistry of Actinide Fluorides in LKE Melt *Abhishek Kumar Rai, Renu Agarwal*
PP-97	Study of highly porous biowastes derived carbon via microwave assisted activation route as an electrode for supercapacitor applications *Prashant Dubey, Vishal Shrivastav, Shashank Sundriyal and Priyanka H. Maheshwari*
PP-98	Enhanced Electro-chemical behavior using Pore Formers in Carbon Papers and its performance as PEMFC Electrode *Sadiya Waseem, A.K. Sahu, Sanjay Dhakate*
PP-99	Lignin-PVA based carbon nano-fibers mats as binder-free electrodes for high performance supercapacitors *Mandeep Singh, Ashish Gupta, S R Dhakate,Shashank Sundriyal*
PP-100	Sulfur doped g-C_3N_4 as an effective electrochemical platform for immunosensing applications *Arunkumar Sakthivel, Mohanraj Sadasivam, Pandiaraj Manickam and Subbiah Alwarappan*

PP-101	Trace analysis of Carbendazim using carbon nanotubes-calcium doped zinc oxide modified carbon electrode *Keerthi Prabhu K, Shweta J. Malode, Nagaraj P. Shetti*
PP-102	Dendrite Preventing Role of Zn^{2+}-Integrated Ionomer Membrane:A Step towards Stable Cycling of Zinc Metal Battery *Meena Ghosh, Vidyanand Vijayakumar, Sreekumar Kurungot*
PP-103	Sucrose Assisted Rapid Synthesis of Multifunctional $CrVO_4$ Nanoparticles: A New High Performance Cathode Material for Lithium ion batteries *Shreenivasa L, Yogeeshwari R.T, Viswanatha R, Yogesh K, Ashoka S*
PP-104	Sulfur doped g-C_3N_4 as an effective electrochemical platform for acetaminophen sensing *Arunkumar Sakthivel, Pandiaraj Manickam and Subbiah Alwarappan*
PP-105	MoS_2 nanosheets decorated MWCNTs based electrochemical detection of 4-Nitrophenol *M. Dinesh, K. Muthumalai, Yuvaraj Haldorai, R. T. Rajendra Kumar*
PP-106	A significantly responsive and high specific capacitance Cobalt and Nickel Metal-organic frameworks as more promising electrode materials for Supercapacitor applications *Omkaramurthy B M, Krishnamurthy G and Sabine Foro*
PP-107	Selective additions of g-C_3N_4 to $InVO_4$ Semiconductor For Superior Photocatalytic & Photoelectrochemical Applications *Debasis Sariket and Chinmoy Bhattacharya*
PP-108	Study the effect of aqueous electrolytes on supercapacitive performance of glycol mediated $CoFe_2O_4$ nanoparticles *Barkha Rani*
PP-109	Synthesis of Cobalt doped cerium oxide on Reduced graphene oxide for capacitance storage and sensing of L-cystine *Veeresha G, Shivakumar M S,Mylarappa M*
PP-110	A novel electrochemical sensor based on Ca-ZnO for the determination of anti-viral drug, acyclovir and its analytical application *Vinoda Shivanand, Davalasab Ilager, Veena J. Badiger, Adarh G. Mirajkar, Nagaraj P. Shetti*
PP-111	Synthesis of Novel Cerium-DPTU Metal-organic frameworks and studies on Supercapacitor applications *Manjunath. K*
PP-112	Enhancement of electrochemical properties of commercial carbon cloth by electrochemical activation for supercapacitor application *Chirag Mevada, Mausumi Mukhopadhyay*

PP-113	influence of media pH in chloride and sulphate ion concentrations on corrosion behaviour of AZ31 Magnesium alloy *M Gururaj Acharya, A Nityananda Shetty*
PP-114	Electrochemical analysis of $FePO_4$ Spherical Nano Particles as Efficient Negative Electrode Material for Hybrid Supercapacitors *S. Suvetha, N. Priyadharsini*
PP-115	Investigation of kinetic parameters of the V^{2+}/V^{3+} and VO^{2+}/VO^{2+} redox-reactions on carbon-based catalysts for vanadium redox flow battery *Pradipkumar Leuaa and Manoj Neergat*
PP-116	Effect of dopants on the structural and electrochemical properties of Li-rich layered-layered cathode *P P Dahiya, C Ghanty, S Basu and S B Majumder*
PP-117	A triazine -based porous organic polymer electrolyte for all-solid-state-lithium batteries *Baby Dhanalakshmi.R*
PP-118	Evaluation of self discharge characterstics for Lithium-Sulfur batteries with different electrolyte additives *Baby Dhanalakshmi.R*
PP-119	Electrodeposition of 106Ru on silver surface towards preparation of brachytherapy source for eye cancer treatment *Prithwish Sinharoy, Dayamoy Banerjee, Smitha Manohar, C P Kaushik*
PP-120	Chloride analysis in saliva: Application of ion selective electrode *Niyoti Shenoy, Harshala Parab and Sangita D. Kumar*
PP-121	Electro catalytic activity and electrochemical super capacitor application of Nano sized $BaTiO_3$ @CPE electrode: Synthesis and characterisation *K V Jagannath ,M Kusuma*
PP-122	Electrochemical behavior of diclofenac sodium at core shell nanostructure modified glassy carbon electrode *Niharika C. Honakeri, Shweta J. Malode, Nagaraj P. Shetti*
PP-123	Facile synthesis of silver nanoparticle-decorated Zinc Oxide nanocomposite based pencil graphite modified electrode for selective electrochemical determination of nitrite *Shridevi Salagarea, Prashanth S. Adarakattib, Yarradoddappa Venkataramanappaahanth S. Adarakattib, Yarradoddappa Venkataramanappaa*
PP-124	Spironolactone, a steroidal antiandrogen: Voltammetric detection and biological application employing graphene based sensor *Nikita Agrawal, Suyash Mane, Sanghamitra Chatterjee*

