



# International Conference on Energy and Environmental Materials (E2M-2024)

July 11 – 13, 2024

Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Indore

Day-1: 11 <sup>th</sup> July 2024 (Thursday)			
Time	Event		
8:00-9:30	Registration		
9:30-10:00	Inauguration		
10:00-10:15	Group Photo		
<b>Session I</b>			
Venue: Gargi Seminar Hall, IIT Indore, <b>Session Chair:</b> Prof. Rajesh Kumar, IIT Indore			
10:15-10:45	<b>Keynote Talk: Prof. Satishchandra B. Ogale</b> , RISE, TCG-CREST, Kolkata <i>“Designing Energy Materials and Interfaces for Superior Energy Harvesting and Storage”</i>		
10:45-11:15	<b>Keynote Talk: Dr. Tata Narasinga Rao</b> , ARCI, Hyderabad <i>“Translational Materials Research in Energy Storage Technologies crossing the valley of death”</i>		
11:15-11:30	<b>Tea Break</b>		
11:30-12:00	<b>Keynote Talk: Prof. Praveen C Ramamurthy</b> , IISc Bangalore <i>“Organic Electronics: Molecules to Devices”</i>		
12:00-12:30	<b>Keynote Talk: Prof. Manoj Kumar Ram</b> , PolyMaterials App, LLC, USA <i>“Design, Fabrication and Modern Applications of Sustainable High Power and High Energy-Based Supercapacitor”</i>		
12:30-13:00	<b>Keynote Talk: Prof. Krishanu Biswas</b> , IIT Kanpur <i>“Multicomponent Quasicrystal as Template for 2D Multicomponent Alloys: Design, Microstructure and Applications”</i>		
13:00-13:20	<b>Invited Talk: Dr. Rohini Kitture</b> , Small and Physical Sciences Journals @ Wiley <i>“Mastering Research Publishing: Insights from Editor’s Desk”</i>		
13:20-14:30	<b>Lunch (at Central Dining Facility)</b>		
<b>Session II</b>			
Venue: Lecture Hall Complex			
	<b>Parallel Session II-A (Room: L-31)</b> <b>Session Chair:</b> Prof. Sudheshna Chattopadhyay, IIT Indore	<b>Parallel Session II-B (Room: L-32)</b> <b>Session Chair:</b> Prof. Krishanu Biswas, IIT Kanpur	<b>Parallel Session II-C (Room: L-33)</b> <b>Session Chair:</b> Prof. Praveen C Ramamurthy, IISc Bangalore
14:30-14:50	<b>Invited Talk: Dr. Suman Singh</b> , CSIR- CSIO Chandigarh <i>“Materials engineering for energy harvesting application”</i>	<b>Invited Talk: Prof. Tokeer Ahmad</b> , Jamia Millia Islamia, New Delhi <i>“Scalable Green Hydrogen Production using Photo- and Electro-Chemical Water Splitting”</i>	<b>Invited Talk: Prof. Dipankar Mandal</b> , INST Mohali <i>“A New Era of Machine Learning integrated Cognitive Nanogenerators”</i>
14:50-15:10	<b>Invited Talk: Dr. A S Prakash</b> , CSIR CECRI Chennai <i>“Advancements in sodium-ion battery technology: novel cathode materials to full-cell systems”</i>	<b>Invited Talk: Prof. Anantharaj Sengeni</b> , IIT Kanpur <i>“Electrocatalysts are worthless without accurate and precise testing!”</i>	<b>Invited Talk: Prof. Raj Kumar Gupta</b> , BITS Pilani <i>“Ultrathin films of graphene system and applications”</i>

**Keynote Talk:** 25 min+ 5 min (Q&A), **Invited Talk:** 16 min+ 4 min (Q&A), **Oral Presentation:** 9 min+ 3 min (Q&A).



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15:10-15:30	<b>Invited Talk: Prof. Babasaheb R. Sankapal,</b> VNIT Nagpur <i>"Material Mutualism" -State of art for energy conversion &amp; storage"</i>	<b>Invited Talk: Prof. Rohit Mehra,</b> NIT Jalandhar <i>"Estimation of Environmental Radioactivity levels in Air, Water and Soil for the Assessment of Health Risks to the Human Population"</i>	<b>Invited Talk: Dr. Jeoti Kanta Mohapatra,</b> Molekule Inc., USA <i>"Emerging Applications of Magnetic Nanowires"</i>
15:30-15:50	<b>Invited Talk: Prof. Sandan Kumar Sharma,</b> IIT Patna <i>"Tribological Performance of Transparent YAG Ceramics: A Study for Energy-Efficient Optical Applications"</i>	<b>Invited Talk: Prof. Biswajit Mondal,</b> IIT Gandhinagar <i>"Waste to Wealth: Electrochemical Upgradation of Biomass and Waste Plastic to Valuables with the Co-production of Hydrogen"</i>	<b>Invited Talk: Dr. Manoj Kumar Gupta,</b> CSIR-AMPRI Bhopal <i>"Two Dimensional Nanostructures Based Flexible Nanogenerators"</i>
15:50-16:10	<b>Invited Talk: Prof. Prem Pal,</b> IIT Hyderabad <i>"Simple and cost-effective silicon surface texturing methods for solar cell"</i>	<b>Invited Talk: Prof. Sudip Chakraborty,</b> HRI Prayagraj <i>"Computational Advancement of Sustainable Energy Materials: Connecting a Few Dots"</i>	<b>Invited Talk: Prof. Syed Arshad Hussain,</b> Tripura University <i>"Versatile multifaceted resistive switching memory using Organic Molecules"</i>
16:10-16:30	<b>Tea Break</b>		
16:30-17:30	<b>Oral Presentations</b> (OPB01-OPB05)	<b>Oral Presentations</b> (OPC01-OPC05)	<b>Oral Presentations</b> (OPA01-OPA05)
17:30-19:00	<b>Poster Presentations:</b> (PPA01- PPA12), (PPB01-PPB47), (PPC01-PPC19), (PPD01-PPD15), (PPE01-PPE15)		
19:00-21:00	<b>Conference Dinner</b>		

