Sunday, 14th December 2025

Time	Venue: IIT Delhi - Abu Dhabi, Khalifa City B, Abu Dhabi (Entry from Gate 6 or 7)	
11:30 - 12:30	**Registration and Lunch**	
12:30 – 14:30	**Workshop 1** **Hands-on with Data-Driven Approaches to Accelerate Catalysis and Materials Research** *(Meta)* **Zachary W. Ullissi** Meta Fundamental AI Research **Rachit Khare** Technical University of Munich	**Workshop 2** **Why High-Quality Presentations and Posters Matter?** *(American Chemical Society)* **Ajay Jha** Assistant Director, ACS Publications
14:30 - 15:00	**Coffee Break and Campus Tour**	
15:00 – 17:00	**Workshop 3** **Innovation & Lab-to-Industry Pathways** *(American Chemical Society)* **Ajay Jha** Assistant Director, ACS Publications	**Workshop 4** **Research Data Management for Catalysis and Materials Research** *(NFDI4Cat and SPARC)* **Michael Libeau** University of Leipzig **Mohammad Khatamirad** Technical University of Berlin **Nikolaos G. Moustakas** Leibniz Institute for Catalysis **Rachit Khare** Technical University of Munich

Monday, 15th December 2025					
Time	**Venue: Fairmont Bab Al Bahr, Abu Dhabi**				
07:30 - 09:00	**Registration and Coffee**				
09:00 – 09:30	Welcome				
	Distinguished Speakers Session 1 **Venue:** *Saqr Ballroom* **Chairs**: Joseph Smith, Shobhana Narasimhan				
09:30 – 10:00	*Powering the Change - Materials and Processes for Energy Transition* **Johannes A. Lercher**, Technical University of Munich				
10:00 – 10:30	*Multiscale Modeling for Accelerating Carbon Capture and Beyond* **Ahmed Al Hajaj**, Khalifa University				
10:30 – 11:00	**Coffee Break and Poster Session 1**				
	Distinguished Speakers Session 2 **Venue:** *Saqr Ballroom* **Chairs**: Safiya Khalil Al Hashmi, Mark T. Swihart				
11:00 – 11:30	*The Prospect of AI for Materials Discovery and Design of New Energy Materials* **Jeffrey Snyder**, Northwestern University				
11:30 – 12:00	*LIGHT, ELECTRONS and ACTION* **Vivek Polshettiwar**, Tata Institute of Fundamental Research				
12:00 – 12:30	*AI for Science and Sustainability: A Journey from Process Systems Engineering* **Fengqi You**, Cornell University				
12:30 - 13:30	**Group Photo and Lunch**				
	Distinguished Speakers Session 3 **Venue**: *Saqr Ballroom* **Chairs**: Ahmed Al Hajaj, Xiaonan Wang				
13:30 – 14:00	*TBD* **Maryam Al Nahyan**, New York University Abu Dhabi				
14:00 – 14:30	*Nature-Inspired Engineering of Functional Materials via a Systematic Design Methodology* **Marc-Olivier Coppens**, University College London				
14:30 – 15:00	*Discovering Reaction Networks and Life Cycle Pathways for a Sustainable Circular Economy of Chemicals* **Bhavik Bakshi**, Arizona State University				
15:00 – 15:30	*Hybrid Energy Systems: Innovative Research Pathways for Alleviating Global Energy Poverty* **Joseph Smith**, Missouri University of Science & Technology				
15:30 - 16:00	**Coffee Break and Poster Session 1**				
16:00 – 18:00	**Parallel Session 1** ***AI for Sustainable Chemical Processes*** **Venue:** Saqr Ballroom 1	**Parallel Session 2** ***Process Intensification for Sustainability*** **Venue:** Saqr Ballroom 2	**Parallel Session 3** ***Sustainable Materials for Energy Storage*** **Venue:** Saqr Ballroom 3	**YRS Session 1** ***AI & ML for Sustainability*** **Venue:** Al Reem	**Lightning Session 1** **Venue:** Sir Banyas
18:30 - 20:00	**Grand Dinner Reception (Shangri-La Hotel & Resorts, Abu Dhabi)**				

