



NATIONAL SYMPOSIUM ON ELECTROCHEMICAL SCIENCE AND TECHNOLOGY [NSEST - 2023]

Focused Theme: Towards Self-Reliance in Electrochemical Technologies

17 - 18 August 2023

Technical Programme

Venue: **G. S. Bhattacharjee Seminar Hall, ARCI, Hyderabad**



Day 1 (17.08.2023): Thursday – Inaugural Session

08.30 - 09.30: REGISTRATION

09.30 - 10.45: INAUGURATION

PROGRAMME

Invocation

Welcome Address

Dr. S. T. Aruna, President, ECSI

Lightning of the Lamp

Address by Convener NSEST 2023

Dr. R. Subasri, Scientist - G, ARCI

Release of Souvenir

Award Ceremony

(Induction of ECSI Honorary Fellows, Mascot, Sampath, Amara Raja, Metrohm, Elayaperumal & Lifetime achievement awards)

Address by the Chief Guest

Dr. N. Kalaiselvi, Director General, CSIR & Secretary, DSIR

Address by Guest of Honor

Dr. Tata Narasinga Rao, Director ARCI

Vote of Thanks

Dr. B. S. Prathibha, Gen. Secretary, ECSI

National Anthem

Group Photo

Inauguration of Exhibition and High Tea

Day 1(17.08.2023): Thursday (Technical Sessions)

| Time, 24 Hrs | Event Sessions | Details | |
|-----------------|---|--|---|
| 11.30 - 12.00 | Keynote Lecture 1 | Prof. Sagar Mitra (IIT Bombay) : “ <i>Myth of 500 Wh/kg battery and its development</i> ” | |
| 12.00 - 12.30 | Keynote Lecture 2 | Mr. Siddharth R Mayur (h2e Power Systems Pvt Ltd): “ <i>Fuel cell : Made in India, Made for the World</i> ” | |
| 12.30 - 12.50 | Award Lectures | Mascot National Award Lecture: Dr. P. Saravanan (Steel Authority of India Ltd, Ranchi) | |
| 12:50 - 13.10 | | N.M.Sampat Award Lecture : Dr. Nitin P Wasekar (ARCI, Hyderabad) | |
| 13.10 - 14.00 | LUNCH | | |
| 14.00 - 14.30 | Award Lectures | Prof. T.L. Rama Char Memorial Lecture : Dr. N. Rajalakshmi (IIT Dharwad) | |
| 14.30 - 14.50 | | ECSI- Amararaja Award Lecture: Dr. Dinesh Rangappa (VTU, Muddenahalli) | |
| 14.50 - 15.10 | | ECSI- Amararaja Award Lecture: Dr. G. Gnana Kumar (MKU, Tamilnadu) | |
| 15.10 - 16.10 | VISIT TO EXHIBITION AND POSTER SESSION | | |
| 15.50 - 16.10 | TEA | | |
| | | Parallel Session 1: Hall A G.S. Bhattacharjee Seminar Hall | Parallel Session 2: Hall B Centre for Carbon Materials |
| 16.10 - 16.30 | Invited Lectures | IT 01: Prof. M.M. Shaijumon (IISER TVM) “ <i>Materials Development and Design Strategies for Advanced Electrochemical Energy Storage Devices</i> ” | IT 03: Dr. Devender Devgun (Jindal Stainless Ltd) “ <i>Stainless Steel and its applications in Process Industries</i> ” |
| 16.30 - 16.50 | | IT 02: Dr. Surendra Kumar Martha (IIT Hyderabad) “ <i>Carbon: A Ubiquitous Electrode Material for Lithium-Based Rechargeable Batteries</i> ” | Hydrogen technologies: Fuels cells, HER, Electro catalysis, Photocatalysis OP 16 – OP 29 |
| 16.50 - 19.00 | Oral Presentations | Batteries and Supercapacitors OP 01 - OP 15 | |

Hall A: Main Hall – G. S. Bhattacharjee Seminar Hall, Hall B: Centre for Carbon Materials (CCM Conference Room)

