

**27<sup>th</sup> December 2021**

|                      | <b>Session 1A</b><br><b>Fuels for Sustainable Transport</b><br><b>Session Moderators: Prof. Dilip Sharma/ Dr. Atul Dhar</b> |   |   | <b>Session 1B</b><br><b>Challenges for Desalination and Wastewater Treatment and Possible Solutions</b><br><b>Session Moderators: Dr. Swatantra P. Singh/ Dr. S Venkat Mohan</b> |  |  |
|----------------------|---|---|---|--|--|--|
|                      | <b>Contribute Papers</b>  |   |   | <b>Contribute Papers</b>   |  |  |
|                      | <b>Paper No.</b>  | <b>Authors</b>  | <b>Title</b>  | <b>Paper No.</b>   | <b>Authors</b>   | <b>Title</b>   |
| 01:00 pm to 03:30 pm | <b>1</b>  | Vikram Kumar and Avinash Kumar Agarwal  | Emission Characteristics of Methanol Fuelled Genset Engine  | <b>63</b>  | Roop Singh Sinsinwar and Munna Verma                             | Sludge Removal in Water Treatment Plant and Impact on the Environment  |
|                      | <b>4</b>  | Hardikk Valera and Avinash Kumar Agarwal  | Identification of Suitable Octane Enhancer Fueling (M15 Or E15) for Two-Wheeler Segment                                     | <b>85</b>  | Nandini Dixit, Akhila M. Nair and Swatantra P. Singh             | Antibacterial Surface-Modified Polyethersulfone (PES) Membranes-based Laser-Induced Graphene (LIG)   |
|                      | <b>5</b>  | Utkarsha Sonawane and Avinash Kumar Agarwal   | Particulate Characterization of Gasohol Fueled Medium-Duty Spark-Ignition Engine  | <b>88</b>  | Kritika Jashrapuria and Swatantra Pratap Singh                   | Graphene-Based Nanomaterials: A Promising Tool In Biofouling Control   |
|                      | <b>6</b>  | Ankur Kalwar and Avinash Kumar Agarwal  | Detailed Engine Characterization Study for Influence of Di-Ethyl Ether (DEE) Addition in Heavy-Duty Tractor Engine          | <b>89</b>  | Najmul Haque Barbhuiya and Swatantra P. Singh                    | Laser-Induced Graphene-Based Electroconductive Filters and Composites for the Removal of Pharmaceutical Compounds                            |
|                      | <b>13</b>   | Ayush Tripathi and Avinash Kumar Agarwal  | Experimental Investigation of Di-Methyl Ether (DME) Utilization in Genset Engine  | <b>90</b>  | Vikram Wanjari, Siddhartha Duttgupta and Swatantra Pratap Singh  | Biosensors for the detection of Environmental Contaminants   |
|                      | <b>81</b>   | Vikas Kumar Sahu, Pradhi Rajeev, Pratibha Vishwakarma, Pravesh Chandra Shukla and Tarun Gupta | Toxicity Equivalent Factor Evaluation of PAH Emissions in a CI Engine fueled with Methanol, Ethanol, Butanol blended Diesel | <b>95</b>  | Sudharshan Reddy and Swatantra Pratap Singh                      | Enhancing properties of poly (vinylidene fluoride) membranes for water treatment applications via non-solvent induced phase inversion method |
|                      | <b>97</b>   | Paramvir Singh, Vishal Patil, Sachin Sonage and Sudarshan Kumar                               | Experimental Investigation Surrogate Fuel with Conventional Gasoline Powered in Spark Ignition Engine                       | <b>102</b>   | Utkarsh Misra, Najmul Haque Barbhuiya and Swatantra Pratap Singh | New generation LIG-PES based composite membranes for energy-efficient desalination and water treatment                                       |