PP-125	Electrochemical sensor based on graphene oxide nanoparticles for the detection of an antihistamine drug *V. Keerthi , Manu T.M., Nagaraj P. Shetti*
PP-126	A Biodegradable Polymer Composite Electrode Platform for Capacitive Energy Storage *Kirti*
PP-127	Voltammetric behaviour of paracetamol at nanoclay modified graphite electrode *Rakesh Sawkar, Davalasab Ilager, Suresh M. Tuwar, Nagaraj P. Shetti*
PP-128	Evaluation of a Pt/C/Nafion Membrane Electrode Assembly for CuCl/HCl Electrolysis *Shruti Aich, Atindra Mohan Banerjee, M. R. Pai and A. K. Tripathi*
PP-129	Synthesis and Electrochemical Studies of a Series of Novel indole-4-hydroxy-chromen-2-ones *RAMESH K B*
PP-130	Fabrication of Flexible V_2O_5 Thin Film Electrodes with Superior Supercapacitor Performances *Ramasamy Velmurugan, Mani Ulaganathan,Balasubramanian Subramanian*
PP-131	Electrochemical surface plasmon resonance based sensor for detection of cancer biomarker alpha-fetoprotein: Evaluation of different sensor surface modification strategies. *Bhawana Thakur, C. A. Amarnath and S. N. Sawant*
PP-132	Evaluation of $BiVO_4$ for Efficient Electrocatalytic H_2O_2 Production *Ashish Nadar, Deepa Khushalani*
PP-133	Magnesium decorated Nickel hydroxide nanoflakes supported on NiO foam for effective electrooxidation of methanol and ethanol *divya catherin*
PP-134	Feâ€"containing structurally integrated positive electrode materials for Lithium-ion batteries *Harsha E., Ammu Surendran, Aswathi T., Aiswarya Bhaskar*
PP-135	Carbon nanofiber/Polyaniline/ZIF_8 composite as a novel electrode material for trace level nitrite measurement *Suma B P and Pandurangappa M*
PP-136	Bi-Fe-O based negative electrodes for intercalation batteries *Ammu Surendran, Harsha E., Aswathi T., Aiswarya Bhaskar*
PP-137	Understanding the changes in electrical and structural properties of Silica doped NASICON based glass electrolyte materials *Shweta R. Keshri,Sudheer Ganisetti,Saswata Chakraborty,Narendar Nasani,Sathravada Balaji,K. Annapurna,Amarnath R. Allu*
PP-138	Development of silver-doped TiO_2 modified electrochemical sensor for the determination of mefenamic acid *Suresh M. Tuwar, Davalasab Ilager, Nagaraj P. Shetti*

PP-139	Microwave assisted synthesis of Ni-Co core-shell nanostructure and their elelctrochemical evaluation as Alcohol oxidation catalyst *S.Mohanapriya and Subbiah Alwarappan*
PP-140	Improvised electrochromic response and eliminating Electrochromic Degradation in Amorphous TiO_2 by Ion assisted pulsed DC unbalanced confocal magnetron sputtering *Balamurugan K*
PP-141	Synthesis of rare earth (Pr, Nd, Sm, and Gd) oxides nanorods and their electrocatalytic ORR activity for H_2O_2 production *Ipsha Hota, Purnendu Parhi*
PP-142	Electrochemical Discrimination of Spermine and spermidine Via. Non Enzymatic Approach *A. Esokkiya, S. Sudalaimani, C. Suresh*
PP-143	Ion-transfer Voltammetry as an Electrochemical Tool for sensing of cadaverine and putrescine *Sudalamani.S, Esokkiya. A, Suresh.C, Giribabu.K*
PP-144	An approach towards the Development of Reversible Dual-ion Battery in an aqueous electrolyte *Asis Sethi,Anil Kumar U*
PP-145	Bio-carbon added NiS as a potential anode material for lithium-ion batteries *V. Mullaivananathan, Shakkeel N.K, N. Kalaiselvi*
PP-146	Evaluation of Platinum coating on stainless steel by Electrodeposition method *Bharath K Devendra*
PP-147	Simplistic synthesis of Ni based Metal Organic Framework(MOF) and its attempt for Sodium ion battery anode *Gokulnath S, Neethu KS, Kalaiselvi N*
PP-148	Sucrose-thiourea derived hard carbon as electrode material in supercapacitor *K. S. Neethu, N. Kalaiselvi*
PP-149	An electrochemical approach for the synthesis of pyron[2,3,4-de] chromene-2-one and its derivatives through C-H activation *Neetu Verma,Manisha Malviya And Ram Sagar*
PP-150	Catalytic activity of Molybdenum disulphide towards water splitting reaction for a greener source of Hydrogen *Debittree Choudhury*
PP-151	Electrochemical Investigation of Ciprofloxacin and its Interaction with dsDNA *P. R. Ipte, H. Pal and A. K. Satpati*