Day 2 (18.08.2023): Friday (Technical Sessions)

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| 9.30 - 9.50 | Award Lectures | Dr. K. Elayaperumal National Award Lecture: Dr. L. Ramakrishna (ARCI, Hyderabad) | |
| 9.50 - 10.10 | | Dr. S. Krishnamurthy Memorial Lecture: Dr. G. A. Pathanjali (High Energy Batteries, Mathur) | |
| 10.10 - 10.30 | | Prof. S.M. Mayanna Endowment Lecture: Dr. K. Ramesha (Director, CECRI) | |
| 10.30 - 11.00 | HIGH TEA | | |
| 11.00 - 11.20 | | ECSI - Metrohm Award Lecture: Dr. C. Tharamani C Nagaiah (IIT, Ropar) | |
| 11.20 - 11.40 | | ECSI - Metrohm Award Lecture: Dr. Pratima Solanki (JNU, New Delhi) | |
| | Invited Talks And Technical Session 3 - 4 | Parallel Session 3: Hall A | Parallel Session 4: Hall B |
| 11.40 - 12.00 | | IT 04: Dr. J. N. Balaraju (NAL, Bengaluru) <i>“Moving from Chromic Acid to Non-Chromic Acid Anodizing Process for the Corrosion Protection of Aircraft Grade Aluminium Alloys”</i> | IT 05: Dr. H.S.S. Ramakrishna Matte (CeNS, Bengaluru) <i>“Enhancing the performance of electrochemical devices through materials engineering”</i> |
| 12.00 - 12.40 | | Surface Engineering: Coatings and Corrosion OP 30 - OP 33 | Electrochemical Sensors OP 48 - OP 51 |
| 12.40 - 13.10 | Visit to ARCI Incubator Facility | | |
| 13.10 - 14.00 | LUNCH | | |
| 14.00 - 15.30 | Technical Session 3 - 4 | Parallel Session 3: Hall A | Parallel Session 4: Hall B |
| | | Surface Engineering: Coatings and Corrosion OP 34 - 40 | Surface Engineering: Coatings and Corrosion OP 41 - 47 |
| 15.30 - 16.15 | Poster Session | | |
| 16.15 - 16.30 | TEA | | |
| 16.30 - 16.50 | Presentation by ThermoFisher Scientific | | |
| 16.50 - 17.30 | Valedictory Function and Award Ceremony | | |

Note: KL: Keynote Lecture (30 min); IT: Invited Talk (20 min); OP: Oral Presentation (10 min)

LIST OF PRESENTATIONS

| SI. No | TITLE |
|-----------------------------------|--|
| AWARD LECTURES | |
| AL-01 | Corrosion resistant steel for various sectors by SAIL Dr. P. Saravanan , Steel Authority of India Limited, Ranchi |
| AL-02 | Compositionally modulated Ni-W multilayers to alleviate the residual stresses in coatings for superior wear resistance Dr. Nitin P. Wasekar , Centre for Engineered Coatings, International Advanced Research Centre for Powder Metallurgy and New Materials, Hyderabad |
| AL-03 | 2D Heterostructured materials for energy generation and storage applications Prof. Dinesh Rangappa , Department of Applied Sciences (Nanotechnology), Center for postgraduate studies, Bangalore Region, Visvesvaraya Technological University, Chikkaballapur |
| AL-04 | Intricacies and its solutions in developing environmentally benign fuel cells Dr. G. Gnana Kumar , Department of Physical Chemistry, School of Chemistry, Madurai Kamaraj University, Tamilnadu |
| AL-05 | Heterogeneous microstructures and their applications Dr. L. Rama Krishna , Scientist-G & Head, Centre for Engineered Coatings, International Advanced Research Centre for Powder Metallurgy & New Materials (ARCI), Hyderabad |
| AL-06 | Designing greener energy conversion system for a sustainable future Dr. Tharamani C. Nagaiah , Department of Chemistry, IIT Ropar |
| AL-07 | Sparking a health revolution: Electrochemical biosensors at the forefront Dr. Pratima R. Solanki , Nano-Bio Laboratory, Special Center for Nanoscience, Jawaharlal Nehru University, New Delhi |
| MEMORIAL/ENDOWMENT LECTURE | |
| ML-01 | Sustainable technology- electrochemistry perspective Dr.N.Rajalakshmi , Former Head & Senior Scientist, Centre for Fuel cell Technology, ARCI, IIT MADRAS Research park, Taramani, Chennai, Presently with Deakin University, Australia, IIT Dharwad and CSTEP, Bangalore |
| ML-02 | Batteries for strategic applications Dr. G. A. Pathanjali , Managing Director of High Energy Batteries (India) Ltd., Mathur |
| KEYNOTE LECTURES | |
| KL-01 | Myth of 500 Wh/kg battery and its development Professor Sagar Mitra , Professor in the Energy Science and Engineering Department, Indian Institute of Technology Bombay (IITB) |
| KL-02 | Fuel cell : Made in India, Made for the World Siddharth R Mayur , Founder President & CEO, h2e Power Systems Pvt. Ltd. Sangam Project Phase II, Pune 411001 |
| INVITED LECTURES | |
| IL-01 | Materials development and design strategies for advanced electrochemical energy storage devices Prof. M. M. Shaijumon , School of Physics, Indian Institute of Science Education and Research, Thiruvananthapuram |