## Day-2: 12<sup>th</sup> July 2024 (Friday)

### Session III

Venue: Gargi Seminar Hall, IIT Indore; Session Chair: Prof. Raj Kumar Gupta, BITS Pilani

Time	Event
9:30-10:00	<b>Keynote Talk:</b> Prof. Sri Sivakumar, IIT Kanpur <i>"Development of Nanocatalysts for Cleaner Fuel"</i>
10:00-10:30	<b>Keynote Talk:</b> Prof. Kothandaraman Ramanujam, IIT Madras <i>"Faradaic and Non-Faradaic Contribution to the Capacity of Novel Organic Cathode of Li-ion Battery"</i>
10:30-11:00	<b>Keynote Talk:</b> Prof. Abir De Sarkar, INST Mohali <i>"DFT perspectives on valleytronics, piezoelectricity and flexible piezo-spintronics in selected functional 2D materials"</i>
11:00-11:30	<b>Tea Break</b>
11:30-12:00	<b>Keynote Talk:</b> Prof. Pratima Agarwal, IIT Guwahati <i>"Challenges in Dopant free c-Si heterojunction solar cells"</i>
12:00-12:20	<b>Invited Talk:</b> Dr. Aayushi Arora, Royal Society of Chemistry <i>"RSC: Integrating Chemical Sciences Community and Beyond"</i>
12:20-12:30	<b>Industry Representation:</b> Talk by Merck Representative

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12:30-13:30 Lunch (At Central Dining Facility)			
Session IV			
Venue: Lecture Hall Complex			
	Parallel Session IV-A (Room: L-31) Session Chair: Prof. Sunil Kumar, IIT Indore	Parallel Session IV-B (Room: L-32) Session Chair: Prof. Srimanta Pakhira, IIT Indore	Parallel Session IV-C (Room: L-33) Session Chair: Prof. Mukesh Kumar, IIT Indore
13:30-13:50	<b>Invited Talk: Prof. Ram B. Choudhary,</b> IIT(ISM) Dhanbad <i>"Nature-Inspired Carbon Electrode Materials as Green Precursors for Green Supercapacitors"</i>	<b>Invited Talk: Prof. Ardhendu Sekhar Giri,</b> IISER Bhopal <i>"Low-cost activated carbon doped TiO<sub>2</sub> nanocomposite and its photocatalytic degradation of Antibiotics under UV-light irradiation"</i>	<b>Invited Talk: Prof. Bikas C. Das,</b> IISER TVM <i>"Memristors and Memtransistors: Exploring Versatile Behaviors and Neuromorphic Potential"</i>
13:50-14:10	<b>Invited Talk: Prof. S. N. Pandey,</b> MNNIT Allahabad <i>"Oxide/hydroxide/oxyhydroxide materials for energy storage: Supercapacitor"</i>	<b>Invited Talk: Prof. Koyel Banerjee Ghosh,</b> IIT Hyderabad <i>"Advancing spin-controlled electrocatalysis via. chirality-induced spin polarization"</i>	<b>Invited Talk: Prof. Anurag Srivastava,</b> IIITM Gwalior <i>"Air and Water pollutant Detection: 2D Materials as the Potential Candidate"</i>
14:10-15:10	<b>Oral Presentations</b> (OPB06 – OPB10)	<b>Oral Presentations</b> (OPC06-OPC08, OPD01-OPD02)	<b>Oral Presentations</b> (OPA06, OPE01-OPE04)
15:10-15:20 Tea Break			
15:20-15:40	<b>Invited Talk: Prof. Anil K. Yadav,</b> CCS University Meerut <i>"Phosphors for Energy efficient LEDs and Lighting Applications"</i>	<b>Invited Talk: Prof. Ambesh Dixit,</b> IIT Jodhpur <i>"Efficient Modulation of Hydrogenation/dehydrogenation Kinetics Using Nanoengineered Materials in MgH<sub>2</sub> Solid-State Hydrogen Storage"</i>	<b>Invited Talk: Prof. Sachin Gupta,</b> Bennett University, Greater Noida <i>"Novel spintronic materials for next generation technological applications"</i>
15:40-16:00	<b>Invited Talk: Dr. Himanshu Tyagi</b> Swansea University, UK <i>"Wide-field Imaging with Super-resolution Enabled by Raman Signals (WISER)"</i> (online)	<b>Invited Talk: Dr. Arijit Mitra,</b> National Cheng Kung University, Taiwan <i>"In-situ Liquid-Phase Transmission Electron Microscopic Observation of Si-H<sub>2</sub>O reaction for On-Demand H<sub>2</sub> Production"</i> (Online)	<b>Invited Talk: Dr. Shamima Hussain,</b> UGC- DAE CSR, Kalpakkam <i>"Advanced material for next generation devices"</i>
16:00-17:00	<b>Oral Presentations</b> (OPB11-OPB15)	<b>Oral Presentations</b> (OPD03-OPD07)	<b>Oral Presentations</b> (OPE05-OPE09)
17:00-17:30 Tea Break			
Session V (Online)			
Venue: Lecture Hall Complex (Room: L-31), Session Chair: Prof. Ritunesh Kumar, IIT Indore			
17:30-18:00	<b>Keynote Talk: Prof. Ajay Kumar Mishra,</b> Durban University of Technology, South Africa <i>"Nano-engineered Materials for Wastewater Applications"</i>		
18:00-18:30	<b>Keynote Talk: Prof. Ajeet Kaushik,</b> Florida Polytechnic University, Florida, USA <i>"Sustainable sensing for health and environmental management"</i>		
18:30-19:00	<b>Keynote Talk: Dr. Jaspreet Dhau,</b> Molekule Group, Inc, USA <i>"Fluorine-Free Firefighting Foam: A Sustainable and Eco-friendly Solution for Extinguishing Class-B Fires"</i>		

