

Sustainable Combustion

47th IEA TLM

| Agenda | | Sunday, June 22 th - Hotel Continental Ischia | |
|--------|--|--|--|
| Time | | Title | |
| 18:00 | | Opening Registration (front of Room Primavera) | |
| 19:00 | | Welcome Cocktail (main swimming pool area) | |
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Agenda Monday, June 23th - Primavera room

| Time | Session | Title | Presenter |
|-------|-----------------|--|---|
| 8:00 | | Opening of the 47th TLM | Alessandro Montanaro (STEMS - CNR) |
| 8:10 | Inj. Processes | Task Overview | Ossi Kaairo (Aalto University) |
| 8:20 | Inj. Processes | Eulerian and Lagrangian CFD simulations of Ammonia Injection with single and multi-hole injectors | Jacopo Zembi (University of Perugia) |
| 8:40 | Inj. Processes | Investigation of hydrogen under-expanded jets in gaseous propulsion systems | Francesco Duronio (University of L'Aquila) |
| 9:00 | Inj. Processes | Large-Eddy Simulations of n-Dodecane Spray Combustion in Ammonia Ambient | Ossi Kaairo (Aalto University) |
| 9:20 | Inj. Processes | A direction targeting affordable accuracy in CFD modelling of H2 jets | Fabrice Foucher (Université d'Orléans) |
| 9:40 | Inj. Processes | Comparative analysis of hydrogen and helium jets using Background Oriented Schlieren | Fabrice Foucher (Université d'Orléans) |
| 10:00 | Break | | |
| 10:20 | Inj. Processes | Theoretical and experimental characterization of a HDEV4 injector to be used with hydrogen by varying the injection and ambient conditions | Salvatore Rossetti (STEMS - CNR) |
| 10:40 | Inj. Processes | Jet Cap Development for H2: experimental and CFD simulations results using a dedicated PDI injector | Luca Gestri (Dumarey Flowmotion) |
| 11:00 | Inj. Processes | Blue Flame Combustion with Diesel Injection System - Modulating Spray Liquid Length and Flame Lift Off | Keiya Nishida (University of Hiroshima) |
| 11:20 | Inj. Processes | Injector Flow Simulation with Complete Needle Motion Under Realistic Conditions | Ossi Kaairo (Aalto University) |
| 11:40 | Inj. Processes | Closing remarks | Ossi Kaairo (Aalto University) |
| 11:45 | KEYNOTE | Powering the Future: Evolution of Internal Combustion Engines and the Path to Zero-Carbon Solutions | Alberto Vassallo(Dumarey Automotive Italia) |
| 12:45 | Lunch | | |
| 13:45 | System Analysis | Task Overview | Ram Vijayagopal (Argonne National Lab.) |
| 13:55 | System Analysis | System Analysis Tools (Autonomie, GREET and more) | Ram Vijayagopal (Argonne National Lab.) |
| 14:15 | System Analysis | Life cycle GHG emissions and energy consumptions of battery electric and hydrogen fuel cell HDVs and a novel DeNOx catalyst | Hu Li (Leeds University) |
| 14:35 | System Analysis | A total cost of ownership comparison of truck decarbonization pathways in Europe (online) | H.Basma (ICCT) |
| 14:55 | System Analysis | Closing remarks | Ram Vijayagopal (Argonne National Lab.) |
| 15:00 | Break | | |
| 15:20 | Policy Briefs | Task Overview (online) | Stathis Tingas (Edinburgh Napier Univ.) |
| 15:30 | Policy Briefs | Advancing Europe's Hydrogen Transport System: Policy Levers for Energy Security and Climate Neutrality | Pierluigi Leone (Politecnico di Torino) |
| 15:50 | Policy Briefs | Hydrogen Network and Adoption in Asian Region: Cases, Perspectives, and Challenges | Muhammad Aziz (University of Tokyo) |
| 16:10 | Policy Briefs | Hydrogen supply chains and infrastructure planning | Tatiana Morosuk (TU Berlin) |
| 16:30 | Policy Briefs | Closing remarks (online) | Stathis Tingas (Edinburgh Napier Univ.) |
| 16:35 | | TLM Tasks summarizing #1 | Paul Miles (Sandia NL) |
| 17:00 | | Closing | |
| 17:30 | | Be ready for bus departure (Hotel Lobby) | |
| 18:00 | | Boat Tour | |
| 20:30 | | Informal Dinner "L'Altra Mezzanotte" Restaurant | |

