



# International Conference on Hydrogen Energy and Sustainability (HES -2025), 10-12<sup>th</sup> October 2025

## IIT (BHU) Varanasi

### LIST OF ORAL PRESENTATION

Name	Affiliation	Title	Abstract ID
Prof. Loveleen Kaur Brar	(Thapar Institute of Engineering and Technology)	Synthesis of TaO/MoO@C <sub>3</sub> N <sub>4</sub> Electrocatalysts for Water Splitting	OHP-1
Dr. Santosh Kumar Singh	(IIT (ISM) Dhanbad)	Assessment and optimization of solar-driven organic Rankine cycle for sustainable hydrogen production	OHP-2
Dr. Soumendra Kumar Das	(IIT (ISM) Dhanbad)	Efficient Prediction of Band Gap and Band Edge Position in Pure and Substituted C <sub>2</sub> N Monolayer for Photocatalytic Water Splitting Using Different Semilocal Meta-GGA Functionals	OHP-3
Himanshu Asati	(IIT Jodhpur)	Visible Light Responsive Carbon Nano Onions-MoS <sub>2</sub> Heterostructures for Green Hydrogen Production	OHP-4
Dr. Silviya R	(Jain University)	N-Doped Carbon Supported Co-W Phospho-Boride Electrocatalyst for Efficient Hydrogen Evolution in Alkaline Seawater	OHP-5
Ajeet Kumar	(IIT Kanpur)	g-C <sub>3</sub> N <sub>4</sub> -supported A <sub>2</sub> SnO <sub>3</sub> (A = Fe, Ni) perovskite-based dual S-scheme heterostructure: Efficient hydrogen evolution via photocatalytic water splitting	OHP-6
Apoorva B C	(CHRIST University)	Alkaline Urea Splitting for Green Hydrogen production with Cobalt Sulfo-Boride MOF Electrocatalyst	OHP-7
Anup Mahata	(IIT Delhi)	Poly-phosphamide driven proton relay for membrane fabrication and electrocatalytic proton reduction	OHP-8
Prof. Umamaheswarrao P	(Bapatla Engineering College)	Performance and Emissions Optimization of a CI Engine Using RSM and Machine Learning Models using Hydrogen-Enriched Sesame Biodiesel blends	OHP-9
Dr. Priyanshu.	(IIT Jammu)	Fixed-Wing UAV Integrated with a Hydrogen Fuel Cell to Enhance Long-Endurance and Sustainable Flight	OHP-10



Dr. Akanksha Kumar Pathak	(IIT (ISM) Dhanbad)	Physics-Based 2D Simulation of the Coup de Fouet Effect in Lead-Acid Batteries for Renewable Integration	OHP-11
Ankur Kumar	(IIT BHU)	Numerical Study of Helium Jet in Crossflow Under Active Forcing: Optimizing Penetration and Mixing	OHP-12
Anbumani P	(BITS Pilani)	Degradation Signature Analysis of PEMFCs using Data-Driven Techniques for Hydrogen-Powered Vehicles	OHP-13
Arjun Singh Kachhawa	Jai Narain Vyas University, Jodhpur	Photocatalytic Water Splitting Under Visible Light Using B, N-Doped Functionalized Graphene Sheets	OHP-14
Dr. Thillai Sivakumar Natarajan	(CSIR-Central Leather Research Institute)	Catalysts-Driven Hydrogen Production from Aluminium-Water Systems: Reaction Mechanism and Kinetic Perspectives	OHP-15
Dr. Keshav Kumar	(IIT Guwahati)	Comparative Study of Traditional Reformer, Membrane Reformer, and Double Stage Membrane Reformer for Enhanced Hydrogen Production Using Methanol Steam Reforming	OHP-16
Aakash Rajpoot	(IIT (ISM) Dhanbad)	Turquoise Hydrogen and Carbon Nanotube Production via Catalytic Methane Decomposition over Fe-Co-Zn/Al <sub>2</sub> O <sub>3</sub> Nano catalyst	OHP-17
Sachin Kumar Sharma	(IIT Guwahati)	Structurally Tuned Ni-Fe-LDH/CNT Electrocatalyst for Efficient Hydrogen Evolution	OHP-18
Bhavtosh Pandey	(HBTU)	Hydrogen Policy Landscape and Energy Management Architecture in India: Prospects, Complexities, and The National Green Hydrogen Mission	OHP-19
Garima	(IIT Kanpur)	Effect of Al <sub>2</sub> O <sub>3</sub> , SiO <sub>2</sub> , TiO <sub>2</sub> , and SiO <sub>2</sub> Al <sub>2</sub> O <sub>3</sub> supports on the Ni catalyst for CO <sub>2</sub> methanation	OCU-21
Jenish S	(IIT Jammu)	Comparison of PSA and TSA for the Separation of CO <sub>2</sub> N <sub>2</sub> mixtures by Computational and Experimental Investigations	OCU-22
Rajvikram Singh	(IIT Kanpur)	Optimization of a catalytic system for RWGS: Influence of active metal, support and calcination temperature	OCU-23
Lavanya Yalagandula	(BITS Pilani)	Dual-functional Catalyst for Efficient CO <sub>2</sub> Conversion into Value-added Products	OCU-24