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| IL-02 | Carbon: a ubiquitous electrode material for lithium-based rechargeable batteries Dr. Surendra Kumar Martha, Associate Professor, IIT Hyderabad |
| IL-03 | Stainless steel and its applications in process industries Dr. Devender Devgun, Jindal Stainless Ltd |
| IL-04 | Moving from chromic acid to non-chromic acid anodizing process for the corrosion protection of aircraft grade aluminium alloys Dr. J. N. Balaraju, Chief Scientist & Deputy Head, Surface Engineering Division, CSIR-National Aerospace Laboratories, Bangalore |
| IL-05 | Enhancing the performance of electrochemical devices through materials engineering Dr. H.S.S. Ramakrishna Matte, Centre for Nano and Soft Matter Sciences, Bengaluru |
| EL-03 | Electro-catalysts for improving the performance of lithium-sulfur Batteries Dr.K. Ramesha, Director CSIR-CECRI, Karaikudi, Tamilnadu |
| ORAL PRESENTATIONS - BATTERIES AND SUPERCAPACITORS | |
| OP- 01 | Advanced chemistry cells (ACC) research: progress at C-MET and plans Milind V Kulkarni |
| OP-02 | Combination of nitro isomers of naphthoquinone on delivering improved capacity and cyclability to Zn-ion batteries Richa Gupta, Kothanadaraman R |
| OP-03 | Improved soluble lead redox flow battery using a corrosion resistant carbon material Harun Khan, Nandini Jaiswal, Nikhil C, M.S. Ramachandra Rao and R. Kothandaraman |
| OP-04 | Zeolite imidazolate framework-67-derived Co₃O₄ /α-MnO₂ composite cathode for long cycle life zinc-ion batteries Abhas Anand, Anil Verma, and Suddhasatwa Basu |
| OP-05 | Investigation of different morphologies of lithium iron phosphate cathode using aqueous binders for lithium-ion batteries V. V. N. Phani Kumar, K. Shanmugam, T. P. Sarangan, A. Sivaraj, L. Babu, T. Mohan, R. Prakash |
| OP-06 | Moving towards a practical low cost & high-performance battery by dry electrode processing Katchala Nanaji |
| OP-07 | Iron, cobalt co-embedded xerogel derived carbon as cathode host for ultra-high-rate performance lithium-sulfur batteries Sony K. Cherian, Mayur M. Gaikwad, Katchala Nanaji , Bulusu V. Sarada, Tata Narasinga Rao, Chandra S. Sharma |
| OP-08 | High-yield LiFePO₄ /C derived from low-cost iron precursor for high-energy Li-ion batteries: Effect of precursor size Ch. Gowthami, B. V. Sarada, A. Venu Vinod, R. Vijay, T. N. Rao, S. Anandan |
| OP-09 | Single-step synthesis of carbon-coated silicon-silicon carbide (Si-SiC@C) through microwave-heating: A specially designed scalable anode for Lithium-ion batteries Manoj Gautam, K Bhawana, Govind Kumar Mishra and Sagar Mitra |
| OP-10 | Investigation of dual phase layered potassium manganese oxide and their complex phase transitions as cathode for K-ion batteries Prasanna Naga Puneeth N, S. D. Kaushik, Kalai Selvan R |
| OP-11 | Chemical conversion of parasitic residual lithium compounds into beneficial artificial interface for cycle improvement of Ni-rich cathodes |