Tuesday, 16th December 2025

Time	Venue: Fairmont Bab Al Bahr, Abu Dhabi
07:30 - 08:00	**Coffee and Snacks**
	Distinguished Speakers Session 4 **Venue**: *Saqr Ballroom* **Chairs**: Johannes Hachmann, Moses Tade
08:00 – 08:30	*Energy Security: Molecular Insight to Industrial Impact. Bringing Speed and Scale to Science for Sustainability* **Ramakrishna R. Sonde**, BITS Pilani, Goa Campus
08:30 – 09:00	*ML Guided Catalyst Discovery for the Direct Hydrogenation of CO_2 to Jet Fuel* **Jorge Gascon**, King Abdullah University of Science and Technology
09:00 – 09:30	*Designing Materials for Sustainability from First Principles* **Shobhana Narasimhan**, Jawaharlal Nehru Center for Advanced Scientific Research
09:30 – 10:00	*2D Nanocomposite Membrane Engineering: A Journey from Research to Production* **Hassan Arafat**, Khalifa University
10:00 - 10:30	**Coffee Break and Poster Session 2**
	Distinguished Speakers Session 5 **Venue**: *Saqr Ballroom* **Chairs:** Marc-Olivier Coppens, Josephine Mary Hill
10:30 – 11:00	*Machine Learning Models Across Chemistry and Materials* **Zachary W. Ulissi**, Meta Fundamental AI Research
11:00 – 11:30	*Fathoming the Complexities of Reactions at Solid-Liquid Interfaces* **David Flaherty**, Georgia Institute of Technology
11:30 – 12:00	*AI for Sustainability: Foundation Models for Closed-Loop, Knowledge-Driven Chemical Discovery and Process Optimization* **Xiaonan Wang**, Tsinghua University
12:00 – 12:30	*Materials for Energy from Advanced Modeling* **Marco Saitta**, Université Pierre et Marie Curie - Sorbonne
12:30 - 13:30	**Lunch**
	Distinguished Speakers Session 6 **Venue**: *Saqr Ballroom* **Chairs**: Jeffrey Snyder, Maryam Khaleel
13:30 – 14:00	*Protonic Ceramic Electrochemical Cells: Status and Outlook* **Sossina M. Haile**, Northwestern University
14:00 – 14:30	*Scalable Production of Nanostructured Materials for Energy and Health Applications using Gas Phase Deposition* **Ruud van Ommen**, Delft University of Technology
14:30 – 15:00	*AI for Materials Driven Innovation for a Regenerative Economy* **Krishna Rajan**, University at Buffalo
15:00 - 15:30	**Coffee Break and Poster Session 2**
15:30 – 17:30	**Parallel Session 4** ***Materials for Sustainability I*** **Venue:** Saqr Ballroom 1 **Parallel Session 5** ***Carbon Capture and Beyond*** **Venue:** Saqr Ballroom 2 **Parallel Session 6** ***AI for Sustainability I*** **Venue:** Saqr Ballroom 3 **YRS Session 2** ***Materials for Sustainability*** **Venue:** Al Reem **Lightning Session 2** **Venue:** Sir Banyas
18:00 - 20:00	**Gala Dinner and Musical Night at Fairmont Bab Al Bahr**

