DAE-BRNS
2nd International Conference on
EIHE-2023

Electrochemistry for Industry, Health and Environment

February 7-11, 2023

At DAE Convention Centre, Anushaktinagar, Mumbai – 400094, India

Organised by

Programme Schedule

February 07, 2023; Tuesday

9:30- 13:00 hrs	:	**Registration** at ***DAE Convention Centre***
13:00 – 14:00 hrs	:	**Lunch at dining hall, DAE Convention Centre**
14:30 – 16:00 hrs	:	**Inauguration of the Conference (Auditorium A)**
16:00 – 16:30 hrs	:	**High Tea at Lobby & Group photograph**
16:30- 18:45 hrs	:	**Session 1 (Auditorium A)** Chairperson**: Prof. J. P. Mittal, UM-DAE-CEBS**
16:30- 17:15 hrs	:	***Plenary Lecture* (40+5 minutes)** **IT-01; Prof Christopher M.A. Brett,** *Department of Chemistry, CEMMPRE, Faculty of Sciences and Technology, University of Coimbra, Portugal* **Modified electrodes with electroactive redox polymers and nanomaterials for sensor and biosensor platforms**
		Invited Lecture (25+5 minutes) **IT-11; Prof. Amreesh Chandra;** *Indian Institute of Technology Kharagpur* **Pseudo-2D Nanostructure based High Performance Hybrid Supercapacitors: Correlating Theoretical and Experimental Studies**

IT-49; Prof. Sangaraju Shanmugam, *Department of Energy Science & Engineering, Daegu Gyeongbuk Institute of Science and Technology (DGIST) Daegu, 42988, South Korea*

Electrochemical Synthesis of Sustainable Carbon-Free Fuels

IT-14; Prof. Kinshuk Dasgupta, *Materials Group, Bhabha Atomic Research Centre, Mumbai*

Tuneable synthesis of graphene oxide by electrochemical exfoliation of graphite

19:00 – 20:30hrs : **Cultural programme (Auditorium A)**

20:30-21:30 hrs : **Dinner at dining hall, DAE Convention Centre**

February 08, 2023; Wednesday

09:30 – 11:15hrs : **Session 2 (Auditorium A)**

Chairperson: Prof. S. Mukhopadhyay, E& IG, BARC

***Plenary Lecture* (40+5 minutes)**

9:30-10:15 hrs : ***IT-08; Prof. P. Vadgama****, Queen Mary University of London, United Kingdom*

Sensors for in vivo biochemical monitoring: A Membranes and materials adaptation

Invited Lecture (25+5 minutes)

10:15-10:45 hrs ***IT-07; Prof. Muhammed Musthafa O T,*** *Indian Institute of Science Education and Research, Pune*

Electrochemical Neutralization: Concepts to Devices

10:45-11:15 hrs ***IT-38, Prof. Rama Kant,*** *Department of Chemistry, University of Delhi*

Electron Transfer in Nano-Structured and Atomically Stepped Electrodes: Theoretical Aspects

11:15-11:30 hrs : **Tea** at ***Lobby***

11:30–13:00 hrs : **Session 3 (Auditorium A)**

Chairperson: Prof. Archana Sharma, BTDG, BARC

Invited Lecture (25+5 minutes)

11:30-12:00 hrs : ***IT-17; Prof. Amartya Mukhopadhyay,*** *Indian Institute of Technology Bombay*

Layered' transition metal oxides as cathode materials for Na-ion batteries

12:00-12:30 hrs : ***IT-05 Prof. Annamalai Senthil Kumar,*** *Vellore Institute of Technology, Vellore*

In-Situ Activation of Pencil Graphite Electrode Surface and Its Active Site Mapping Using Scanning Electrochemical Microscopy and Electrocatalysis

12:30-13:00 hrs : ***IT-21 Prof. M R Pai,*** *Chemistry Division, Bhabha Atomic Research Centre, Mumbai*

Solar Water Splitting Using Earth Abundant Conjugated Photocatalysts

13:00-14:00 hrs **Lunch at dining hall, DAE Convention Centre**

14:00-16:00 hrs **Session 4**
Chairpersons: Dr. Sangita D Kumar, ACD, BARC
Dr. Sanjukta A. Kumar, ACD, BARC