PP-152	Effect of sulphuric acid on L cysteine functionalized Î±-MnO_2 urchin rods *C.Revathi, R.Selvakumar*
PP-153	Evaluation of Electrocatalytic Hydrogen Generation by V(III)-EDTA Complex *D. Majumder, K. K. Bairwa and V. S. Tripathi*
PP-154	Synthesis of zirconium diboride and its application in the protection of stainless steel surface in a harsh environment *Krishna Kumar Yadav, Sujit Kumar Guchhait, Sunaina, Ankush, C. M. Hussain, Ashok K. Ganguli, Menaka Jha*
PP-155	Facile synthesis of silver nanoparticles on RGO support and its application as H_2O_2 sensor. *Jagdish Chandrakant Bhangoji.*
PP-156	Cyclic carbonate tethered poly (allyl ether) based gel polymer electrolyte for high voltage lithium metal battery *V. Vijayakumar, J.R. Nair, M. Winter, K. Sreekumar*
PP-157	Trace level determination of Silica and Chloride in steam and water, Borate ion concentration in water samples by ion chromatography *S V Ramachandra Rao*
PP-158	Electrodeposition of Ni-Fe alloy on mild steel *Praveen BM*
PP-159	Tuning Molecular Interactions For Highly Reproducible and Stable Carbon Based Mixed-Cation Hybrid Lead Halide Perovskite Solar Cells: Towards Commercialization *Kavya S. Keremane, Subodh G. Mhaisalkar*
PP-160	Synthesis and Characterization of Ceria based Material as a Catalyst for Soot Oxidation Activity *Varsha Mavath, Sunaina Patil, Irfana Shajahan*
PP-161	Dilatometer Studies of Praseodymium Doped Ceria Based Electrolyte Material For It-Sofc *Shweta Ganiger, Irfana Shajahan, Sunaina Patil and Hari Prasad Dasari*
PP-162	High Performance Symmetric Supercapacitor based on Nitrogen doped Reduced Graphene Oxide *Sahil Thareja, Anil Kumar*
PP-163	Electroanalysis of fungicide, carbendazim using RGO-TiO_2 nanoparticle modified carbon paste electrode *Prabhanjan Umadi, Nagaraj P. Shetti, Davalasab Ilager, R. M. Kulkarni*
PP-164	Fe Doped Nickel Hydroxide/Nickel Oxyhydroxide Function as an Efficient Catalyst for Oxygen Evolution Reaction *Chavi Mahala, Mamta Devi Sharma, Mrinmoyee Basu*

PP-165	Synthesis and Characterization of Niobium Doped Ceria Based Solid Electrolytes *Sahana Naik, Sunaina Patil, Irfana Shajahan and Hari Prasad Dasari*
PP-166	Control synthesis of porous Ni(II) oxide nanoparticles for efficient supercapacitor application *Sujit Chatterjee, Malay Chakraborty, Apurba Ray, Sachindranath Das, Swapan Kumar Bhattacharya*
PP-167	Development of in-situ g-C_3N_4 â€“ $BiVO_4$ semiconductor composites for applications in photoelectrochemical Water Splitting *Sangeeta Ghosh and Chinmoy Bhattacharya*
PP-168	Graphene/ZnO Modified Carbon Paste Electrode as an Effective Electrocatalyst for the Oxidation of Dopamine *Nygil Thomas*
PP-169	Development of a High Energy - Power Density Lithium Ion Hybrid Capacitor using Boron Doped Graphene Nanosheets as Anode and Acid Activated Rice Husk as cathode *Udita Bhattacharjee, Naresh Vangapally, Sourav Ghosh, Surendra K. Martha*
PP-170	Development of Low-Cost Methods for Recycling Graphite Anode from Spent Lithium-Ion Batteries *Madhushri Bhar, Sourav Ghosh, Satheesh Krishnamurthy, Y. Kaliprasad, Surendra K. Martha*
PP-171	Electrodeposited thin sheets of Ni composite with high activity and durability for hydrogen evolution reaction in alkaline water electrolysis *Divya Rathore*
PP-172	Camparative study of binder free 2D aligned efficient MnO_2 micro flowers and biomediated green synthesis of MnO_2 nanoparticles for enhancing electrochemical performance. *Rutuja Anilkumar Chavan*
PP-173	Band Gap Tuning to Improve the Photoanodic Activity of ZnInxSy for Photoelectrochemical Water Splitting *Mamta Devi Sharma, Chavi Mahala*
PP-174	An electrochemical sensor for paracetamol at core shell modified carbon paste electrode an analytical application *Hariprasad Khasnis, Nagaraj P. Shetti, Davalasab Ilager, R. M. Kulkarni*
PP-175	Functionalized graphene oxide as a new generation corrosion inhibitor: DFT and experimental approach *Rajeev Kumar Guptaa, Manisha Malviyaa, K.R. Ansarib, H. Lgazc, D.S. Chauhanb, M. A. Quraishib*

PP-176	Hydrothermal synthesis of Zr-amino terepthalate and its composite with MWCNTs as a novel electrode material in nitrite quantification *Suma B P and Pandurangappa M*
PP-177	Influence of Cu ion Concentration on Optoelectronic and Photovoltaic Performance of Zn1-xCu_2xSe Thin Films: A Facile Hydrothermal Strategy *Satish S. Patil, Rahul M. Mane, Chaitali S. Bagade, Suvarta D.Kharade, Monika P.Joshi, Kishorkumar V.Khot*
PP-178	Probing the role of deposition time in tuning the physico-chemical, optoelectronic performance of Cu_2SnS_3 thin films *Monika P. Joshi, Kishorkumar V. Khot, Suvarta D. Kharade, Chaitali S. Bagade, Rahul M. Mane, Popatrao N. Bhosale*
PP-179	Battery-Pack design methodologies dedicated for mitigation of catastrophic Thermal Runaway Propagation in Lithium-ion batteries: A Review *Nandini K Usha K Venugopalan S*
PP-180	Li-Ion Cell Balancing With In House Developed Cell Balancing Electronics -Hybrid Micro Circuit (Cbe-Hmc) *Sushma H R, Ananda S, M Pramod, M.S Srinivasan, Sankaran M*
PP-181	Ni-Mo catalyst on activated carbon support for the electro-oxidation of methanol in acidic and alkaline media *Almeida Jennefer Tricia and Narvekar apurva*
PP-182	Electrodeposition - An effective and economic technique for the fabrication of CIGS thin film solar cells *Divya Boosagulla, Sreekanth Mandati, Ramachandraiah Allikayala, Bulusu V Sarada*
PP-183	Effect of Magnetic Field on the Electrodeposition of Ni-Cd Alloy Coating *Neethu Raveendran M*
PP-184	Porous Multi-Channel Carbon Nanofiber Electrodes for High Performance Supercapacitors using Waste Expanded Polystyrene *Ishita and Dr Richa Singhal*
PP-185	RGO-TiO_2 modified sensor for the determination of antihistamine, Cetirizine an analytical application *Farina M. Nadaf, Nagaraj P. Shetti, Davalasab Ilager, R. M. Kulkarni*
PP-186	Rational design of a coupled confronting Z-scheme system for energy production with removal of dye and antibiotic *Debasmita Kandi*
PP-187	Nitrogen and Sulphur doped Graphene Oxide Support for electrocatalysis of Methanol Oxidation reaction *Arti Krishnanand Naik*