Wednesday, 17th December 2025

Time	Venue: Fairmont Bab Al Bahr, Abu Dhabi				
07:30 - 08:00	**Coffee and Snacks**				
08:00 – 10:00	**Parallel Session 7** ***Sustainable Chem-ical Processes*** **Venue:** Saqr Ballroom 1	**Parallel Session 8** ***AI for Sustainability II*** **Venue:** Saqr Ballroom 2	**Parallel Session 9** ***Materials for Sustainability II*** **Venue:** Saqr Ballroom 3	**YRS Session 3** ***Catalysis and Carbon Capture*** **Venue:** Al Reem	**YRS Session 4** ***Water-Energy-Climate*** **Venue:** Sir Banyas
10:00 - 10:30	**Coffee Break and Poster Session 3**				
	Distinguished Speakers Session 7 **Venue**: *Saqr Ballroom* **Chairs**: Ruud van Ommen, Krishna Rajan				
10:30 – 11:00	*Materials Science and Systems Innovation for the Just Energy Transition* **Daniel M. Kammen**, Johns Hopkins University				
11:00 – 11:30	*Decarbonising the Future: CCU and Hydrogen Landmark Redefining the Future of Energy* **Kamal K. Pant**, Indian Institute of Technology Roorkee				
11:30 – 12:00	*Decarbonising Heavy Industries: The Roles of Carbon Capture and Hydrate-Based Storage* **Moses Tade**, Curtin University				
12:00 – 12:30	*All Wastes are not Equal for Hydrogen Production via Gasification* **Josephine Mary Hill**, University of Calgary				
12:30 - 13:30	**Lunch**				
	Distinguished Speakers Session 8 **Venue**: *Saqr Ballroom* **Chairs**: Fengqi You, Zachary W. Ulissi				
13:30 – 14:00	*Flame Aerosol Synthesis of High-Entropy Catalysts for Sustainability* **Mark T. Swihart**, University at Buffalo				
14:00 – 14:30	*Engineering Human+AI Collaboration for Process Safety and Sustainability Applications* **Rajagopalan Srinivasan**, Indian Institute of Technology Madras				
14:30 – 15:00	*Artificial Intelligence for Multiphase Reactors: Some Recent Advances* **Muthanna H. Al-Dahhan**, Missouri University of Science & Technology				
15:00 - 15:30	**Coffee Break and Poster Session 3**				
	Distinguished Speakers Session 9 **Venue**: *Saqr Ballroom* **Chairs**: Sossina M. Haile, Bhavik Bakshi				
15:30 – 16:00	*Computational Screening of Metallic and Mixed-metal Oxide Catalysts for Bio-oils Upgrading and H_2 Production* **Lourdes Vega**, Khalifa University				
16:00 – 16:30	*Outlook on Global Energy Transition: AI Catalysing Power Sector Transformation* **Gauri Singh**, International Renewable Energy Agency				
16:30 – 17:00	*Revisiting Energy Systems Modelling in the Context of AI* **Rangan Banerjee**, Indian Institute of Technology Delhi				
17:00 - 17:30	**Closing Remarks and Award Ceremony**				
17:30 – 19:00	Visit to the Sheikh Zayed Grand Mosque				

TECHNICAL PROGRAM (Parallel Sessions 1 – 3)

Monday, 15th December 2025			
Session	**Parallel Session 1** ***AI for Sustainable Chemical Processes***	**Parallel Session 2** ***Process Intensification for Sustainability***	**Parallel Session 3** ***Sustainable Materials for Energy Storage***
Room	Saqr Ballroom 1	Saqr Ballroom 2	Saqr Ballroom 3
Chairs	**Suprakas Sinha Ray** **Shelaka Gupta**	**Manoj Ramteke** **Ejaz Ahmed**	**Madhulika Gupta** **Rajesh Kumar Upadhyay**
16:00 – 16:20	*Generative AI for Sustainability: Applications in Drug Discovery, Agrichemistry and Materials Science* **Alex Aliper** Insilico Medicine	*Sustainable Nanocomposites Synthesized through "Green" Plasma Induced Liquid Chemistry* **Dan Sun** Queen's University Belfast	*Hybrid Materials as Electrode and Electrolyte for Conversion Devices* **Suddhasatwa Basu** IIT Delhi
16:20 – 16:40	*Accelerating Sustainable Technologies through High-Throughput Synthesis of Covalent Organic Frameworks* **Safiya Khalil Al Hashmi** NYU Abu Dhabi	*Catalytic Structures for CO_2 Conversion into Lower Hydrocarbons: Structure-Resolved CFD Simulations* **Vivek Buwa** IIT Delhi	*Atomic Scale Origin of RC-Circuit Behavior in Solid Electrolytes* **Abhijit Chatterjee** IIT Bombay
16:40 – 17:00	*Making Artificial Intelligence Work in the Molecular Sciences* **Johannes Hachmann** University at Buffalo	*Next-Generation Anion Exchange Membranes with Superior Stability and Conductivity for Electrochemical Energy and Water Electrolysis* **Bijay Tripathi** IIT Delhi	*Catalytic Layered Double Perovskites for Sustainable Fuel Cells and Electrolyzers* **Sivaprakash Sengodan** Khalifa University
17:00 – 17:20	*Enhanced Sampling Augmented with Machine Learning Methods for Simulating Activated Processes* **Tarak Karmakar** IIT Delhi	*Ion Transport in Electrochemical Capacitors: Modified Kirchhoff's Law for Structure-Property Relationships* **Ankur Gupta** University of Colorado	*Extraction of Vanadium from Spent Catalyst and Utilization in Flow Battery* **Anil Verma** IIT Delhi
17:20 – 17:40	*Machine Learning Based Dynamic Model of Solar Thermal Power Plant* **Mani Bhushan** IIT Bombay	*Intelligent Digital Twins - Transforming the Energy Industry* **Sriganesh Karur** Ex-General Manager, Shell	*New Materials for Clean Energy and Sustainability* **Ahsan Qurashi** Khalifa University