**\*\* Presentation and video are pending**

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| Session 2A<br><b>Engine Combustion Modelling, Simulation and Sprays</b><br>Session Moderators: Dr. Pravesh C Shukla/ Dr. Gabriele Di Blasio |   | Session 2B<br><b>Bioenergy/biofuels</b><br>Session Moderators: Prof. Vijay S. Moholkar/ Prof. Ravindran Balasubramani |                   |   |  |
|---|---|---|-------------------|---|--|
| Contribute Papers   |   |   | Contribute Papers |   |  |
| Paper No.   | Authors   | Title   | Paper No.         | Authors   | Title  |
| 3   | Dhananjay Kumar and Avinash Kumar Agarwal                                 | 3D Modeling of Co-Axial Injector for Direct Injection of Methanol in Large Bore Engine                                | 71                | Premeshworii Devi Maibam and Arun Goyal                             | Modeling and optimization of rice-straw delignification by deep eutectic solvent for the production of bio-fuel feedstock using RSM-CCD approach |
| 7   | Ashutosh Jena and Avinash Kumar Agarwal                                   | Numerical Investigation of Mixture Stratification and Combustion in GCI with Narrow-Angle Direct Injection (NADI)     | 98                | Ravneet Kaur, Poonam Gera, Mithilesh Kumar Jha and Thallada Bhaskar | Alkali pretreatment and hydrothermal liquefaction of castor residue for bio-oil production   |
| 11  | Rahul Kumar Singh, Ankur Kalwar and Avinash Kumar Agarwal                 | Assessment of M15 Fueled BS-VI SI Engine for Passenger Car  | 110               | Purtika Nagia, Avinash Thakur and Gulshan Kumar Jawa                | Studies on Dynamic Stability of Green Emulsion Liquid Membrane using Ionic Liquid and Nanoparticle   |
| 12  | Avinash Kumar Agarwal, Harsimran Singh and Krishnamoorthi M               | Potential of Bathtub Piston Geometry in reducing HC and CO Emissions from Gasoline Compression Ignition Engine        | 124               | Rahul Gautam and Shunmugavel Saravanamurugan                        | Transformation of Glucose to Fructose with Modified Zeolites   |
| 73  | Rohit Kumar and Sudarshan Kumar   | Laminar Burning Velocity Measurements Of Surrogate Fuels At Elevated Temperatures                                     | 126               | Javvadi Yamini and Dr. S Venkata Mohan                              | Surveillance of Antibiotic Resistance Genes (ARGs)/Bacteria (ARB) in Urban lakes   |
| 116   | Krishna Kant, Santhosh Kumar Keerthi and R Banerjee                       | Air Assisted Liquid Sheet Breakup in Twin Fluid Atomizers   |                   |   |  |
| 125   | Nasir Attar, Arun Pattanashetti, Shivansh Chaturvedi and Santhosh R       | Simulation and analysis of coaxial swirling jet flow field  |                   |   |  |
| 127   | Vivek K, Kundan Kumar Singh, Aditya Saurabh and Lipika Kabiraj            | Impinging Jet Atomization of Newtonian and non-Newtonian fluids   |                   |   |  |
| 128   | Vivek K, Tikaram, Kalyani Agarwal, Neelkanth Nirmalkar and Lipika Kabiraj | Impinging jet atomization of nanobubble-water solution  |                   |   |  |