PP-188	Rational Design of a novel ternary One Pot Architectured Au Promoted MoS_2/$ZnIn_2S_4$ p-n heterojunction photocatalyst towards energy and environment *Gayatri Swain*
PP-189	Z-scheme dictated WO_3-X/Ag /ZnCr layered double hydroxide (LDH) synergistically visible light induced photocatalyst towards energy and environmental applications *Dipti Prava Sahoo and Kulamani Parida*
PP-190	Oxygen Vacancy enriched BiOI/$PbTiO_3$ p-n junction: An efficient catalyst towards antibiotic degradation *Lekha Paramanik*
PP-191	Assessment on the Soil Corrosivity to Buried-Metallic Pipes in Kirtipur Municipality (Nepal) *Kumar Prasad Dahal, Jhalak Narayan Timilsena, Madhav Gautam, Jagadeesh Bhattarai*
PP-192	Synthesis and characterisation of nitrogen-doped graphene oxide for sodium-ion batteries *Sakli Firdosh Aslam*
PP-193	Utilization of Carbon Dioxide to Useful Chemicals by Electrocatalytic Reduction on Nanostructured Copper Surface *Saudagar B. Dongare, Neetu Singh, and Haripada Bhunia*
PP-194	A simple sonochemical assisted synthesis of nanocomposite (ZnO/MWCNTs) for electrochemical sensing of Epinephrine in human serum and pharmaceutical formulation *P Shaikshavali, T Venu gopal, G.Venkata prasad*
PP-195	A facile synthesis of Fe_3O_4-Gr nanocomposite and its effective use as electrochemical sensor for the determination of dopamine and as anode material in lithium ion batteries *G. Venkataprasad, T. Madhusudana Reddy, A. Lakshmi Narayana, O. M. Hussain, P. Shaikshavali, T. Venu Gopal and P. Gopal*
PP-196	Environmental analysis of fungicide carbendazim using TiO_2 nanoparticle modified carbon paste electrode *Aishwarya K. S., Davalasab Ilager, Vinoda. Shivanada, Nagaraj P. Shetti*
PP-197	Electro-oxidation of famotidine at nanoclay based electrode and its analytical applications *Pramod R. Vernekar, Nagaraj P. Shetti*
PP-198	Assembly and testing of WC/C coated metal monopolar plate based fuel cell stack *V.A.Faizal; N.Murugesan; H.N.Jena; V.Jayaraman*

PP-199	Effect of Nafion ionomer content in the catalyst layer of diffusion electrodes on the performance of proton exchange membrane fuel cells *V.A.Faizal; N.Murugesan; Hrudanada Jena; V.Jayaraman*
PP-200	Tunable heterojunction using conducting polymer for Photovoltaic Application *Sunil Luhar*
PP-201	Outstanding performance of Dye Sensitized Solar Cell with Ag deposited Titania using N_3 dye sensitizer *Sayantani Bhattacharya*
PP-202	Effective capacitance (Ceff) from constant phase element (CPE) as a tool for studying the corrosion mechanisms *V. I. Chukwuike and R. C. Barik*
PP-203	Assembly and functional demonstration of open cathode proton exchange membrane fuel cell stack for cold trap regeneration *N. Murugesan, V.A.Faizal, Hrudananda Jena and V.Jayaraman*
PP-204	A novel ternary $NiFe_2O_4$@P-doped g-C_3N_4 nanocomposite producing appreciable H_2 energy with a good amount of photocurrent. *Priti Mishra*
PP-205	Voltammetric determination of methdilazine using eriochrome black-T modified electrode *Ritika Hurkadli, Davalasab Ilager, Nagaraj P. Shetti*
PP-206	Amberlite XAD-4 modified electrode for nimesulide and detection in spiked human urine analysis *Sushmitha M. Badiger, Fardeen khan, Sanjota M. Patil, Nagaraj P. Shetti*
PP-207	Fe.WO_3 and CTAB composite modified sensor foe the determination of nosteroidal anti-inflammatory drug *Shaheen Contractor, Davalasab Ilager, Nagaraj P. Shetti*
PP-208	Development of g-C_3N_4 modified electrode for the determination of aclonifen and its environmental application *Sujay Kulkarni, Davalasab Ilager, Nagaraj P. Shetti*
PP-209	Development of TiO_2 and clay nanoparticle composite electrode for the detection of atorvastatin *Vivek C. Shet, Shikandar D. B., Nagaraj P. Shetti*
PP-210	Reduced Graphene Oxide (rGO) supported Pd-Ru bimetallic nanocomposite for High performance Supercapacitor Applications *Y.Veera Manohara Reddy, N. Guru Prakash , B.Sravani , O.M. Hussain , K.Anitha , G.Madhavi*
PP-211	Electro oxidation of nimesulide at graphene oxide and reduced graphene oxide modified carbon paste electrode *Sure saipavankumar, Davalasab Ilager , Nagaraj P. Shetti*