Poster Presentations: P-1 to **P-82** at ***Poster Hall*** (Except CPs selected for oral presentation)

15:30-16:00 hrs **Tea during poster session**

16:00–18:30 hrs **Session 5 (Auditorium A & Auditorium B)**

Invited Lecture (20+2 minutes)

Auditorium A

***Chairperson*:**
Prof. H. Pal, HBNI
Prof. Sunil K Ghosh, HBNI

IT-22: Prof. Chinmoy Bhattacharya, *Dept. of Chemistry, Indian Institute of Engineering Science & Technology,(IIEST), Shibpur*

$BiVO_4$ - a futuristic Semiconductor for Photoelectrochemical Applications

IT-46; Prof. Bhaskar R. Sathe*, Department of Chemistry, Dr. Babasaheb Ambedkar Marathwada University Aurangabad*

New Modifications of Graphene for Water Splitting and Fuel Cell Reactions

IT-23; Prof. Nagraj Shetty *, School of Advanced Sciences, KLE Technological University, Hubbali, Karnataka*

Electrochemical sensors for the detection and degradation of toxic molecules

Auditorium B

***Chairperson*:**
Prof. A.C. Bhasikuttam, RPCD, BARC
Prof. P.A. Hassan, ChD, BARC

IT-28; Prof. Subramanyam Sarma*, Department of Chemistry, YOG VEMANA UNIVERSITY*

Electrocatalysis of reduced graphene oxide-supported nanocomposites for fuel cell reactions

IT-10: Prof. Sanghamitra Chatterjee, *Department of Chemistry, Institute of Chemical Technology, Mumbai*

Theranostic Applications of Carbon Nanomaterial Modified Sensors: A Promising Future

IT-41; Dr. D. K Sahoo*, Material Processing & Corrosion Engineering Divisison, Bhabha Atomic Research Centre*

IT-09: Rituraj Mishra, *Bharat Petroleum Corporation LTD*

Investigative Research on the Critical Electrochemical Corrosion Driven by Combined Cathodic and Anodic Interference on a Pipeline

IT-51 ; Dr. Ruma Gupta, *Fuel Chemistry Division, Bhabha Atomic research Centre*

Electrochemical fate of Actinides: Aqueous and Non aqueous routes

IT-35; Dr. Bholanath Mahanty, *Radiochemistry Division, Bhabha Atomic Research Centre*

Membrane based potentiometric sensors for lanthanides and actinides

Electrowinning of light rare earth metals and alloys using molten salt electrolysis route

IT-52; Dr. V. S. Tripathi, *Radiation & Photochemistry Division, BARC, Mumbai*

Electrodeposition of Rhodium and Platinum-Rhodium alloy on stainless steel substrate: a durable catalyst surface

IT-45; Prof. D. Banerjee*, Nuclear Recycle Group, Bhabha Atomic Research Centre, Mumbai*

Electrodeposition of Radioruthenium: Process Development and its Applications for the Treatment of Eye Cancer

IT-58: Ms. Sutanwi Lahiri, *Laser & Plasma Technology Division, Bhabha Atomic Research Centre, Mumbai*

Application of cavitation in graphite decontamination

18:45 hrs : **Tea** at ***Lobby***

20:00-21:00 hrs : **Dinner at dining hall Training School Hostel, Anushaktinagar**

February 09, 2023; Thursday

09:30–11:00 hrs : **Session 6 (online) (Auditorium A)**

Chairperson: Prof. T.K. Ghanty, BSG, BARC

Plenary Lecture **(40+5 minutes)**

09:30–10:15 hrs : ***IT-16; Prof. Shalini Prasad,*** *Department of Bioengineering and Biomedical Engineering, The University of Texas at Dallas*

Electrochemically mediated multi-modal detection strategy-driven sensor platform to detect and quantify pesticides

10:15-11:00 hrs : ***IT-55; Prof. Ritu Goswami Kataky,*** *Department of Chemistry, Durham University, Durham, United Kingdom*