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| | Jyotirekha Dutta, Shuvajit Ghosh, Surendra Kumar Martha |
| OP-12 | Development of advanced multifunctional polymer binders for cathode materials in Lithium-ion batteries Lalith Rao, Jung-Hyun Kim, Jay Sayre |
| OP-13 | Hierarchical porous micro spherical hard carbon for high-capacity anode for lithium, sodium and potassium-ion batteries and distinct storage mechanism Nagmani, Sanchita Manna, Sreeraj Puravankara |
| OP-14 | High-performance asymmetric supercapacitors based on MnCoSe₂ nanoneedles over conducting nickel foam substrate P. M. Anjana, R. B. Rakhi |
| OP-15 | Waste toner derived functionalized multi-walled carbon nanotubes for energy storage application Ismail Shahib M, Anshu, Saurabh S Suranshe, Awanikumar Patil, R P Vijayakumar |
| HYDROGEN TECHNOLOGIES: FUEL CELLS, HER, OER, ELECTROCATALYSIS AND PHOTOCATALYSIS | |
| OP-16 | Structural and electrical studies of co-doped gadolinium doped ceria (GDC) system Parvathy R J, Deepthi N Rajendran |
| OP-17 | Investigating vacancy formation of A₂Zr₂O₇ (A=La, Ce, Nd and Gd) Pyrochlore for promising electrolyte performance Ajay Raj, Anjana P Anantharaman |
| OP-18 | Designing next generation sustainable energy conversion and storage systems using two-dimensional organic-inorganic layered hybrid catalysts Debdyuti Mukherjee, R. Aswin, K. Ramya |
| OP-19 | Laser Nitrided Titanium bipolar plates for PEM fuel cell application –preliminary studies Sundararajan Ramakrishnan, E Anusha, Imran Shaik, S M Shariff, Natarajan Rajalakshmi, Krishnan Ramya, Shobit Omar |
| OP-20 | Sintering parameters and composition dependent densification, microstructure, and mechanical properties of strontium-aluminosilicate glass sealant for SOFC Prasenjit Barick, Bhaskar Prasad Saha |
| OP-21 | Effect of buffer layer and current collector area on polarization resistance of SrMg_{0.1}Mo_{0.9}O_{3.6}-based composite SOFC anode M Buchi Suresh, Amit Das |
| OP-22 | Studies on the development of NdBa_{0.5}Sr_{0.5}Co₂O_{5+x} as a propitious electrode material for reversible solid oxide fuel cell J. Divyanshi, A. Sreelakshmi, S. Senthil Kumar, S. T. Aruna |
| OP-23 | Gaining insights into open cathode PEMFC by investigating key operating parameters Shikha Thapa, Harshal Agarwal, A. K. Sahu |
| OP-24 | Design of Fe, Cu and Ni mixed RuO₂ electrocatalysts for enhancing selectivity towards CER over OER Koshal Kishor Singh |
| OP-25 | Influence of operating parameters on performance of PEM based ECMR for hydrogen production under pressurized condition V. Sri Harsha Swarna Kumar, R. Balaji, Lakshman Neelakantan, K. Ramya |