PP-212	Development of Hf.WO_3 modified sensor for the determination of ambroxol and its analytical application *Akshay B.M., Davalasab Ilager, Nagaraj P. Shetti*
PP-213	A novel electrochemical sensor based on the Fe.WO_3 and cationic surfactant for the detection and degradation of amitrole *Dhanush K., Davalasab Ilager , Nagaraj P. Shetti*
PP-214	Bismuth-nanoparticles decorated multi-wall-carbon-nanotubes cast-coated on carbon paste electrode; an electrochemical sensor for sensitive determination of Gallic Acid at neutral pH *Madhusudhana, Manasa G, Arvind K Bhakta, Zineb Mekhalif, Ronald J Mascarenhas,*
PP-215	g-C_3N_4 and cationic surfactant based electrochemical sensor for the detection of insecticide methyl parathion *Darshan I. Panchangmath, Madhumati S. Dhaduti, Davalasab Ilager, Nagaraj P. Shetti*
PP-216	Polythiophene-PCBM Based All-Organic Electrochromic Device: Fast and Flexible *Anjali Chaudhary*
PP-217	Bentonite clay modified electrode for the determination of cetirizine hydrochloride and its analytical applications *Rutuja R. Patil, Manu T.M., Nagaraj P. Shetti*
PP-218	Voltammetric behavior of carbendazim at WO_3.0.33H_2O modified carbon paste electrode an environmental application *Harsha U. Arkasali, Nagaraj P. Shetti, Davalasab Ilager*
PP-219	Development of Corrosion Resistant Zirconia Coatings on Stainless Steel by Hydrothermal Process for Application in AHWR/BWR *Nidhi Garg, Santanu Bera*
PP-220	Development of graphene oxide modified sensor for the determination of hydrochlorothiazide *Raksha Hulagi, Manu T.M., Nagaraj P. Shetti*
PP-221	Electrochemical detection of mefenamic acid at 10% Mg-Zno modified electrode and its analytical application *Vikram Hattiholi, Nagaraj P Shetti*
PP-222	A novel sensor for a anti-inflammatory, theophylline drug at TiO_2 nanoparticles modified electrode *Ramesh S. Malladi, Nagaraj P. Shetti*
PP-223	Mesoporous carbon material derived from teak wood and its composite with molybdenum sulphide for electrochemical oxygen reduction *Piyush Kumar Sonkar and Vellaichamy Ganesan*
PP-224	Proton Conducting Graphene Membrane Electrode Assembly for High Performance Hydrogen Fuel Cell *Manu Gautam*

PP-225	Electrochemical evaluation of Argon ion beam treated hydroxyapatite thin film for biomedical application *Md shahid Deep shikha Sanjay Kumar Sinha*
PP-226	An efficient electrochemical detection of Bisphenol A using novel silver oxide (Ag_2O) nanocubes *Urmila Chakraborty, Gaurav Bhanjana, Gurpreet Kaur, Ganga Ram Chaudhary*
PP-227	Electrochemical determination of an antihistamine drug, cetirizine at nano-clay modified Electrode *Shivangi V. Vadavadagi, Davalasab Ilager, Nagaraj P. Shetti*
PP-228	Development of Æ³-Fe_2O_3 nanoparticles and clay composite modified sensor for the detection of thiosalicylic acid *Veena S. Wali, Davalasab Ilager, Nagaraj P. Shetti*
PP-229	Development of g-C_3N_3 and cationic surfactant modified sensor for the detction of herbicide, amitrole an environmental application *Sushanth S. Naik, Nagaraj P. Shetti, Davalasab Ilager*
PP-230	Detection of herbicide, molinate at ZnO nanoparticles modified electrode and its environmental application *Vijayalaxmi M., Davalasab Ilager, Nagaraj P. Shetti*
PP-231	Assessment of anti-corrosive performance of synthesised Hafnium based cationic metallosurfactant on iron surface in saline media and simulated sea media *Harshal Mehta, Gurpreet Kaur, Ganga Ram Chaudhary*
PP-232	Development of L-Valine film by electrochemical polymerization process onto the surface of carbon paste electrode for Chronamperometric detection of environmentally hazardous 4-amino phenol *T. Venu Gopal, T. Madhusudana Reddy, P. Shaikshavali, G. Venkataprasad and P. Gopal*
PP-233	Tetrabutylammonium Tetrachloroferrate (III) Complex Derived Fe_3C/Fe Decorated Carbon for Efficient Oxygen Reduction Reaction *Debojit Ghosh, Rumeli Banerjee and Papu Biswas*
PP-234	Electrochemical and Electron Spectroscopy Investigation on Quaternary Semiconductor Cu_2XSnS_4 (X= Ni, Co, Fe, Mn, Cd) Nanocrystals for the Solar Cell Application *Yogesh A. Jadhav, Pragati R. Thakur, Santosh K. Haram*
PP-235	Polyoxometalate with carbon composite for oxygen reduction reaction *Sagar Ingavale, Bhalchandra Kakade*
PP-236	Functional Alkoxysilane Mediated Controlled Synthesis of Prussian blue nanoparticles, Enabling Silica Alginate Bead Development; Nanomaterial for Selective Electrochemical Sensing *P C Pandey, Shwarnima Singh and Shilpa N. Sawant*

PP-237	Nano molar detection of clozapine at ruthenium doped TiO_2 nanoparticles modified electrode *Laxmi Killedar, Davalasab Ilager, Nagaraj P. Shetti*
PP-238	Hydrothermally Synthesized MoS_2 Nanoclusters for Hydrogen Evolution Reaction *Shanu Mishra, Ashish Kumar Mishra*
PP-239	Scalable fabrication of flexible Interdigital micro-supercapacitor and shape memory supercapacitor using highly conductive PVA-TEOS-PPy nanocomposite material *Anand Torvi, M.Y. Kariduraganavar*
PP-240	Study of Mo based electrochemically active material for sodium ion battery applications *Kruti K. Halankara, Balaji P Mandalab, and A. K. Tyagi*
PP-241	The influence of $MnFe_2O_4$ on the cycling behaviour of lithium-sulfur batteries *Deepa Elizabeth Mathewa,c, G. Jenita Ranid, Sabu Thomasb, A Manuel Stephan*
PP-242	Determination of Radiochemical Purity of Reactor produced I-131 by Electrophoresis Technique *SurekhaSane & Ashutosh Dash*
PP-243	Effect of Addition of Ceric Sulphate on Corrosion Behaviour of Ni-Mo Alloy Coatings *Cindrella N. Gonsalves and A. Chitharanjan Hegde*