Electrochemical Interactions at 'soft' liquid-liquid interfaces

11:00–11:15 hrs : **Tea at *Lobby***

11:15–13:00 hrs : **Session 7 (online & offline); (Auditorium A)**

Chairperson: Prof. Swapan K Ghosh, UM-DAE-EBES

Plenary Lecture **(40+5 minutes)**

11:15-12:00 hrs : ***IT-29; Prof. Ignacy Cukrowski,*** *Department of Chemistry, Faculty of Natural and Agricultural Sciences, University of Pretoria, South Africa*

Metal-Ligand Equilibria: A Unified Theory and Protocol for Voltammetry and Potentiometry

Invited Lecture (25+5 minutes)

12:00 – 12:30 hrs : ***IT-02; Prof. Ramanathan S,*** *Dept. of Chemical Engineering, IIT Madras, Chennai*

Electrochemical reaction mechanism identification from potentiodynamic polarization data

12:30– 13:00 hrs : ***IT-03; Prof. Sayan Bhattacharyya****, IISER Kolkata*

Solid State Chemistry Approach Towards Green Hydrogen

13:00 – 14:00 hrs : **Lunch at dining hall, DAE Convention Centre**

14:00 – 16:00 hrs : **Session 8**

Chairperson:
Prof. N. Choudhury, ChD, BARc
Prof. S. Nath, RPCD, BARC
Poster Presentations: CP-82 to CP-152 at ***Poster Hall*** (Except CPs selected for oral presentation)

Tea during 15:30-16:00

16:00 – 17:30 hrs : **Session 9; Invited Lecture (20+2 minutes)**

Auditorium A

***Chairperson*:**

Dr. S. Adhikari, SIRD, BARC

Shri M.K. Saxena, RACD, BARC

IT-24; Mr. Rooshin Vadgama, *UCL Cancer Institute, University College London*

The Effect of Low Dose Radiation on Neurotransmission

IT-57: Prof. Drishty Satpati*, Radiopharmaceuticals Division, Bhabha Atomic Research Centre, Mumbai, India*

Applications of Electrochemistry In Development of Radiopharmaceuticals

IT-13: Prof. P.C. Mondal *, Department of Chemistry, Indian Institute of Technology Kanpur*

Molecular thin films for electrochemical supercapacitors: Are we heading toward the molecular power banks?

IT-53; Prof. Ruma Ghosh, *Department of Electrical Engineering, Indian Institute of Technology Dharwad*

Auditorium B

***Chairperson*:**

Dr. A. K. Tripathi, ChD, BARC

Dr. G. Sugilal, FRD, BARC

IT-36; Prof. Rosy*, Department of Chemistry, IIT(BHU) Varanasi*

Hexagonal Boron Nitride for Na- Ion/Metal Batteries

IT-47; Dr. Thandavarayan Maiyalagan,
Department of Chemistry, SRM Institute of Science and Technology, Kattankulathur

Non-Precious Electrocatalysts for Electrochemical Water Splitting; Current status and future prospects

IT-44; Dr. Pramod Bhatt, Solid State Physics Division, Bhabha Atomic Research Centre, Mumbai

Nanomaterials based Sensors for Healthcare Applications

Multifunctional Prussian Blue Analogues Molecular Magnets for Energy Storage Applications

IT-04; Dr. Shailendra K. Jha, *CSIR -National Metallurgical Laboratory, Jamshedpur*
Electrochemically Shape-controlled and Confined Micro and Nanostructured Materials for Methanol Electrooxidation

17:30-18:50 hrs **Session 10: Oral Presentations (5+2minutes)**

***Chairperson*:**	***Chairperson*:**
Dr. Amrit Prakash, RMD, BARC	**Dr. Sulekha Mukhopadhyaya, ChED, BARC**
Dr. D. Mandal, AMMD, BARC	**Shri Kalyan Bhanja, HWD, BARC**
Auditorium A	**Auditorium B**
Oral presentations	Oral Presentations
CP 3,5,6,8,14,16,17,19,20,23 & 24	**CP 29,31,34,43,46,48,51,57,60,64,67**

18:50 hrs : **Tea** at ***Lobby***

20:00 21:00 hrs : **Dinner at Anushaktinagar**

February 10, 2023; Friday

09:30 – 11:15 hrs : **Session 11; (Auditorium A)**

Chairperson: Prof. J. Chattopadhyay, RSD, BARC

09:30 – 10:15 hrs : ***IT-26; Prof. Stijn F. L. Mertens,*** *Department of Chemistry, Lancaster University, United Kingdom*