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| OP-26 | Y₂O₃ deposited TiO₂ nanotube arrays as photo anode for enhanced photo electrochemical water splitting Shuchi Sharma, R.B. Harikrishna, A.M. Kannan, G. Ranga Rao |
| OP-27 | Electrocatalytic activity of Co-substituted hexagonal SnS₂ (Co_xSnS_{2-x}/rGO) nanocomposites for both HER and OER in alkaline medium Chandan Kumar, Pinky Saharan, Mandeep Singh, Ashish Gupta, and S.R. Dhakate |
| OP-28 | Correlative multi technique imaging of single particle photocatalyst and scanning photo-electrochemical microscopy on TEM Grids Sujoy Sarkar |
| OP-29 | Investigating the influence of annealing atmosphere of TiO₂ nanotube arrays on Ti-6Al-4V for enhanced photoelectrochemical performance R.B. Harikrishna, Shuchi Sharma, T. Sundararajan, G. Ranga Rao |
| SURFACE ENGINEERING –CORROSION AND COATINGS | |
| OP-30 | Anti-corrosion sol-gel coating using layer-by-layer nanocontainer for mild steel corrosion protection Aarti Gautam, Ananya Behera, K. V. Gobi, R. Subasri |
| OP-31 | Effect of inhibitor-loaded halloysite nanotubes and montmorillonite clay nanocontainers for self-healing corrosion protection of aluminum alloy 2024-T4 S. Manasa, K.V. Gobi, R. Subasri |
| OP-32 | Ferritic stainless steel with superior corrosion and formability property-an alternative to 304L austenitic stainless steel P. Saravanan, Bhawna Khalkho, S. Srikanth, Vinod kumar |
| OP-33 | Electrochemical corrosion behavior of Nb_x(MoTaW)_(1-x) (x = 0.4, 0.55, and 0.7) novel refractory multicomponent alloys Anjali Kanchi, Koteswararao V. Rajulapati, D. Sivaprahasam, A. Jyothirmayi, Ravi C. Gundakaram |
| OP-34 | Evaluation of 2-amino-1,3,4-thiadiazole as a potential corrosion inhibitor for mild steel in acidic environments to strengthen oil field pipelines Manoja Tharmaraj, Abinaya Radhakrishnan, Anuradha Ramani, Nagarajan Srinivasan |
| OP-35 | Anticorrosive, mechanical, and thermal behavior of epoxy composite coating reinforced with agri-biomass derived graphene analogs for carbon steel protection Anu Verma, Rupam Bandyopadhyay, Chandra Sekhar Tiwary, Jayanta Bhattacharya |
| OP-36 | Insights into the electrochemical corrosion response of the thin cermet coatings deposited by AC-HVAF D. Vijaya Lakshmi, P. Suresh Babu, Rahul Jude Alroy, G. Siva Kumar, M.J.N.V. Prasad |
| OP-37 | Study of the oxidation behaviour of alloy 304HCu in advanced ultra-supercritical steam environment C. Sundaresan Bhagwat Ghule, S. Ningshen, Dandapani Vijayshankar, V.S. Raja |
| OP-38 | Redox chemistry through 3D printing Surender Kumar |
| OP-39 | Compositional gradient nanocrystalline Ni-W coatings by electrodeposition for superior wear resistance Lavakumar Bathini, M. J. N. V. Prasad, Nitin P. Wasekar |