Oral Presentation

OP-001	Amberlite XAD-4 resin and Ag-TiO_2/XAD modified electrode for the determination of flufenamic acid *Sampada Patawari, Manu. T. M., Nagaraj P. Shetti*
OP-002	Electrochemical behavior of carbendazim at WO_3. $0.33H_2O$ modified glassy carbon electrode *Davalasab Ilager, Nagaraj P. Shetti, Shanakara S. Kalanur*
OP-003	Intercalation Pseudocapacitance at Enhanced van der Waals Gaps of Nanotubular Bi_2Se_3 Matrix through MnO_2 Incorporation: A Novel Route to High Electrochemical Energy Storage *Rishika Chakraborty, Mukul Pradhan*
OP-004	Fiber-on-Plane Flexible solid-state supercapacitor device for energy storage: Modelling and Simulation using COMSOL Multi-Physics *Rigved Samant*
OP-005	Mineralization of Picric Acid Contaminated Water by Electrolytic Method *Ratanesh Kumar, P. B. Wagh, S V Ingale, R. P. Patel, Praveen Kumar, K. D. Joshi and Manmohan Kumar*
OP-006	Kinetic Study of the photocharged BiVO4 and Co-Bi modified BiVO4 *Sriram Kumar and Ashis Kumar Satpati*

OP-007	Electrochemistry a tool for fabrication of nanomaterial based biosensors *Bhawna Batra, Vijay Kalra, Minakshi Sharma, JS Rana*
OP-008	Light-induced plating of Ni as a seed layer and investigation of nickel silicide phase formation for silicon solar cell metallization *Divya Priyadarshani*
OP-009	Electrochemical degradation of 4-aminophenol on ferus sulphide/CNT modified glassy carbon electrode *Mohammad A. Hasnat, Iqbal A. Siddiquey, Md. Tarikul Islam*
OP-010	Enhancement in electrochemical performance of carbon nanotubes @ chitosan film based biosensor for ultrasensitive determination of atropine in biological fluids and leaf extract of Datura stramonium *Suyash Mane, Sanghamitra Chatterjee*
OP-011	Hafnium doped tungsten oxide (Hf-WO_3) modified sensor for the determination of paracetamol *Mahesh M. Shanbhag, Nagaraj P. Shetti*
OP-012	Synthesis and Investigation of Electrochemical Properties of Bismuth Nanoparticles *Nishu Devi, Kaushik Mallick*
OP-013	Optical biosensor comprising of immobilized bio-hybrid on microplate for detection of methyl parathion pesticide *Archana Mishra, Jitendra Kumar and Jose Savio Melo*
OP-014	Characterization of Li-ion Batteries by Nonlinear Electrochemical Impedance Spectroscopy *Rajesh Pachimatla and Ramanathan S*
OP-015	Maghemite/MWCNT-bulk modified carbon paste electrode and its synergistic effect for hypersensitive DPV quantification of Resorcinol an endocrine disruptor *Manasa .G, Ronald J Mascarenhas, Arvind K Bhakta & Zineb Mekhalif*
OP-016	Electrochemically reduced GO-CNT Nanocomposite as a sensitive probe for in-vitro detection of Nitrofurantoin in biological fluids *Shekher Kummari, V. Sunil Kumar, K. Vengatajalabathy Gobi*
OP-017	High-Performance PbO_2-Carbon Hybrid Ultracapacitor by using Peltophorum -Pterocarpum Leaves Derived Carbon as Negative Active Material *Sadananda Muduli, Naresh k. Rotte*
OP-018	Fabrication of the porous $NiCo_2O_4$ microsphere on flexible stainless-steel mesh as an electrode for asymmetric supercapacitors *Gokul P. Kamble, Rutuja A. Chavan, Seema A. Mane, Sanjay S. Kolekar, and Anil V. Ghule*
OP-019	Sintering Mechanism for the early stage sintering of Praseodymium Doped Ceria *Irfana Shajahan, Michelle Amin, Jessina Cherry, Ashish Kumar and Hari Prasad Dasari*

OP-020	Controlled structure of Lithium Cobalt Oxide for Li-ion battery *Parbhej Ahamed and Mohammad A Yousuf*
OP-021	Preparation and Characterizations of Bi-Mo-based metal oxide semiconductors for photoelectrochemical applications *Swarnendu Baduri, Jitendra Kumar Singh, Han-Seung Lee and Chinmoy Bhattacharya*
OP-022	Pt and Pt-M nanoparticles decorated on waste drug derived N-doped carbon support for polymer electrolyte membrane fuel cells application *Dipsikha Ganguly, Kothandaraman Ramanujam , Sundara Ramaprabhu*
OP-023	Advanced Electrode Material for Na-ion Battery *Ayan Mukherjee and Malachi Noked*
OP-024	Phosphide protected FeS_2 anchored CeO_2NS based ternary hybrid effective towards both photoelectrocatalytic and photocatalytic N_2 reduction to NH_3 *Sabiha Sultana*
OP-025	Electrospun Manganese Oxide Nanoparticles decorated Carbon Nanofibers as Electrodes for Supercapacitors *Shriram Radhakanth, Richa Singhal*
OP-026	Inkjet-Printed Nanostructured Thin Film Electrodes for PEM Fuel Cell *Khantesh Agrawal*
OP-027	Pulse electro deposition and characterisation of platinum and ruthenium bi-metallic electrodes for proton exchange membrane based devices *N. Murugesana, A.Ahalyab, V.A. Faizala, Hrudananda Jenaa and V. Jayaramana*
OP-028	Reduced Graphene Oxide and anionic surfactant modified electrode for the determination ambroxol *Chandana Payappanavar, Vinoda S., Nagaraj P. Shetti*
OP-029	Gene specific DNA Biosensor for detection of H_1N_1 in Human *Ravina*
OP-030	An adept approach to convert titanium carbide (Ti_3C_2Tx) to titanium nitride (Ti_3N_2Tx) and itâ€™s composite with N-doped CNTs for Efficient Oxygen Electroreduction Kinetics *Haridas Parse, Indrajit Patil*
OP-031	Ribbon like $NiCo_2O_4$ for All-Solid state Asymmetric Supercapacitors *Siddhant Srivastav*
OP-032	Electrocatalytic oxidation of arsenite at Pt disk electrode using convolution potential sweep voltammetry technique *Ahmed Jalal Farid Us Samed, Muhammad Abul Hasnat*
OP-033	Catalytic Conversion of Lithium Polysulfides by Cobalt Sulfide Interlayer for High-Performance Lithium-Sulfur Battery *Meenakshi Seshadhri Garapati, Ramaprabhu Sundara*