Rajeev Ranjan	(IIT Roorkee)	Role of catalyst supports in enhancing selective hydrogenation of CO <sub>2</sub> to formic acid over Ni-based catalysts	OCU-25
Prof. Taraknath Das	(IIT Roorkee)	Dry Reforming of Methane for the syngas production using supported Ni-catalyst: Catalyst regeneration and MW-CNTs Separation	OHP-26
Prof. Vandana Meena	(NIT Kurukshetra)	Silicon-Type BaBiO <sub>2</sub> X (X = Cl, Br) Oxyhalides as Promising Photocatalysts for Sustainable Hydrogen Generation and Environmental Remediation	OHP-27
Dr. Deepak Chandra Sau	(CSIR-National Metallurgical Laboratory)	Development of a process for production of hydrogen from iron oxide waste fines(wurtzite)	OHP-28
Rinkoo Bhabal	(CHRIST University)	Bimetallic CoNi-MOF-derived electrocatalyst for green hydrogen production by urea electrolysis in wastewater	OHP-29
Sri Himaja Pamu	(BITS Pilani)	Harnessing Sunlight for Photocatalytic Hydrogen Evolution via Band-Engineered LaNiO <sub>3</sub> -LaVO <sub>4</sub> Heterostructures	OHP-30
Lomas Rishi	(IIT Jammu)	Methane Decomposition over Fe-Co/Al <sub>2</sub> O <sub>3</sub> : Catalyst and Reaction Conditions Optimization	OHP-31
Abhishek Anand	(IIT BHU)	Role of CeO <sub>2</sub> -YSZ Intermediate Layers in Improving Hydrogen Permeance of Palladium Membranes on Porous $\alpha$ -Al <sub>2</sub> O <sub>3</sub> Supports"	OHP-32
Prof. Asma Iqbal	(NIT Srinagar)	Valorizing non-recyclable waste to Energy using Downdraft Gasifier	OWE-33
Prof. Minal Prashant Deshmukh	(MIT WPU, Pune)	An eco-friendly solution for bioethanol production from microalgae with optimized process parameters and emission characteristics	OWE-34
Prof. Siva Mohan Reddy Narapureddy	(IIT Roorkee)	In-situ hydrogen production and battery electrode materials from metal effluent and biomass	OWE-35
Prof. Jyoti Prasad Chakraborty	(IIT BHU)	Bio-asphaltene to biohydrogen: production challenges and future prospects	OWE-36
Dr. Apoorv Verma	(Kaunas University of Technology)	Insights from lab-scale experiment and numerical simulation to investigate the hydrogen flow behaviour during underground storage	OWE-37



Pankaj Parmar	(IIT Kharagpur)	Thermochemical Conversion of Biomass Waste to Energy: Product Yield, Characterization, and Optimization in Pyrolysis Systems	OWE-38
Mrinmoy Kumar Sarmah	(IIT Guwahati)	Experimental Investigation of Syngas Production in A 25 kW Dual Fluidized Bed Gasifier (DFBG)	OWE-39
Dr. Sindhu S	(Amrita Vishwa Vidyapeetham)	Pyrolysis kinetics study of lignocellulosic biomasses	OWE-40
Prof. Subrata Panda	(IIT BHU)	Effect of Pressure Compaction on Microstructural Evolutions and Hydrogen Storage Properties of Magnesium Powders	OHS-41
Prof. Sumeet Kumar Dubey	(UPES Dehradun)	Unveiling the PCI Characteristics of Mg-Ni Alloy: A Step Towards Efficient H <sub>2</sub> Storage	OHS-42
Chaithanya Purushottam Bhat	(BITS Pilani)	Ti-Functionalized Newly Modelled Penta-Hexa-Deca Graphene as a Promising Hydrogen Storage Material: A First-Principles Study	OHS-43
Digvijay Kumar Gupta	(IIT Guwahati)	Hydrogen Storage Potential and Technical Analysis of Salt Caverns of India	OHS-44
Gaurav Arora	(IIT Delhi)	Modelling the Effect of Process Variables on Hydrogen Uptake and Release in a Metal Hydride Storage System	OHS-45
Dr. Shyam Sunder Rao	(IIT BHU)	Study the direct synthesis of methanol from the natural gas over ZSM-5 catalyst under mild reaction conditions	OHS-46
Manvendra Kumar	(Defence Institute of Advanced Technology, Pune)	PLIF-Based Diagnostics of CO <sub>2</sub> and CF <sub>4</sub> Suppression Mechanisms in Hydrogen–Methane Flames	OCC-47
Saswata Dhar	(Defence Institute of Advanced Technology)	Collective Suppression Effect of Hydrogen-Air Mixture with CO <sub>2</sub> and Propene	OCC-48
Abhimanyu Singh Singh Khichi	(IIT Madras)	A Comprehensive Investigation of CO <sub>2</sub> Absorption and Desorption Performance Using Novel Amine Solvents	OCC-49
Praveen Kumar R	(IIT Madras)	Evaluating the Absorption performance and Degradation Behaviour of MEA in Cyclic Post-Combustion CO <sub>2</sub> Capture	OCC-50