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| OP-40 | Development of a process for application of advanced hot dip galvanizing coatings on advanced high strength steel sheet Mahesh G. Walunj, Lokesh C. Pathak, V. S. Raja |
| OP-41 | Zn-Ni plating as a viable alternative to cadmium plating – Challenges in a production level 500 L plating facility Sai Pramod Pemmasani, Meenu Srivastava, M. Ganesh, N. T. Manikandanath, B. Shri Prakash, J.N. Balaraju |
| OP-42 | Electrodeposition and characterization of magnetite deposits of varying thickness on modified 9Cr-1Mo steel Namrata Upadhyay, A Ravi Shankar, S. Ningshen |
| OP-43 | Pulse electrodeposition of Al: ZnO thin films for window layer of solar cells using aluminum metal foil as aluminum source Divya Boosagulla, Ramachandraiah Allikayala, Sarada V Bulusu |
| OP-44 | Recovery of valuable and precious metals from the leach residue of waste printed circuit boards (PCBs) Suruchi Kumari, Jhumki Hait, Ranjit Prasad, Manis Kumar Jha |
| OP-45 | Structural, morphological and XPS studies of cold-sprayed Al- coatings on AA 2024 (T3) Substrate R.P.S. Chakradhar, S. Latha, G. Chandra Mouli, M. Arun, Harish Barshilia, Meenu Srivastava |
| OP-46 | Electrochemical surface treatment of heat sink fins used for thermal management of travelling wave tube amplifiers Himanshu Shukla, Sharad Shukla |
| OP-47 | Effect of feedstock state on the corrosion performance of cold sprayed nickel coatings G Neelima Devi, Nitin P Wasekar, S Kumar |
| SENSORS | |
| OP-48 | Electrochemically nanoengineered surface comprising 3D bimetallic dendrites for ultrasensitive detection of 1,4-Dioxane in environmental matrix Rohini Kumari, Pranjal Chandra |
| OP-49 | Gold modified hydroxyapatite electrophoretic deposition for H₂S gas sensor application using impedance spectroscopy at room temperature J. Priyanka, V. Balasubramani, R M. Ezhilarasi, S.E. Noorjahan and T.M. Sridhar |
| OP-50 | Development of electrochemical sensor for pico molar detection of dopamine using biomass extracts derived N, P-doped carbon quantum dots Padmapriya. A, Thiyagarajan, Devendiran. M, Shanmugaraj A.M, R. A. Kalaivani |
| OP-51 | Oxygenated graphitic carbon nitride based electrochemical sensor for dibenzofuran detection Sonam Singh, Aparna Naithani, Krish Kandari, Souradeep Roy, Sourav Sain, Susanta Sinha Roy, Shikha Wadhwa, Syed Mohammad Tauseef, Ashish Mathur and Yogender Kumar Mishra |
| POSTER PRESENTATIONS - BATTERIES AND SUPERCAPACITORS | |
| PP-01 | Mitigation of active-material crossover by molecular size exclusion approach in non-aqueous organic redox-flow batteries Sandeep Kumar Mohapatra, Kothandaraman Ramanujam, Sethuraman Sankararaman |
| PP-02 | Enrichment of lithium using two-chambered electro dialysis cell for battery application Srishti Sridhar, Aarti Atkar, Vani Bukke, Shrisha Raj, A. Gangagni Rao |