Electrochemistry beyond Redox Processes: from Collective to Single Molecule Switching

Invited Lecture (25+5 minutes)

10:15-10:45 hrs ***IT-62: Prof. Suddhasatwa Basu****, IIT Delhi*

Electro and photo-electro conversion of Furfural to Various Platform Chemicals

10:45–11:15 hrs : ***IT-40; Prof. S. K. Ghosh,*** *Materials Processing & Corrosion Engineering Division*
Bhabha Atomic Research Centre, Trombay, Mumbai

Electrochemical Investigation of Uranyl Species in Ethaline-DES and Possibility of UO_2 Deposition

11:15 – 11:30 hrs : **Tea** at ***Lobby***

11:30 – 13:00 hrs : **Session 12: (Auditorium A)**

Chairperson: Prof. S. Kannan, RC&IG, BARC

Invited Lecture (20+2 minutes)

IT-18; Prof. Bharatkumar Suthar, *Indian Institute of Technology Bombay*

Electrochemical impedance of porous electrodes for battery applications

IT-56; Prof. S. N. Sawant, *Chemistry Division, Bhabha Atomic Research Centre, Trombay-Mumbai*

Electrochemical Biosensors for Cancer Biomarker Detection

IT-50: Prof. Abhijit Chatterjee, *Department of Chemical Engineering, Indian Institute of Technology Bombay, Mumbai*

Tackling complexity in electrocatalysis: A modeling framework to capture structure and complexity at the solid-liquid interface

IT-20: Prof. Arnab Dutta, *Chemistry Department, Indian Institute of Technology, Bombay*

Designing artificial H_2 producing cobalt catalysts with neurotransmitter and vitamin

13:00 – 14:00 hrs : **Lunch at dining hall, DAE Convention Centre**

14:00 – 16:00 hrs : **Session 13**

Chairperson:

Dr. T. Das, RPhD, BARC

Dr. K. K. Swain, ACD, BARC

Poster Presentations: P-153 to **P-215** at ***Poster Hall*** (Except CPs selected for oral presentation)

Tea during 15:30-16:00

16:00 – 17:10 hrs : **Session 14; Invited Lecture (20+2 minutes)**

Auditorium A

***Chairperson*: Prof. Awadhesh Kumar, RPCD, BARC**

IT-30; Prof. S Pande, *Department of Chemistry, Birla Institute of Technology and Science, Pilani, Rajasthan*

Effect of Cation Doping on Ni-based System for Overall Water-Splitting Reaction

IT-32; Prof. Mrinmoyee Basu *, Department of Chemistry, BITS Pilani, Pilani Campus, Rajasthan*

Carbon-based Dots as Efficient Sensitizer in Photoelectrochemical Water Splitting Reactions

IT- 31 : Prof. Kathiresan M, *Electro Organic and Materials Electrochemistry Division, CSIR-Central Electrochemical Research Institute*

Porous Organic Polymer and its Composites for Electrocatalysis

Auditorium B

***Chairperson*: Prof. Ashok Arya, G&AMD, BRAC**

IT-34; Prof. S. B. Arya*, National Institute of Technology Karnataka Surathkal*

A critical issue of piping failure: Flow accelerated corrosion and erosion corrosion

IT-27; Prof. S. Senthil Kumar, *CSIR-Central Electrochemical Research Institute (CSIR-CECRI), Karaikudi*

Electrochemiluminescence based imaging for visualizing sebaceous fingerprint

IT-06; Prof. Venkataraman Dharuman, *Department of Bioelectronics and Biosensors, Science campus, Alagappa University*

Nanoparticles functionalized theranostic liposome for antibiotic resistant bacteria and electrochemical sensing