TECHNICAL PROGRAM (Parallel Sessions 4 – 6)

Tuesday, 16th December 2025			
Session	**Parallel Session 4** ***Materials for Sustainability I***	**Parallel Session 5** ***Carbon Capture & Beyond***	**Parallel Session 6** ***AI for Sustainability I***
Room	Saqr Ballroom 1	Saqr Ballroom 2	Saqr Ballroom 3
Chairs	**Deepak Kumar** **Suddhasatwa Basu**	**Husain Kanchwala** **Ramakrishna R Sonde**	**Abhijit Chatterjee** **Sriganesh Karur**
15:30 – 15:50	*Computational Modeling and ML to Discover Materials and Reaction Pathways for Clean Energy Applications* **Ananth Govind Rajan** IISc Bangalore	*High-throughput Molecular and Process-level Screening of COFs for Carbon Capture via Pressure Swing Adsorption* **Ashutosh Yadav** IIT Jammu	*Engineering Polymer-surface Adhesion using Molecular Dynamics and Machine Learning* **Divya Nayar** IIT Delhi
15:50 – 16:10	*Zeolite-templated Carbon-based Air Electrodes for Lithium-Oxygen Battery* **Maryam Khaleel** Khalifa University	*Developing Nanostructured Catalysts for CO_2 Conversion using Density Functional Theory and Machine Learning* **Sergey Kozlov** NUS, Singapore	*Optimizing Renewable Energy and Thermal Storage with Advanced AI* **Martin Takáč** MBZUAI, Abu Dhabi
16:10 – 16:30	*Rational Design of Acidic Sites for Large Pore Zeolite for their Effective Utilization in Alkylation Reactions for Sustainable Aviation Fuel* **Manjesh Kumar** IIT Delhi	*Phonon Pathways to Green Energy: Thermoelectric Advances in 2D Chalcogenides* **Nirpendra Singh** Khalifa University	*Artificial Intelligence-Driven Optimization of Solid Oxide Electrolysis for Efficient Green Hydrogen Production* **Munawar A. Shaikh** UAE University
16:30 – 16:50	*Tunable Frameworks: Fit-to-Purpose Materials for Energy and Sustainability* **Dinesh Shetty** Khalifa University	*A Novel Carbon Capture and Utilization Technology to Recycle Heavy Metals from Industrial Waste* **Vikram Singh** IIT Delhi	*Development of Deep Learning based Bayesian Sensor Fusion Algorithms: Application to Hybrid Three Tank Experimental System* **Jayaram Valluru** IIT Ropar
16:50 – 17:10	*Bioplastics in Focus: Life Cycle Assessment and AI for a Greener Future* **Suprakas Sinha Ray** DSI - CSIR	*Computational-Guided Design of Functionalized Zeolite-Templated Carbons for Efficient CO_2 Capture* **Daniel Bahamon Garcia** Khalifa University	*Mapping the Elastic Properties of Sodium Silicate Glasses: A Simulation Pipeline Integrating SHIK and DeepMD with XGBoost for High-Fidelity Prediction* **Hicham Jabraoui,** TII
17:10 – 17:30	*Data-Driven Materials Designing for Optoelectronics* **Dibyajyoti Ghosh** IIT Delhi	*Climate Change, Sustainability and the Pathway Towards a Circular Economy: Global Perspectives and Challenges* **Chithirai Pon Selvan** Curtin University Dubai	*Machine Unlearning for Process Applications* **Manoj Ramteke** IIT Delhi

TECHNICAL PROGRAM (Parallel Sessions 7 – 9)