Sustainable Combustion

47th IEA TLM

Agenda Tuesday, June 24th - Primavera room

| Time | Session | Title | Presenter |
|-------|--------------|--|---|
| 8:00 | Gas Engines | Task Overview | Yuri Wright (Empa) |
| 8:10 | Gas Engines | Modeling Hydrogen Flame Instabilities Under Engine-like Conditions Using LES-TFM | Ossi Kaairo (Aalto University) |
| 8:30 | Gas Engines | Combustion Process of H ₂ -DDF Engine with HVO fuel | Hiroshi Kawanabe (Kyoto University) |
| 8:50 | Gas Engines | Recent progress on ignitability and flame development in an optical H ₂ ICE | Peter Hallstadius (Lund University) |
| 9:10 | Gas Engines | Toward Optimized Spark Ignition in Hydrogen Engines: Experimental Insights from Pressure-Rise Calorimetry | Anupam Saha (Lund University) |
| 9:30 | Gas Engines | Design and characterization of hydrogen injection system for ultra lean combustion in an optical engine | Salvatore Rossetti (STEMS - CNR) |
| 9:50 | Gas Engines | Ignition and Combustion Behaviour of H ₂ / CH ₄ Blends at conditions relevant for large engines | Yuri Wright (Empa) |
| 10:10 | Break | | |
| 10:30 | Gas Engines | High-efficiency Natural Gas heavy-duty vehicles: assessment of charge dilution strategies on a Single Cylinder Research Engine | Davide Di Domenico (STEMS - CNR) |
| 10:50 | Gas Engines | Mixture Formation and Combustion Characteristics of Hydrogen Jets Under Various Injection Strategies | Choongsik Bae (KAIST) |
| 11:10 | Gas Engines | Closing remarks | Yuri Wright (Empa) |
| 11:15 | KEYNOTE | Renewable fuels in large internal combustion engine applications | Nicole Wermuth (LEC GmbH) |
| 12:05 | Soot | Task Overview | Paul Miles (Sandia NL) |
| 12:25 | Soot | A Molecular Dynamics perspective on soot formation | Paul Miles (Sandia NL) |
| 12:45 | Soot | Tracking the mechanisms of Inception and Growth of Soot in Planar Mixing Layer Flames | Francesco Carbone (Univ. of Connecticut) |
| 13:05 | Lunch | | |
| 14:05 | Soot | Probing particulate matter nanostructure and composition by advanced diagnostic methods | Carmela Russo (STEMS - CNR) |
| 14:25 | Soot | Non-exhaust emissions from brake wear: a physical and chemical investigation of the debris emitted by a brake for light-duty application | Silvana Di iorio (STEMS - CNR) |
| 14:45 | Soot | Closing remarks | Paul Miles (Sandia NL) |
| 14:50 | Gas Turbines | Task Overview | Mario Ditaranto (SINTEF) |
| 15:00 | Gas Turbines | Experimental investigation of stratification in a swirl-stabilized gas burner fuelled with NH ₃ /H ₂ | José M García-Oliver (Univ. Polyt. of Valencia) |
| 15:20 | Gas Turbines | High pressure combustion of cracked ammonia | Mario Ditaranto (SINTEF) |
| 15:40 | Gas Turbines | Toward Social Implementation of Ammonia and Hydrogen Fueled Micro Gas Turbine and Industrial Heat Devices | Yong FAN (AIST) |
| 16:00 | Break | | |
| 16:20 | Gas Turbines | Injection effects on NO _x emissions in liquid ammonia combustion in a gas turbine combustor | Masayasu Shimura (AIST) |
| 16:40 | Gas Turbines | A lumped parameter numerical model of the fuel system and heat exchangers for an hydrogen-powered aircraft turbine engine | Emma Frosina (University of Sannio) |
| 17:00 | Gas Turbines | Gas turbine with regeneration and intercooling for aeronautical use | Daniele Tortorici (Sapienza Univ. of Rome) |
| 17:20 | Gas Turbines | Experimental facilities and recent progress in SAF research at Lund University | Elna Heimdal Nilsson (Lund University) |
| 17:40 | Gas Turbines | Data-driven optimization of Synthetic Aviation Fuel composition to minimize contrail formation and pollutant emissions | Dario Lopez Pintor (Sandia NL) |
| 18:00 | Gas Turbines | Closing remarks | Mario Ditaranto (SINTEF) |
| 18:05 | | TLM Tasks summarizing #2 | Paul Miles (Sandia NL) |
| 18:30 | | Closing | |
| 20:00 | | Social Dinner "Hotel Continental Ischia" Restaurant del Parco | |