Athira V B	(National Chemical Laboratory- NCL Pune)	Optimization of porous support and fabrication of thin film composite (TFC) membrane for CO <sub>2</sub> gas separation in simulated flue gas conditions	OCC-51
Ishita mandal	(Institute)	Design Of Plate-Type Heat Exchangers for Absorption-Based Carbon Capture Plants for Indian Power Plants	OCC-52
Dr. Binod Kumar	IIT Jammu	Development of a 3D-Printed Integrated Heat Exchanger and Catalytic Reactor for 1 kW Ammonia-Fed Solid Oxide Fuel Cell Systems	OHP-53
Dr. Nainsi Saxena	IIT (ISM) Dhanbad	Catalytic Decomposition of Coalbed Methane for Turquoise Hydrogen Production and Carbon Nanotube as byproduct Using Nickel-Supported Bentonite as catalyst	OHP-54
Dr. Aniruddha Santosh Bhide	CHRIST (Deemed to be University)	Energy Efficient Green Hydrogen Generation via Formaldehyde Electrooxidation Using a Cu-Fe-Based Catalyst	OHP-55
Dr. Priyanshu.	IIT Jammu	A Novel Beam-Down Parabolic Dish Concentrator System Integrated with Trans critical CO <sub>2</sub> Rankine Power Cycle and PEM Electrolyser for Green Hydrogen Production: Design, Optical Analysis, and Techno-Economic Optimization	OHP-56
Sachin Kumar Vishwakarma	IIT BHU	Experimental Investigation of Joule Heated Membrane Separator for Ultra-Pure Hydrogen Production Using Methanol Steam Reforming	OHP-57
Amarendra Nayak	Ravenshaw University, Cuttack, Odisha	An Interface Engineering Strategy of FeS <sub>2</sub> /CoS <sub>2</sub> @MoS <sub>2</sub> as an Electrocatalyst for Efficacious Water Splitting	OHP-58
Prof. Sivasubramanian Velmurugan	NIT Calicut	Valorization of Phormidium valderianum for CO <sub>2</sub> , Fixation and Phycocyanin as a Natural Food Colorant	OCU-59
Dr. Saumya Tiwari	IIT Kanpur	Methane- $\text{CO}_2$ Reforming in Molten Carbonate Salt Medium for Sustainable Syngas Production	OCU-60
Kaushik Kundu	IIT Delhi	H <sub>2</sub> -rich syngas production through ML-driven catalyst optimization with experimental validation	OHP-61



Anusha Yajurvedi	University of Antwerp	CBV/Non-porous Silica/13X-YSZ impregnated Pd-Ag membrane for hydrogen separation and its effect on Hydrocarbons	OCU-62
Deepa Agrahari	Madan Mohan Malviya University of technology	Optimized Biohydrogen Production from Industrial Spent Wash via Integrated Dark Fermentation and Microbial Fuel Cell Using Clostridium biocatalyst	OCU-63
Deeksha Jaiswal	IIT Kanpur	Ti3C2TX-based Zr@MXene for CO <sub>2</sub> Capture and Conversion	OCU-64
Matam Sandeep Chandra	IIT Madras	Modelling of CO <sub>2</sub> desorption process from aqueous amine solution by coupling phase transfer with reaction kinetics	OCU-65
Vishal Uttam Dhakane	IIT Jammu	Integrated CFD and Machine Learning Approach for Hydrodynamics and Kinetics Modeling in a Cu-Cl Cycle Fluidized Bed Reactor for Hydrogen Production	OHP-66
Rajanikant Choudhari	IIT-BHU	Reduction and kinetic behaviour of premixed lean-grade manganese/iron ores during pre-reduction with hydrogen gas.	OFT-67
Aravindh rajagopalan	Amrita Vishwa Vidyapeetham	Overcoming PdO-to-Pd Deactivation Transition under Methane Partial Oxidation: Effect of Pt loading	OHP-68
Dr. Jitendra Kumar Prabhakar	IIT Kanpur	Optimizing Ni/Mn ratio and metal loading in Ni-Mn/Al <sub>2</sub> O <sub>3</sub> catalysts for low temperature CO <sub>2</sub> methanation	OCC-69
Prasenjit Barman	Asaam Energy Institute, Sivasagar, Assam	Enhancement of Performance Parameters and Control of Emission Characteristics of a Hydrogen Dual Fuel Diesel Engine	OFT-70