Wednesday, 17th December 2025

Session	Parallel Session 7 *Sustainable Chemical Processes*	Parallel Session 8 *AI for Sustainability II*	Parallel Session 9 *Materials for Sustainability II*
Room	Saqr Ballroom 1	Saqr Ballroom 2	Saqr Ballroom 3
Chairs	**Mani Bhushan** **Munawar A. Shaikh**	**Dinesh Shetty** **Ashutosh Yadav**	**Anil Verma** **Dibyajyoti Ghosh**
08:00 – 08:20	*Direct Joule-Heated Membrane Reformer for On-Site Production of Ultra-pure Hydrogen* **Rajesh Kumar Upadhyay** IIT (BHU) Varanasi	*Artificial Intelligence – Driven Screening and Atomistic Simulation of Corrosion Inhibitors for Steel in Marine Environments* **Shivraj Karewar** Technology Innovation Institute	*Porous Organic and Coordination Polymer Materials for Energy and Environment Sustainability* **Himanshu Aggarwal** BITS Pilani, Hyderabad
08:20–08:40	*Adsorption of Two Anionic Mordant Red Dyes by Differently Activated Plant Derived Biochar* **Umesh Mishra** NIT Agartala	*Prediction of Descriptor (CO and OH) Binding Energy on Cu-based Bimetallic Alloys using ML Approach* **Shelaka Gupta** IIT Hyderabad	*Microwave-Synthesized Graphene Quantum Dots as Hydrophilic Modifiers for High-Performance Polysulfone Ultrafiltration Membrane* **Jagdeeshbabu P Ettiyappan** NITK Surathkal
08:40-09:00	*Magnesium-CaNi Composite Systems for Hydrogen Storage Applications* **Nitesh Kumar** IIT Jammu	*Graph Neural Network Assisted Sensor Placement Design using Reliability Criteria* **Om Prakash** IIT Delhi	*Microarchitected Hierarchically Porous PLA/S/CNT Nano-composite Electrodes Enabled via 3D Printing with Remarkable Performance in Li-Ion Batteries* **Vinay Gupta** Khalifa University
09:00-09:20	*Deciphering the Role of Metals and Promoter Loading on CO_x Free Turquoise H_2 Production for Carbon Neutral Coal Mining* **Ejaz Ahmad** IIT (ISM) Dhanbad	*Deconstruction of Biomass for Bioenergy: Molecular Insights into Xylan-Cellulose Adhesion* **Madhulika Gupta** IIT (ISM) Dhanbad	*Core-shell Nanotechnology Assisted Nano-Composite Anode (Gr/Si@TiO_2) for Li-ion Battery* **Deepak Kumar** IIT Delhi
09:20-09:40	*Radiation-based Techniques for Detailed Investigation of Cohesive Particle Flows to Make Advanced Materials* **Ruud van Ommen** Delft University of Technology	*Tuning the Selectivity of Hydrogenation and C-C Coupling Pathways during Biomass Conversion* **Rachit Khare** Technical University of Munich	*Graphene Anti-Corrosion Coatings for Sustainable Infrastructure and Industrial Efficiency* **Husain Kanchwala** IIT Delhi

TECHNICAL PROGRAM
(Young Researchers and Scientists Sessions)

Monday, 15th December 2025	
Session	**YRS Session 1** ***AI & ML for Sustainability***
Room	Al Reem, Fairmont Bab Al Bahr, Abu Dhabi
Chairs	**Jayaram Valluru, Divya Nayar**
16:00 – 16:10	*Metal Chalcogenide Nanomaterials for Sustainable Development*, **Shivram Garje,** University of Mumbai
16:10 – 16:20	*AI-Guided Screening of 2D-Materials for Efficient Proton Transport in PEM Fuel Cells,* **Yuting Li**, Khalifa University
16:20 – 16:30	*Development of a Multifunctional Cellulose/Chitosan Bioelectrode for Neural Interfacing Applications using Machine Learning Approaches,* **Meera Alex,** American University of Sharjah
16:30 – 16:40	*Mapping the Flammability Space of Sustainable Refrigerant Mixtures through an Artificial Neural Network Based on Molecular Descriptors,* **Sultan Al Ali**, Khalifa University
16:40 – 16:50	*DOS is More: Physics-Informed GNNs for Sustainable Materials*, **Elizaveta Starykh**, MBZUAI
16:50 – 17:00	*A Hyper-Heuristic Interval based AI Prediction Model for Reliable Performance Forecasting of Water Energy Nexus System*, **Bukke Kiran Naik**, NIT Rourkela
17:00 – 17:10	*Zeolite – Conducting Polymer Nanocomposite for Water Remediation Coupled with Machine Learning Insights*, **Megha Parmar**, Pandit Deendayal Energy University
17:10 – 17:20	*Hourly Solar Irradiation Forecasting via Hybrid Facebook Prophet-ML Framework for Amravati* Region, **Aditya Kumar**
17:20 – 17:30	*Data-Driven Machine Learning Applications for Predictive Modeling of Petrochemical and Ecofriendly Systems*, **Noora Al Mansoori**, Abu Dhabi University
17:30 – 17:40	*Prompt Learning Framework for Zero-Shot Carbon Fiber Defect Detection in Hydrogen Storage Manufacturing*, **Samee Ullah Khan**, Khalifa University