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| PP-03 | Development of thin &flexible / bendable lithium-ion batteries for flexible and wearable electronic devices Shashikant Tekale, Prashant Misal, Saheb More, Saloni Mohare, Sonali Kakade, Bharat Kale, Sangeeta Semwal and Milind Kulkarni |
| PP-04 | Enhancement in performance of lithium-sulphur batteries by embedding MnO₂ into carbon-sulphur composite Shivangi Tewatia, S. Anandan, Prathap Haridoss, B.V. Sarada |
| PP-05 | Harnessing the potential of TiO₂ -carbon-sulfur composite cathode for lithium-sulfur batteries Thoran Malik Sai Kanakaraju, Yuva Keerthana, Shivangi Tewatia, Dilip Kumar Behara B. V. Sarada |
| PP-06 | Robust sulfonated polyelectrolyte membrane from poly (styrene-co-divinyl benzene) melt-interpenetrated poly(ethylene) network with negolyte modification synergy for vanadium redox flow battery Jeet Sharma, Harun Khan, Ramanujam Kothandaraman, Vaibhav Kulshrestha |
| PP-07 | Use of voltage for recomposing degraded redox active molecules for flow battery applications Abhilipsa Sahoo, Kathandaraman Ramanujam |
| PP-08 | High-performance sodium-ion battery pouch cell with a low-tortuosity, low-voltage, high plateau capacity hard carbon derived from potato-peel biomass K Bhawana, Manoj Gautam, Govind Kumar Mishra and Sagar Mitra |
| PP-09 | Metal-organic frameworks as conductivity enhancers for all-solid-state Lithium batteries Shruti Suriyakumar, Rohit M Manoj, Sreelakshmi Anilkumar, Keerthy P Sudhakaran, Muhammed Shafeek Oliyantakath Hassan, Vinesh Vijayan, Manikoth M Shaijumon |
| PP-10 | Room temperature sodium-sulfur batteries: Current status and future prospects Anshu, Sagar Mitra |
| PP-11 | Leaf-like ZIF-L/MgNiO₂ micro-spheres composite as a cathode for Zinc-ion hybrid supercapacitor-battery with a sulfonated Poly (ether ether ketone) gel containing Zn²⁺ /H⁺ conducting Ions Ishita Naskar, Partha Ghosal, Melepurath Deepa |
| PP-12 | Microporous NCNF-ZIF-67/PEDOT prepared by electrospinning and electro polymerization as efficient energy storage material for free-standing symmetric supercapacitors Karingala Sampath, B. Thirupathi, K. Manohar, K. Vengatajalabathy Gobi |
| PP-13 | Comprehensive analysis of the effect of weight percentage of V and Mn in Ni/Co-MOFs for hybrid supercapacitors Tejashree V, Radhika MG , Srividhya S, Kathyayini Nagaraju |
| PP-14 | Structural and electrochemical properties of mono and divalent ions substituted mixed metal olivine phosphate for Li-ion hybrid capacitor M. Ganeshbabu, R. Kalai Selvan |
| PP-15 | Synthesis of Ni-doped –carbon coated LiFePO₄ as a cathode material for high power LIB Application by cost-effective solid state method Shreyas J. Kashyap, R. Vijay, T. N. Rao, S. Anandan |
| PP-16 | VOx anchored Ti₃C₂Tx MXenes heterostructures for high-performance supercapacitors Kiran Kumar Garlapati, Surendra K. Martha, Bharat B. Panigrahi |

**HYDROGEN TECHNOLOGIES: FUEL CELLS, HER, OER,
ELECTROCATALYSIS AND PHOTOCATALYSIS**

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| PP-17 | Synthesis and characterization of $A_2B_2O_7$ (A = Gd and Y, B= Ti) Titanate Pyrochlore B Navaneeth Kumar, Namrata Damor, Anjana P Anantharaman |
| PP-18 | Screening of spent polymer electrolyte membrane from fuel cells and electrolyzers from the perspective of recycling Sreeraj. P, Raman Vedarajan, Ramya K |
| PP-19 | Electrochemical performance of $SrMg_{0.1}Mo_{0.9}O_{3.5}$ -based mixed ionic and electronic conducting composites for solid oxide fuel cell anodes Amit Das, M Buchi Suresh |
| PP-20 | Vapour phase synthesized Cobalt Phosphide electrocatalyst for Hydrogen evolution reaction Sabarish Kumaravel, T. Joseph Sahaya Anand, Yuvaraj Haldorai, Rajendra Kumar R.T. |
| PP-21 | Development of N, S-dual doped mesoporous hollow carbon spheres as an alternate electrocatalyst for oxygen reduction reaction in alkaline medium Hari Prasaad Somasundharam, Sakkarapalayam Murugesan Senthil Kumar |
| PP-22 | Accelerated electrochemical CO_2 reduction to formate on the surface of Sn-MOF@rGO-10 composite Deep Lata Singh, G. Ranga Rao |
| PP-23 | L-Arginine functionalized cobalt oxide as an efficient electrocatalyst for oxygen evolution reaction Simi Thomas, Bhuvaneswari Thasma Subramanian, Anjali Rangaswamy, Valsala Madhavan Nair Biju |
| PP-24 | Effect of Gd^{3+} doping on structural, morphological, electrical, and electro- catalytic behavior of cerium oxide ceramics synthesized by sol-gel auto combustion route Subhadip Das, Swadesh Kumar Pratihar |
| PP-25 | Ta_2O_5 and Ta_3N_5 nanotubes grown on tantalum substrate for photo-electrocatalytic water splitting Krateeka Madan, G. Ranga Rao |
| PP-26 | Electrochemical synthesis of ruthenium nano cluster over nickel diselenide as an efficient alkaline water splitting Vipin Yadav, Megha Sharma, Prasenjit Sen, and Manikoth M Shaijumon |
| PP-27 | Electrochemical nitrogen reduction to ammonia under ambient condition using bismuth-carbon nanocomposite based electrocatalysts C. Priji, G. Balaji, K. Ramya |
| PP-28 | Microbial bioprospecting of biofuel industry-derived crude glycerol waste as feedstock for biofuel production and its conversion into different value-added products Pravat K. Swain |
| PP-29 | Hydrothermal synthesis of MoS_2 nanoflowers and their application in photocatalytic pollutant degradation studies Bhagyalakshmi Balan, Treesa K. James, Suresh Mathew |
| PP-30 | Microwave-assisted synthesis and characterization of Ag/rGO/TiO_2 nanocomposites with enhanced visible-light activity Aswathy V Kumar, Divya K S, Treesa K James, Suresh Mathew |