OP-034	Electrochemical reaction assisted demethylation of guaiacol to redox active catechol on MWCNT surface and its electrocatalytic oxidation of hydrazine in neutral pH solution *Mansi Gandhi, Desikan Rajagopal and Annamalai Senthil Kumar*
OP-035	Redox behavior of H_2O and $Ca(OH)_2$ in $CaCl_2$ melt *Anwesha Mukherjee, R. Kumaresan, Suddhasattwa Ghosh, Kitheri Joseph, B. Prabhakara Reddy*
OP-036	Reduced graphene oxide modified $CuBi_2O4$ as an efficient and noble metal free photocathode for superior photo electrochemical hydrogen production *Adit Kumar Shah*
OP-037	Water Mediated Proton Relays: Natural Condition Ready Molecular Hydrogen Evolution Reaction Catalyst *Dependu Dolui, Shikha Khandelwal, Arnab Dutta*
OP-038	Multifunctional Dicyclohexylamine (DCHA) gives Anodic Electrochemiluminescence in the presence of Luminol *M. Sornambigai, C.V. Raju and S. Senthil Kumar*
OP-039	Enhancement of Electrochemical properties of hybrid Bismuth Ferrite and Carbon dots for Supercapacitor. *Abu Faizal*
OP-040	Oxidation of carbon steel at high temperature and pressure: effect of chemical used for pH *Vivekanand Dubey, Supratik Roychowdhury and Vivekanand Kain*
OP-041	XPS Studies on Aluminum and Titanium Oxide Anodic Films formed in an Oxalic Acid and Glycerol Mixture *R. K. Choudhary, P. Mishra, A. K. Debnath and V. Kain*
OP-042	Ultra-trace Level of Detection of Chromium(VI) using Flower Like RGO/NiS/Au Nanocrystal Modified Glassy Carbon Electrode *Srikant Sahoo and A. K. Satpati*
OP-043	Electrochemical Behaviour of ThF4 in FLiNaK Molten salt *Abhishek Kumar Rai, Renu Agarwal*
OP-044	Optimization of mixed cationic perovskite solar cell through response surface methodology (RSM) *Saikumar Nair, Siba Prakash Bhoi, Yagnesh Trivedi, Jignasa V. Gohel*
OP-045	Experimental and theoretical study on SO_2 tolerance of Pt electrocatalysts: Role of carbon support *J.A. Prithi, Ramasamy Shanmugam, G. Ranga Rao, N. Rajalakshmi*
OP-046	Dual-bioreceptor sandwich immunoassay coupled with magnetic bead based off-line protein capture system for cancer biomarker detection. *Mohanraj Sadasivam, Arunkumar Sakthivel, Murugan Veerapandian, Subbiah Alwarappan, Pandiaraj Manickam*

OP-047	Highly Sensitive Detection of Anticancer Drug by Electrochemical Methods *Jyoti Singh , C. A. Betty, Sipra Choudhury, P.A. Hassan, Manjunath Nookala, Vikram Gota*
OP-048	Comparative study on the electrochemical behaviour of bimetal Oxide â€“ Graphene/Graphene oxide nanocomposite for selective Dopamine sensing *Arockiajawahar Anancia Grace*
OP-049	Tailoring the electronic properties of two-dimensional bimetallic oxide structures to boost water electrolysis and photolysis *Sahanaz Parvin, Dhirendra K Chaudhary, Anima Ghosh and Sayan Bhattacharyya*
OP-050	Iron Sulfide Loaded Ordered Mesoporous Carbon Composite for High-Performance Sodium-Ion Batteries *Anupriya K. Haridas, Jungwon Heo, Xueying Li, Yuanzheng Sun, Rakesh Saroha, and Jou-Hyeon Ahn*
OP-051	Polyaniline based electrochemical biosensor for Î±-fetoprotein detection using bio-functionalized nanoparticles as detection probe *C. A. Amarnath and Shilpa N. Sawant*
OP-052	Electrochemically deposited Silicon nano particles used as negative electrode for Li-ion battery *Anjali Vanpariya, Sakshum Khanna, Priyanka Marathey, Kashinath Lellala, Roma Patel*
OP-053	Facile synthesis of g-C_3N4/In_2O_3 composite with enhanced photoelectrochemical properties *Debasis Sariket, Arjun Maity, and Chinmoy Bhattacharya*
OP-054	Excellent Li-ion storage performances of SnO nano-disc embedded carbon *Dipa Dutta Pathak, B. P. Mandal and A.K. Tyagi*
OP-055	Deciding the parameters in lithium sulfur battery: A step to optimize the effective crossover in Li-S cathode *P.Packiyalakshmi, S.Prasanna, Nikhil chandran M.K and N.Kalaiselvi*
OP-056	Facile green synthesis of carbon dots from Azadirachta indica leaves and their utility for electrochemical sensing and binding of an anticancer drug, lapatinib *Ayyapayya Mathad*
OP-057	Soft-lithographic Microfluidic Enzymatic Biofuel Cell with integrated Laser Pyrolyzed Bioelectrodes *Prakash Rewatkar,Jayapiriya US, and Sanket Goel*
OP-058	CuO nanosheets based electrocatalyst for methanol oxidation *Anu Prathap M. Udayan and Shilpa N. Sawant*
OP-059	Pulse Electrodeposited CIS/CIGS Absorbers for Photovoltaic and Photoelectrochemical Applications *Sreekanth Mandati, Prashant Misra, Divya Boosagulla, Tata Narasinga Rao and Bulusu V. Sarada*