TECHNICAL PROGRAM
(Young Researchers and Scientists Sessions)

Tuesday, 16th December 2025	
Session	**YRS Session 2** ***Materials for Sustainability***
Room	Al Reem, Fairmont Bab Al Bahr, Abu Dhabi
Chairs	**Tarak Karmakar, Bijay Tripathi**
15:30 – 15:40	*Microwave-Assisted Synthesis of $ZnFe_2O_4$ Nanomaterials for High-Performance Supercapacitor Application*, **Pavan Dhurandhar**, University of Mumbai
15:40 – 15:50	*Engineering Sustainable Materials and Methods for Lightweight Lattice Structures*, **Asha Viswanath**, Khalifa University
15:50 – 16:00	*Export Competitiveness of Controlled Environment Saffron Production: Entrepreneurial Evidence from Indian Emerging States*, **Sahiba Sharma,** Manav Rachna University, Faridabad
16:00 – 16:10	*Morphological Engineering of $CoFe_2O_4$ Nanostructures for High-Performance and Durable Supercapacitor Electrodes*, **Rukayat Zakari**, Khalifa University
16:10 – 16:20	*From Nature to Power: Eco-Friendly Energy Scavenging and Self-powered Smart Sensing*, **Bushara Fatma**, Khalifa University
16:20 – 16:30	*Advanced Inorganic Materials for Energy Storage Devices*, **Rohan Narkar**, University Of Mumbai
16:30 – 16:40	*Electromagnetic Shielding Performance of Large Lateral-Sized Graphene Sheets* **Shanavas Shajahan**, Khalifa University

TECHNICAL PROGRAM
(Young Researchers and Scientists Sessions)

Wednesday, 17th December 2025	
Session	**YRS Session 3** ***Catalysis and Carbon Capture***
Room	Al Reem, Fairmont Bab Al Bahr, Abu Dhabi
Chairs	**Ananth Govind Rajan, Manjesh Kumar**
08:00 – 08:10	*Selective Formation of Formic Acid via Low-Temperature Methane Oxidation on Au-Fe/Na-ZSM-5: Experimental and DFT Insights*, **Iqra Ahangar**, Higher Colleges of Technology, Abu Dhabi
08:10 – 08:20	*Ni-Ru Catalysts for Biogas Reforming: Mitigating Carbon and Sulfur Induced Deactivation via MoO_3 Promotion*, **Satyajit Panda**, Council of Scientific & Industrial Research, Dehradun
08:20 – 08:30	*Facile Hydrothermal Synthesis of MoS_2/MXene Composite for Efficient Rhodamine B Dye Adsorption from Aqueous Solutions*, **Riddhi Patel**, Pandit Deendayal Energy University, Gandhinagar
08:30 – 08:40	*Synthesis-dependent function of Pd/CHA Zeolites under Cold-start conditions: An Operando FT-IR Spectroscopy and Microreactor Study*, **Yusra Hamid**, University of Lisbon
08:40 – 08:50	*Nonpolynomial Spline Approach for CO_2 Adsorption–Diffusion Modelling*, **Kirandeep Kaur**, Netaji Subhash University of Technology Delhi
08:50 – 09:00	*Integrated Experimental, Simulation, and Process-level Evaluation of Advanced Adsorbents for PSA-based CO_2 Capture in Cement Plants*, **Khushboo Yadava**, Grihitum, IIT Mandi Catalyst
09:00 – 09:10	*Photocatalytic Degradation of Sulfamethoxazole with TiO_2-Fe_2O_3 Photocatalyst under Solar Light Irradiation*, **Jitendra Pal Salavadhi**, NITK, Surathkal
09:10 – 09:20	*Conformational Dynamics of O-2 Acetylated Xylan on Cellulose Surfaces: Implications for Sustainable Biofuel Production*, **Tripti Kundu**, IIT (ISM) Dhanbad
09:20 – 09:30	*Barriers for Integrating Carbon Capture and Storage into Net-Zero Pathways: A Comprehensive Literature Review*, **Priji Biju**, The British University in Dubai

TECHNICAL PROGRAM
(Young Researchers and Scientists Sessions)