**Keynote Talk:** 25 min+ 5 min (Q&A), **Invited Talk:** 16 min+ 4 min (Q&A), **Oral Presentation:** 9 min+ 3 min (Q&A).



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## Day-3: 13<sup>th</sup> July 2024 (Saturday)

### Session VI (online)

Venue: Lecture Hall Complex (Room: L-31, L-32 & L-33): Session Chair: Prof. Dharendra Kumar Rai, IIT Indore

Time	Event		
9:00-9:30	<b>Keynote Talk: Dr. Harish C. Barshilia</b> , CSIR-NAL Bangalore <i>"Towards facile and eco-friendly renewable energy solutions: Recent advances in photo-thermal conversion coating technologies"</i>		
9:30-10:00	<b>Keynote Talk: Dr. Mohit Sharma</b> , IMRE, Singapore <i>"High-throughput and Lightweight Composites for New-gen Aero-structure and Advanced Air Mobility (AAM)"</i>		
<b>Session VII</b> Venue: Lecture Hall Complex			
	<b>Parallel Session VIII-A (Room: L-31)</b> <b>Session Chair:</b> Prof. Janakiraman S, IIT Indore	<b>Parallel Session VIII-B (Room: L-32)</b> <b>Session Chair:</b> Prof. Hemen Kalita Gauhati University	<b>Parallel Session VIII-C (Room: L-33)</b> <b>Session Chair:</b> Prof. Sumanta Samal, IIT Indore
10:00-10:20	<b>Invited Talk: Prof. Nirmal Ganguli</b> , IISER Bhopal <i>"Antiferromagnetic spintronics promising superfast computation at miniscule energy"</i>	<b>Invited Talk: Prof. Bablu Prasad</b> , M.S. University of Baroda, Vadodara <i>"Prevalence and Characterization of Microplastics in Water, Sediments, and Crab Samples from Kavi Kamboi, Gujarat"</i>	<b>Invited Talk: Prof. Utpal Sarkar</b> , Assam University, Silchar <i>"Carbon based material for nanoelectronic and optoelectronic applications"</i>
10:20-10:40	<b>Invited Talk: Prof. Swagata Roy</b> , Parul University Gujarat <i>"A Cutting-Edge Approach to Self-Harvesting and Renewable Energy Storage Devices Using <math>\beta</math>-Nucleated High-Dielectric PVDF Composites"</i>	<b>Invited Talk: Dr. Mukurala Nagaraju</b> , Incheon National University, South Korea <i>"Development of fully biodegradable magnesium (Mg)-molybdenumtrioxide (<math>MoO_3</math>) transient battery"</i> (Online)	<b>Invited Talk: Prof. Jai Singh</b> , Guru Ghasidas Vishwavidyalaya, Bilaspur <i>"Future Materials for Thermoelectric and Hydrogen Storage"</i> (Online)
10:40-11:40	<b>Oral Presentations</b> (OPB16-OPB20)	<b>Oral Presentations</b> (OPD08-OPD12)	<b>Oral Presentations</b> (OPD13, OPE10-OPE11)
12:00	<b>Valedictory Function:</b> (Venue: POD 1D-105)		
12:30	<b>Lunch (At Central Dining Facility)</b>		