Sustainable Combustion

47th IEA TLM

Agenda Wednesday, June 25th - Primavera room

| Time | Session | Title | Presenter |
|-------|-----------------------|---|---|
| 8:00 | n-ZCET | Task Overview | Dario Lopez-Pintor (Sandia NL) |
| 8:10 | n-ZCET | Fundamentals of Mixture Formation and for Methanol Fueled Engines | Dario Lopez-Pintor (Sandia NL) |
| 8:30 | n-ZCET | Synthetic fuels to improve thermal efficiency of current and future CI engines | Noboru Uchida (new-ACE) |
| 8:50 | n-ZCET | Tomographic Analysis of Spray Morphology and Collapse Behavior of Methanol and Gasoline in a Lateral DI Injector | Choongsik Bae (KAIST) |
| 9:10 | n-ZCET | Modelling, Testing and Control Solutions for Sustainable Combustion Engines | Enrico Corti (University of Bologna) |
| 9:30 | n-ZCET | Dual-Fuel Multi-Mode Combustion for High-Efficiency and Low-Emissions Medium-Duty Engines | José M García-Oliver (Univ. Polyt. of Valencia) |
| 9:50 | n-ZCET | Mixing-Controlled Compression-Ignition Combustion with Diesel-Like Alternative Fuels | Paul Miles (Sandia NL) |
| 10:10 | Break | | |
| 10:30 | n-ZCET | Alcohol Combustion Collaboration: A multi-Insitutional research group on alcohol-fueled engines | Brian Gainey (Lund University) |
| 10:50 | n-ZCET | Investigations into the feasibility of a methanol CI combustion process | Yuri Wright (Empa) |
| 11:10 | n-ZCET | Closing remarks | Dario Lopez-Pintor (Sandia NL) |
| 11:15 | Solid Fuel Combustion | Task Overview | Jacobo Porteiro (University of Vigo) |
| 11:25 | Solid Fuel Combustion | New trends on the modeling of biomass combustion for industrial scale systems | Jacobo Porteiro (University of Vigo) |
| 11:45 | Solid Fuel Combustion | Challenges and progresses in the chemical characterization of condensed products from pyrolysis of biomasses and wastes | Barbara Apicella (STEMS - CNR) |
| 12:05 | Solid Fuel Combustion | Sustainable Propellant Solutions for HRE in Interplanetary Mission: the GREEN FOXFIRE Project | Daniele Piazzullo (STEMS - CNR) |
| 12:25 | Solid Fuel Combustion | Multi-scale approach for modeling and experimental characterization of reacting porous solids | Simon Baier (TU Dortmund) |
| 12:45 | Lunch | | |
| 13:45 | Solid Fuel Combustion | Perspectives and challenges for iron and aluminum as sustainable carriers of renewable energy | Arne Scholtissek (TU Darmstadt) |
| 14:05 | Solid Fuel Combustion | Use of iron as energy carriers: potential, research, and perspectives | Francesca Cerciello (STEMS - CNR) |
| 14:25 | Solid Fuel Combustion | Closing remarks | Jacobo Porteiro (University of Vigo) |
| 14:30 | Combustion Chemistry | Task Overview | Scott W. Wagnon (Lawrence Livermore NL) |
| 14:40 | Combustion Chemistry | The Planar Mixing Layer Flame (PMLF) configuration to unravel the gas-phase and soot formation chemistry in non-premixed combustion | Francesco Carbone (Univ. of Connecticut) |
| 15:10 | Combustion Chemistry | Optimization of H ₂ – Natural Gas Chemistry for CFD Applications | Dario Lopez Pintor (Sandia NL) |
| 15:30 | Break | | |
| 15:50 | Combustion Chemistry | Combustion Chemistry Modeling for Synthetic Aviation Turbine Fuels | Scott W. Wagnon (Lawrence Livermore NL) |
| 16:10 | Combustion Chemistry | Three-Dimensional CFD Analysis of a Combustion Furnace Considering a Detailed Chemical Reaction Mechanism of Ammonia | Tsukasa Hori (Osaka University) |
| 16:30 | Combustion Chemistry | Oxy-fuel combustion fundamentals at high pressure in CO ₂ medium for improved efficiency and energy resilience (online) | Subith Vasu (Univ. of Central Florida) |
| 16:50 | Combustion Chemistry | Closing remarks | Scott W. Wagnon (Lawrence Livermore NL) |
| 16:55 | | TLM Tasks summarizing #3 | Paul Miles (Sandia NL) |
| 17:30 | | Closing of the 47th TLM | Alessandro Montanaro (STEMS - CNR) |