04:00 pm to  
06:30 pm

\*\* Presentation and video are pending

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|--------------------------------|--|--|--|--|---|---|
| 10:15 am to<br>12:45 pm        | Session 3A<br><b>Coal Biomass Combustion for Power Generation</b><br>Session Moderators: Prof. Swarnendu Sen/ Dr. Aditya Saurabh |  |  | Session 3B<br><b>Microbial Processes and Products</b><br>Session Moderators: Prof. Parmjit S Panesar/ Prof. Samir Khanal |   |   |
|                                | Contribute Papers  |  |  | Contribute Papers  |   |   |
|                                | Paper No.  | Authors  | Title  | Paper No.  | Authors   | Title   |
|                                | 101**  | Ayush Kumar Pandey and Onkar Singh                 | Parametric study of combined solar and biomass based power and hydrogen generation system                              | 62   | Karan Kumar and Vijayanand S. Moholkar  | Theoretical studies to understand the inhibition mechanism of alcohol/aldehyde dehydrogenase due to inhibitors present in hydrolysates from lignocellulosic biomass |
|                                | 113  | Inderpal Singh, Atul Dhar and Parmod Kumar         | Exploration of Organic Rankine Cycle Technology for Low-Temperature Waste Heat Recovery from Engines                   | 76**   | Shristee Gupta, Ramakrishnan Parthasarathi and Sushmita Tiwari  | Lignin-based bio-sorbent for the treatment of textile effluent  |
|                                | 117  | Prof. Yogesh Chandra Sharma and Siddhi Jaiswal     | Valorization of biodiesel derived glycerol for the production of glycerol carbonate assisted by heterogeneous catalyst | 77**   | Sushmita Tiwari, Shristee Gupta, Aditya Kumar, Devendra Kumar Patel and Ramakrishnan Parthasarathi  | Green synthetic approach for bioadsorbent development: Lignin based adsorbent for Hg (II) removal from industrial effluent  |
|                                | 120  | Hemant Bherwani, Tushar Indorkar and Amol Niwalkar | Ensuring Green Energy Transition using Circular Economy Framework: A Case Study for Delhi                              | 86   | Akhila M. Nair, Ashish Kumar and Swatantra P. Singh   | Electrochemical Disinfection Performance of Metal Doped Nanomaterials for Virus Inactivation  |
|                                | 129**  | Aditi Parihar and Shruti Patnaik                   | Assessment of Noise Pollution Level: A case study of Mumbai, India   | 87   | Mitil Koli and Swatantra Singh  | Symmetric Membranes: A new approach in membrane technology  |
|                                |  |  |  | 138  | Manupati Hemalatha, Athmakuri Tharak, Harishankar Kopperi, Uday Kiran, C.G. Gokulan, Santosh Kumar Kuncha, Rakesh. K Mishra and S Venkata Mohan | Long term Surveillance for SARS-CoV-2 – Wastewater Based Epidemiological Studies  |
|                                |  |  | 139  | Manvita Vadrevu, Santhosh J, Harishankar Kopperi, Ravi Kiran Boda, Asutoshsinh Kaushik and Venkata Mohan                 | Sustainable Strategy for Treatment of Composite Dye wastewater of Village based Handloom Cluster  |   |

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|--------------------------------|--|---|--|---|---|--|
| 01:45 pm to<br>04:15 pm        | Session 4A<br><b>Future of IC Engine Technology and Roadmap</b><br>Session Moderators: Prof. Raja Banerjee/ Dr. Dhananjay Srivastava |   |  | Session 4B<br><b>Air Pollution and Climate Change: Sustainable Approaches</b><br>Session Moderators: Dr. Nitin Labhsetwar/ Dr. Piyali Das |   |  |
|                                | Contribute Papers  |   |  | Contribute Papers   |   |  |
|                                | Paper No.  | Authors   | Title  | Paper No.   | Authors   | Title  |
|                                | 2  | M. Krishnamoorthi and Avinash Kumar Agarwal   | Effect of Injection Strategies on Combustion and Emission Characteristics of Gasoline Compression Ignition (GCI) mode Engine                                 | 66  | Aman Gupta, Vivek Srivastava, Amit Singh and Tarun Gupta            | Seasonal trends in Bioaerosol load in different microenvironments in IIT Kanpur  |
|                                | 8  | Sam Joe Chintagunti and Avinash Kumar Agarwal   | Effect of Injection Pressure and Ambient Conditions on Combustion and Emission Formation in Methanol - Diesel Dual-Fuel RCCI Conditions                      | 83  | Adnan Qadri, Amit Kumar Singh and Tarun Gupta                       | Temporal trends and characterization of Biomass Burning in the Indo Gangetic Plains and North-eastern Region of India using Satellite Based Observations |
|                                | 10   | Shanti Mehra and Avinash Kumar Agarwal  | Development of Ultra-Clean DME Fueled Tractor for Agricultural Applications  | 103   | Rohit Dalal, Sunit Kumar Singh, Roshan Wathore and Nitin Labhsetwar | Process Simulation of Different Hydrogen Production Methods via Methane Reforming: A Comparative Energy Analysis   |
|                                | 15   | Deepak Kumar and Avinash Kumar Agarwal  | Total Cost of Ownership study of 2-wheelers and 4-wheelers in India  | 121   | Hemant Bherwani and Dhanya Balachandran                             | Valuing environmental externalities for mitigation of climate change impacts and promoting sustainability  |
|                                | 16   | Prashant Pathak and Avinash Kumar Agarwal   | Effect of Post Injection of Diesel in Diesel Genset Engine with Methanol Port Injection,, Effect of EGR in Diesel Genset Engine with Methanol Port Injection | 122**   | Hemant Bherwani and Amol Niwalkar                                   | Monetary Quantification and Benefits Mapping of Mangroves of Andamans  |
|                                | 82   | Mandeep Singh, Alok Singh, Satsimran Singh and Sarbjot Singh Sandhu   | An Attempt to reduce the NOx emissions by varying the boost pressure of CRDI engine fueled with 20% blending of argemone biodiesel                           |   |   |  |
|                                | 104**  | Prajakta Ramteke, Sunit Kumar Singh and Nitin Kumar Labhsetwar  | Efficient Soot Oxidation by Mixed Metal Oxide Catalysts and their Application in Diesel Emission Control After-Treatment Devices                             |   |   |  |
| 130                            | M. Nikhil Mathew, Inderpal Singh and Atul Dhar   | Effect of exhaust heat recovered on onboard generation of HHO gas and its implications on the constituent emissions |  |   |   |  |