17:10-18:50 hrs **Session15: Oral Presentations (5+2minutes)**

***Chairperson*:**

Prof. H.N. Ghosh, RPCD, BARC

Prof. T. Bandyopadhyay, ChD, BARC

Auditorium A

Oral presentations

CP 72,77,84,88,92,102,105,110,113,115,118,119, 126, IT-33

***Chairperson*:**

Auditorium B

Prof. D. K. Maity, HBNI

Shri Ajoy Singh, UED, BARC

Oral Presentations

CP 121, 133,136,164,173,178,187,205,209

Presentation by sponsors

18:50– 19:00 hrs : **Tea**

Evening Lecture

Chairperson: Shri Vivek Bhasin, NFG & RDDG, BARC

19:00-19:45 hrs : ***Prof. A. K. Tyagi,*** *Director, Chemistry Group, BARC*

Four golden years in Science: Shaping the modern world

20:00 21:00 hrs : **Dinner at Anushaktinagar**

February 11, 2023; Saturday

09:00 – 11:15 hrs : **Session 16 (Auditorium A)**

Chairperson: Prof. P.K. Mohapatra, RCD, BARC

***Plenary Lecture* (40+5 minutes)**

09:00 – 10:15 hrs : ***IT-12; Prof. Ana Maria Oliveira-Brett,*** *Department of Chemistry, CEMMPRE, Faculty of Sciences and Technology, University of Coimbra, Portugal*

Bioelectrochemical Sensing of Biomolecules Oxidative Damage

Invited Lecture (20+2) minutes)

IT-54; Prof. Rajesh Ganesan, *Materials Chemistry Division*

Materials Chemistry and Metal Fuel Cycle Group, IGCAR

Applications of Electrochemical Sensors for Sodium Systems

IT-15: Prof. A. K. Satpati, *Analytical Chemistry Division, Bhabha Atomic Research Centre, Mumbai*

Characterisation of Semiconductor Photoelectrode Interfaces using Electrochemical/Spectroelectrochemical Investigations

IT-19: Prof. Amit Sinha, *Powder Metallurgy Division, Materials Group, Bhabha Atomic Research Centre*

Development of composite electrolyte and electrode materials for IT-SOFC

11:20– 11:30 hrs : **Tea** at ***Lobby***

11:30 – 12:45 hrs : **Session 17 (Auditorium A)**

Chairperson: Prof. R. Tewari, MG, BARC

Invited Lecture (20+2 minutes)

IT-60: Prof. Balaji P. Mondal, *Chemistry Division, Bhabha Atomic Research Centre, Mumbai*

Lithium and sodium storage capacity of Mo2C based composite

IT-42: Dr. V Nafees Ahmed, *Chemical Technology Division, Bhabha Atomic Research Centre, Mumbai*

Technology demonstration for Hydrogen production by Iodine Sulfur thermochemical process

IT-39: Prof. Pranjal Chandra, *School of Biochemical Engineering, Indian Institute of Technology (BHU), Varanasi*

Nanoengineered Electrochemical Sensors for Tracking Biomarkers In Miniaturized Settings

IT-61: Dr. Jyoti Prakash, *Glass and Advanced Materials Division, Materials Group. Bhabha Atomic Research Centre, Mumbai*

CNT aerogel electrochemical bio-sensor: A new era in ultra sensitive biomedical technology

12:45– 13:45 hrs : **Lunch at dining hall, DAE Convention Centre**

14:00 – 15:50 hrs : **Session 18 (Auditorium A)**

Chairperson: Prof. Y. K. Bhardwaj, RTDD, BARC

Invited Lecture (20+2 minutes)

IT-43: Prof. Dimple Dutta, *Chemistry Division, Bhabha Atomic Research Centre, Mumbai*

Design of Electrode Materials for Advanced Sodium-Ion Batteries

IT-48: Prof. Sunita Kumbhat, *NanoBiosensor Laboratory, Jai Narain Vyas University, Jodhpur*

Real time monitoring system for aflatoxins in real samples

IT-59; Dr. S. P. Koiry, *Technical Physics Division, Bhabha Atomic Research Centre, Trombay-Mumbai*

Electrochemical methods: Indispensable for the fabrication and characterization of organic solar cells

IT-25: Prof. Gunda Mohanakrishna, *School of Advanced Sciences, KLE Technological University, Hubbali*

Bioelectrochemical systems (BES) as a sustainable approach for water and wastewater treatment along with renewable energy generation

15:50– 16:00 hrs : **Tea**

16:00 – 17:30 hrs : **Valedictory Function** at **Auditorium A**

20:00 hrs Onwards : **Dinner** at TSH, Anushaktinagar (only on prior intimation)