Wednesday, 17th December 2025	
Session	**YRS Session 4** ***Water-Energy-Climate***
Room	Sir Banyas, Fairmont Bab Al Bahr, Abu Dhabi
Chairs	**Vikram Singh, Ankur Gupta**
08:00 – 08:10	*Sustainable Extraction of Rare Earth Element: Repurposing Waste Fungal Pellets for Lanthanum (La) Recovery from Wastewater*, **Bharat Bhushan**, IIT Guwahati
08:10 – 08:20	*Enhancing Water Droplet Erosion Resistance through in-situ Austenite-to-Martensite Phase Hardening*, **Lama Mahmoud**, Concordia University
08:20 – 08:30	*Development of Low-Carbon Thermoplastic Pellets for Additive Manufacturing*, **Reem Al Ramsi**, Technology Innovation Institute, Abu Dhabi
08:30 – 08:40	*Revolutionary Holey Graphene-hydrophobic Eutectic Solvent-embedded Sulfonated PES Hybrid Membranes for Superior Emerging Contaminant Removal*, **Anjali Singhal Goyal**, Khalifa University
08:40 – 08:50	*Porous rGO/networked Cellulose Composite Membranes: Towards Enhanced Nanofiltration Performance of rGO-based Membranes*, **Shabin Mohammed**, Higher Colleges of Technology, Abu Dhabi
08:50 – 09:00	*A Sustainable Hybrid Chemical-bioflocculant (HCBF) for the Removal of Polystyrene Microplastics from Water Treatment Plants*, **Priya Krishnamoorthy Lekshmi Ammal**, TKM College of Engineering
09:00 – 09:10	*Performance Enhancement of Type IV Hydrogen Tanks Using Expanded Graphite*, **Omar El Khatib**, Khalifa University

TECHNICAL PROGRAM
(Lightning Sessions)

Monday, 15th December 2025	
Session	**Lightning Session 1**
Room	Sir Banyas, Fairmont Bab Al Bahr, Abu Dhabi
Chairs	**Om Prakash, Rachit Khare**
16:00	*Deep Neural Network–Based Dynamic Plantwide Modeling of a Hybrid Solar Thermal Power Plant*, **Dibyajyoti Baidya**, IIT Bombay
16:05	*Machine Learning-Driven TMDCs-based Sensors for Discrimination of Volatile Amines in Complex Mixtures*, **Snehraj Gaur**, IIT Delhi
16:10	*Development of Machine Learning Integrated Moving Horizon State Estimator for Processes Subject to Missing Data and Delayed Measurements: Application to Industrial Scale Penicillin Production Process (IndPenSim)*, **Vishnu Roshan**, IIT Ropar
16:15	*Optimizing Sustainable Energy Planning in Delhi: A Hybrid Machine Learning and Time Series Approach for Solar Potential Forecasting*, **Dipali Pawar**, IIT Delhi
16:20	*Sound Absorption Prediction in TPMS Metamaterials via Machine Learning*, **Vignesh Sekar**, Khalifa University
16:25	*AI-ML Aided Advanced Technologies For Maintenance and Sustainability of Civil Infrastructure: Field Study On Real Rail over Bridge*, **Shipra Prakash**, IIT Delhi
16:30	*AI-Driven Wind Resource Modeling for Efficient Wind-to-Hydrogen System Design at Jaisalmer*, **Nagasree Keerthi Pujari**, IIT Hyderabad
16:35	*Explainable Machine Learning Based Multi-Objective Optimization Framework for Ammonia Recovery from Digestate*, **Shobhita Sharma**, IIT Delhi
16:40	*Machine Learning Potentials to Guide Reaction Mechanisms at the Metal-Water Interface*, **Jayendran Iyer**, IIT Delhi
16:45	*MAX Phase Purity–Dependent Interlayer Spacing Engineered Ti_3C_2-F MXene Electrodes for High-performance Energy Storage Applications*, **Ekta Choudhary**, IIT Indore
16:50	*Artificial Intelligence Driven Forecasting of Solar-Based Green Hydrogen Production for Sustainable Energy Development in India*, **Karan Sareen**, IIT Delhi/CEA
16:55	*Boosting Hydrogen Evolution on Halogenated MXenes via Surface Termination Engineering: A Data-Informed Computational and Experimental Strategy*, **Ankita Kumari**, IIT Delhi
17:00	*Data-Driven Prediction of Polymer Adhesion on Heterogeneous Surfaces via Attention Based Learning*, **Sibasankar Panigrahy**, IIT Delhi
17:05	*Production of H_2-rich Syngas Production through ML-driven Catalyst and Process Condition Optimization with Experimental Validation and Mechanistic Insights*, **Kaushik Kundu**, IIT Delhi
17:10	*A Context-Dependent Network DEA Framework with Directional Distance Functions for Sustainable Decision Intelligence: Insights from the Indian Banking Sector*, **Akash Jain**, NSUT Delhi
17:15	*Unveiling Chemical Evolution of Electrode-electrolyte Interface in Sodium Ion Batteries from Machine Learning Potential-based Simulations*, **Dhananjay**, IIT Delhi