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|--------------------------------|---|--|---|--|---|--|
| 09:00 am to<br>11:30 am        | Session 5A<br><b>Sustainable Energy from Carbon Neutral Sources</b><br>Session Moderators: Dr. Himanshu Tyagi/ Dr. Balkrishna Mehta |  |   | Session 5B<br><b>Biological Waste Treatment</b><br>Session Moderators: Dr. Sunita Varjani/ Prof. Bin Gao |   |  |
|                                | Contribute Papers   |  |   | Contribute Papers  |   |  |
|                                | Paper No.   | Authors  | Title   | Paper No.  | Authors   | Title  |
|                                | 74  | Abhinav Rajan and K. S. Reddy  | Optical modeling of solar parabolic dish collector coupled with conical cavity receiver   | 67   | Nitin Choudhary, Puneeta Pandey and V.K. Garg   | Nature and Extent of Unauthorised Waste Dump Sites in Bathinda City, Punjab, India   |
|                                | 78**  | Ravi Raj and Prabha Chand  | A review on the application of phase change materials to enhance thermal comfort of buildings   | 75   | Divyani Panwar, Parmjit S. Panesar and Harish K. Chopra   | Extraction and characterization of pectin from citrus by-products using microwave extraction technology                                      |
|                                | 99  | Prashant Saini, Dr. Atul Dhar and Dr. Satvasheel Ramesh Powar              | The Performance Evaluation of a Parabolic Trough Collector with an Internal Triangular Helical Wire Coil Flow Insert Using Different Working Fluids | 84   | Yumnam Robinson Singh, Abhijeet Thakur, Carlos M. G. A. Fontes and Arun Goyal   | Expression, purification and biochemical characterization of a recombinant putative glucuronoxylanase (CcGH30A) from Clostridium clariflavum |
|                                | 133   | Akshayveer Akshayveer, Amit Kumar, Ajeet Pratap Singh and Om Prakash Singh | Effect of overhead-type rectangular PCM enclosure on thermo-electric performance of PV/PCM module   | 92   | Dhanya Ms and Ritu Kamboj   | Butanol production from Potato peel waste with Clostridium acetobutylicum immobilized on cotton cake   |
|                                | 140   | Amit Kumar, Akashayveer Akshayveer, Ajeet Pratap Singh and O.P Singh       | Performance enhancement of a curve solar air heater by using phase change material  | 105  | Hemant Thakur, Atul Dhar and Satvasheel Powar   | Biomethane production from co-digestion of food waste and bio flocculated sewerage sludge in CSTR  |
|                                |   |  |   | 112**  | Anil Kumar, Avinash Thakur and Parmjit Singh Panesar  | Optimization of Chromium (VI) Removal through Environmentally Benign Green Emulsion Liquid Membrane using Response Surface Methodology       |
|                                |   |  |   | 131  | Reena Rooban and Binod Parameswaran   | Production of citric acid using agro-industrial waste  |
|                                |   |  | 134   | Maria Paul Alphy and Parameswaran Binod  | Evaluation of different fermentation strategies for the production of 1,3-propanediol and organic acids by an adaptively evolved strain of Lacobacillus brevis N1E9.3.3 |  |