Graphene/NiO modified carbon paste electrode for the detection of Dopamine in presence of ascorbic acid and uric acid

Tony Thomas
Department of Chemistry, Deva Matha College, Kuravilangad, Kerala, India 686633
tony.chem@rediffmail.com

Nanoplatelets of graphene (Gr) were obtained by the thermal exfoliation of graphite oxide prepared by modified Hummers and Offeman method. Nickel Oxide (NiO) nanoparticles of crystallite size 6.1 nm with a porous structure was synthesised by solution combustion method (SCS). Carbon paste electrode (CPE) is a homogeneous mixture of graphite powder and silicone oil. CPE was bulk modified with Graphene and NiO nanoparticles (MCPE/Gr/NiO) for the selective detection of dopamine (DA) in presence of interfering molecules such as ascorbic acid (AA) and uric acid (UA). MCPE/Gr/NiO electrode is 100% insensitive to AA signals below 1.0×10^{-3} M which enabled to carry out the quantification of DA accurately in presence of 1000 fold excess of AA. The fabricated electrode shows good reproducibility, stability and linear dynamic range of 0.3 − 300 μM. Detection limit of DA at MCPE/Gr/NiO is 1.6×10^{-7} M.

Trace level detection of Dopamine

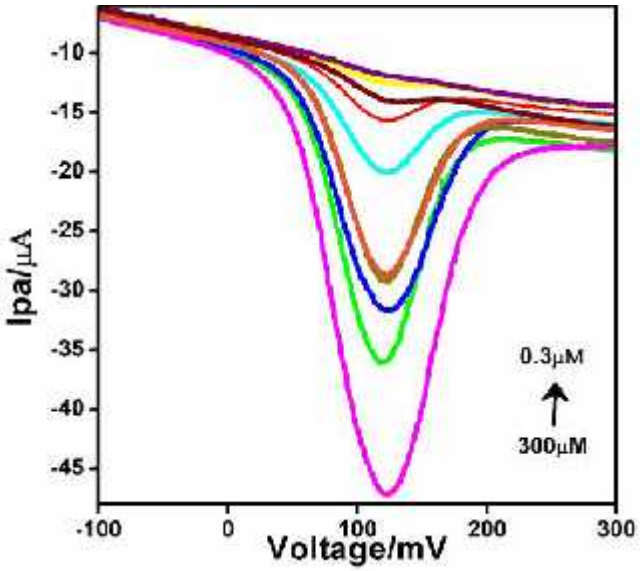
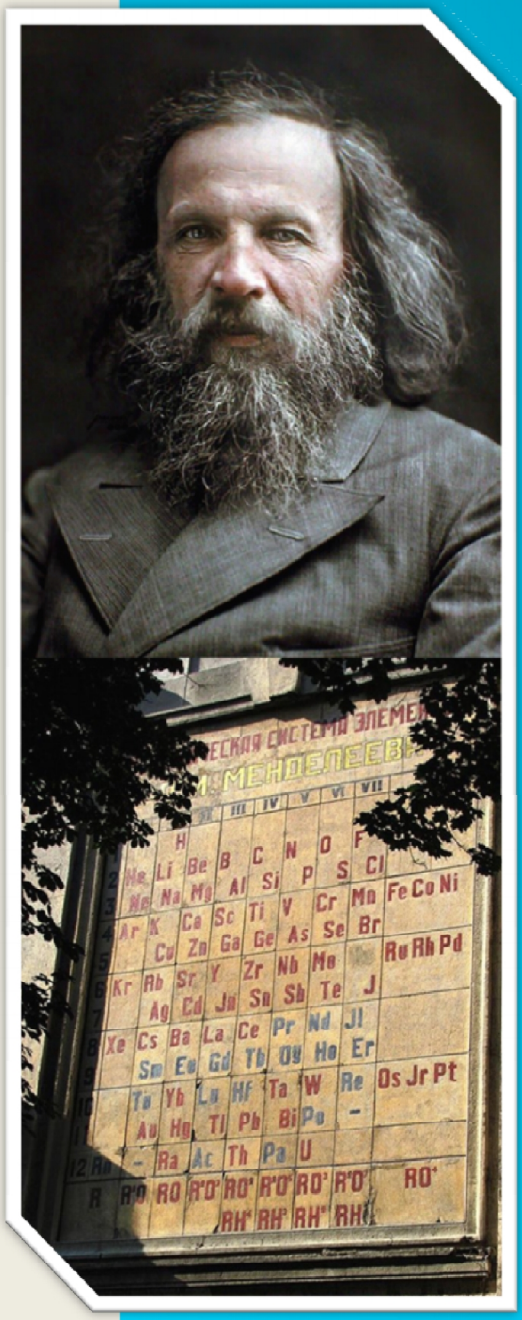


Figure 1: DPVs of various concentrations of DA at MCPE/Gr/NiO in 0.1 M phosphate buffer of pH = 7.4 at a scan rate of 5 mV/S.

"There is nothing in this world that I fear to say."

Dmitri Ivanovich Mendeleev



"The most all penetrating spirit before which will open the possibility of tilting not tables, but planets, is the spirit of free human inquiry. Believe only in that."

"I have achieved an inner freedom. I want you to have this feeling too - it is my moral responsibility to help you achieve this inner freedom."

"Work, look for peace and calm in work: you will find it nowhere else."

"There's no talent, neither genius without hard work."

"Pleasures flit by - they are only for yourself; work leaves a mark of long-lasting joy, work is for others."

"The establishment of a law, moreover, does not take place when the first thought of it takes form, or even when its significance is recognised, but only when it has been confirmed by the results of the experiment."

"It is the function of science to discover the existence of a general reign of order in nature and to find the causes governing this order. And this refers in equal measure to the relations of man - social and political - and to the entire universe as a whole."

Celebrating

150 Years of Periodic Table

Indian Society for ElctroAnalytical Chemistry

Mumbai, India

www.iseac.org.in