TECHNICAL PROGRAM
(Lightning Sessions)

Tuesday, 16th December 2025	
Session	**Lightning Session 2**
Room	Sir Banyas, Fairmont Bab Al Bahr, Abu Dhabi
Chairs	**Joby Joseph, Nidhi Jain**
15:30	*Hydrogen Storage Capacities in Nanoporous M2(m-dobdc) Metal-Organic Frameworks at Near Ambient Temperatures*, **Himani Joshi**, IIT Indore
15:35	*From Bulk Solvents to Confined Spaces: Redefining Reaction Environments*, **Mohd Ussama**, IIT Delhi – Abu Dhabi
15:40	*Photonics to Physiology: BCN@CMC Nanocomposites for Optoelectronics and Biomedical Devices*, **Mohan Manjunathaswamy**, Khalifa University
15:45	*Unveiling Medium-Dependent Synergistic Role of Metals and Active sites in Prussian Blue Analogue-Derived FeCoTe for Hydrogen Evolution using Electroanalytical Techniques*, **Bhawna Rathor**, IIT Delhi
15:50	*Novel Tri-Amine Blend for Efficient Post-Combustion CO_2 Capture: Experimental Absorption–Desorption Studies, Kinetic Analysis, Modeling, and Spectroscopic Investigations*, **Akhil Kumar Gupta**, IIT (BHU) Varanasi
15:55	*Investigating the Electrochemical Performance and Degradation Mechanism of $Na_3V_2(PO_4)_3$ for Sodium-Ion Batteries*, **Akshita Sharma**, IIT Delhi
16:00	*An Integrated Process-Structure-Property Model for Recycled Carbon Fibre Needle Punched Nonwovens: Towards Sustainable Structural Materials*, **Danvendra Singh**, IIT Delhi
16:05	*Surface-Engineered Pd/g-C_3N_4 Catalysts for Light-Driven Formic Acid Dehydrogenation at Room Temperature*, **Mathivathani J R**, IIT Delhi
16:10	*Eco-friendly Co-precipitation Processed $BaZn(VO_4)_2$ Nanoparticles as a Promising Anode Material for Li and Na-ion Batteries*, **Mohd Saqib**, IIT Delhi
16:15	*Green Encapsulation of Metal Oxide and Noble Metal ZnO@Ag for Efficient Antibacterial and Catalytic Performance*, **Aisha Noor**, IIT Delhi
16:20	*Synthesis of Butyl Butyrate as a Sustainable Aviation Fuel Using V_2O_5-Supported Silicomolybdic Acid Catalyst*, **Shariq Farhan Elahi**, Curtin University, Australia and IIT (ISM) Dhanbad, India
16:25	*Interfacial Charge Transfer Dynamics in Electrochemical CO_2 Reduction on Gold Electrodes: Influence of Ionic Strength and Cation Identity in Na_2CO_3-Based Electrolytes*, **Jagriti Malik**, IIT Delhi
16:30	*Biomass Briquettes as a Low-Carbon Alternative Fuel for Hard-to-Abate Industries*, **Bishakh Choudhury**, IIT Delhi
16:35	*Exploring MOF – Hydrocarbon Integration for Sustainable Adsorption Cooling: An Accelerated Approach using Bayesian Optimization and Monte Carlo Simulations*, **S Muthukrishnan**, IIT Kanpur
16:40	*High-κ Interface Engineering for Energy-Efficient Spin–Orbit Torque Memories: A Materials Pathway Toward Digital Sustainability*, **Shubham Bhatt**, IIT Delhi
16:45	*Unexpected Lowering of Charge-Transfer Resistance in Ultra-Long Cycled (>30,000 Cycles) Solution-Processed Laminar-Crystalline Li_3VO_4 Anodes and its Li_3VO_4||LFP Full Cells Performance in 18650 form factor*, **Tejveer Singh Anand**, IIT Delhi
16:50	*Techno-Economic Analysis of Green Hydrogen Project in Abu Dhabi*, **Adnan Nagah**, Abu Dhabi National Oil Company (ADNOC) and IIT Delhi – Abu Dhabi