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| Session 6A<br><b>Combustion: Emerging Paradigm</b><br>Session Moderators: Prof. Sudarshan Kumar/ Prof. Bhupendra Khandelwal |   | Session 6B<br><b>Thermochemical Processes for Biomass</b><br>Session Moderators: Prof. Vinod. K. Garg/ Prof. Siming You   |                   |  |   |
|---|---|---|-------------------|--|---|
| Contribute Papers   |   |   | Contribute Papers |  |   |
| Paper No.   | Authors   | Title   | Paper No.         | Authors  | Title   |
| 14  | Aaishi Ashirbad and Avinash Kumar Agarwal                       | Development of Constant Volume Combustion Chamber to study Laser-Ignited Gasoline-Direct Injection Spray  | 68                | Dipak Das, Parmjit S. Panesar and Charanjiv S. Saini                                       | Characterization of soybean meal protein isolate extracted through ultrasound treatment   |
| 69  | Anand Singh, Mahendra Reddy and Sukanta Dash                    | Chemical Kinetic analysis of NH <sub>3</sub> /CH <sub>4</sub> – O <sub>2</sub> /N <sub>2</sub> / H <sub>2</sub> O <sub>2</sub> Mixture to Evaluate the Feasibility for Air Replacement with H <sub>2</sub> O <sub>2</sub> | 96                | Deepak Singh, Dhananjay Singh, Suresh Kumar Patel, Balendu Shekhar Giri and Sunita Varjani | Investigation of the performance of a solar dryer integrated with PVT hybrid system for food preservation   |
| 70  | Debojit Sharma, Sukanta Kumar Dash and Mahendra Reddy Vanteru   | Exergy Analysis on Excess Enthalpy Combustion of LPG+ H <sub>2</sub> / air mixture in an Ultra-High Intensity Meso-scale Combustor  | 114               | Jitendra Singh and Soumen Kumar Maiti  | Consolidated bioprocessing of sugarcane bagasse feedstock for bioethanol production using coculture of <i>Saccharomyces cerevisiae</i> and <i>Pichia stipitis</i> |
| 72  | Subrat Garnayak, Sukanta K. Dash and V. Mahendra Reddy          | Effect of N <sub>2</sub> , CO <sub>2</sub> , and H <sub>2</sub> O Dilution on MILD Combustion of CH <sub>4</sub> /H <sub>2</sub> Flame with Extremely Low Oxygen Content  | 115               | Monika Thakur, Sudhir Singh and Monika Thakur  | Utilization of potato peel for extraction of starch and enzymatic biosynthesis of resistant starch  |
| 79  | Shawnam Shawnam, Pragma Berwal and Sudarshan Kumar              | Measurement of Laminar Burning Velocities of CH <sub>4</sub> /H <sub>2</sub> /NH <sub>3</sub> Fuel Mixture at Elevated Temperatures   | 119               | Santanu Basak  | Sustainable flame retardant natural fibre textiles made using extracts of plant waste bio-macromolecules  |
| 80  | Upasana Priyadarshani Padhi, Nilay Dorlikar and Sudarshan Kumar | Measurement of laminar burning velocity of toluene-air mixtures at elevated temperatures  | 123**             | Saurabh Gupta, Sukhwinder Kaur, Harpal Singh and Rupinder Pal Singh                        | Screening and Isolation of Potential Biosurfactant Producing Bacterial Strain of <i>Alcaligenes</i> SS-1  |
| 118   | Akshat Jain, Anirudha Ambekar and Thaseem Thajudeen             | Stability of Nanofuel Suspension and Mitigation of Particulate Emissions from the Combustion of Liquid Fuels  | 141**             | Poonam Kumari, Manupati Hemalatha, Ranaprathap Katakajwala and S Venkata Mohan             | Algae-based Bioplastics - Mixotrophic Production and Life Cycle Analysis  |
| 143   | Anuj Kumar, Eshan Sharma, Krishna Chaitan Marthi, Santanu De    | Numerical investigation of differential diffusion in a laminar, H <sub>2</sub> /N <sub>2</sub> diffusion flame  |                   |  |   |
| 144   | Eshan Sharma and Santanu De                                     | Large-eddy Simulations of Auto-igniting Methane Flames  |                   |  |   |

1:00 pm to 03:30 pm

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