SURFACE ENGINEERING – CORROSION AND COATINGS

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|----------------|--|
| PP-31 | Smart coatings with autonomous corrosion indication and active corrosion protection function on mild steel Ramay Patra, M. Santhosh, K. V. Gobi, R. Subasri |
| PP-32 | Enhancing the longevity of solar panel frames: unlocking the potential of C₃N₄/TiO₂ for photoelectrochemical cathodic protection Abinaya Radhakrishnan, Manoja Tharamaraj, Nagarajan Srinivasan |
| PP-33 | Corrosion behaviour of CoCrFeMnNi_x (x= 5, 10, 15, and 20 at%) high entropy alloys Baswanta S Patil, M. Nagini, M. Tarun Babu, C. Prashanthi, A. Jyothirmayi, K. Suresh |
| PP-34 | Development and degradation studies of biodegradable Mg-Zn-Zr alloys Hitesh Kumar, S. Dutta, R. Vijay, K. Hembram |
| SENSORS | |
| PP-35 | Zr-BDC@MWCNT-based electrochemical non-enzymatic sensor for organophosphate pesticide detection N Gokila, Yuvaraj Haldorai, Ramasamy Thangavelu Rajendra Kumar |
| PP-36 | Fabrication of an electrochemical sensing platform based on modified silver carbonate nanocomposite for the detection of tetracycline Neenamol John, Bony K John, Binila K Korah, Beena Mathew |
| PP-37 | CoMoO₄ nanoparticle decorated on reduced graphene oxide as an efficient electrochemical sensor for the real-time detection of fenitrothion Anjali Rangaswamy, Simi Thomas, Valsala Madhavan Nair Biju |
| PP-38 | Efficient detection of hydroxylamine on NiCo₂O₄ nanoparticle modified fluorine doped Tin Oxide electrode via amperometry Asha Ramesh |
| PP-39 | Nanomolar detection of rutin using electrochemical sensor prepared from biomass carbon quantum dots nickel-composite Kalaivani, P. Thiagarajan, M. Devendiran, A. Padmapriya |
| PP-40 | Electrochemical characterization of S-HAP coated 316L stainless steel using electrophoretic deposition for bone implants K. Aruna, R. Vignesh, S. Varshini, K. M. Veerabadran, T. M. Sridhar |
| PP-41 | Rapid quantification of HepG2 cells aided by electrochemically deposited folic acid on platinum electrode Shubhangi, Marshal Dhayal, Sanjay Kumar Rai |
| PP-42 | Process flow-sheet to recover precious and non-ferrous metals from residue of electro refining Rukshana Parween, Jhumki Hait, Rekha Panda, Balram Ambade, Manis Kumar Jha |
| PP-43 | Modelling of electrical properties of CNT yarns J. Akhil Teja, A.S.Bhattacharyya |