

Combustion TCP TLM41 - Presentation Presenters, Authors, and Titles

Opening Remarks

Presenter	Authors	Title
Carina Alles	Chair of the Combustion TCP, SFOE, Switzerland	TCP on Clean and Efficient Combustion 41st Task Leaders Meeting
Paul Miles	Operating Agent for the Combustion TCP, Sandia National Laboratories, USA	Welcome! - 41st International Energy Agency Combustion Technology Collaboration Programme Task Leaders Meeting

Combustion Chemistry Task

Presenter	Authors	Title
William J. Pitz	William J. Pitz, Lawrence Livermore National Laboratory, USA	Introduction - Combustion Chemistry Task Overview
Ahfaz Ahmed	Corinna Netzer, Ahfaz Ahmed, Andrea Gruber, Terese Løvås, Department of Energy and Processing Engineering, Norwegian University of Science and Technology, Norway	NO formation and emissions characteristics in ammonia/hydrogen/nitrogen-air wrinkled flame
Patrick Hemberger	Mathias Steglich, Andras Bodi and Patrick Hemberger, Paul Scherrer Institute, Switzerland	Unveiling Reaction Mechanisms in Combustion Chemistry by Detection of Elusive Molecules
Alexander A. Konnov	Christian Brackmann, Torsten Methling, Gianluca Capriolo, Marco Lubrano Lavadera, Alexander A.	Laminar burning velocities and LIF measurements of nitric oxide formation in flames of simple alcohols
Kazunari Kuwahara	Kazunari Kuwahara, Osaka Institute of Technology,	Chemical Kinetic Activities in SIP Innovative Combustion Technology
William J. Pitz	William J. Pitz, Scott W. Wagnon, Goutham Kukkadapu, Kuiwen Zhang, Chiara Saggese, Charles Westbrook,	Development of chemical kinetic models for gasoline and diesel fuels and their blends with high-performance fuels
William J. Pitz	William J. Pitz, Lawrence Livermore National Laboratory, USA	Combustion Chemistry Task Wrap-up

Gas Engines Task

Presenter	Authors	Title
Yuri Wright	Yuri Wright, ETN, Switzerland	Introduction - Gas Engine Task Overview
Choongsik Bae	Choongsik Bae, Korea Advanced Institute of Science and Technology (KAIST), Korea	Dual-Fuel Combustion Strategies with Diesel and Natural Gas

Qiang Cheng	Qiang Cheng, Zeeshan Ahmad, Ossi Kaario, Martti Larmi, Aalto University, Finland	Optical investigation of dual-fuel combustion using chemiluminescence and natural luminosity imaging
José M García-Oliver	J.M. Garcia-Oliver, P. Martínez Hernández, CMT Universitat Politècnica de València, Spain M.P. Musculus, R. Rajasegar, Z. Li, D. Carpenter, CRF Sandia National Laboratories, USA Y. Niki, National Institute of Maritime, Port and Aviation Technology, Japan	Chemiluminescence and IR Imaging of Pre-chamber Jet Penetration, Ignition, and Combustion in an HD NG Engine
Kai Herrmann	Kevin Stork, Gurpreet Singh, Michael Weismiller, US Kai Herrmann, S. Wüthrich, P Süess. P Cartier, University of Applied Sciences and Arts, Switzerland C. Schürch, ETH, Switzerland	Characterization of Dual-Fuel Combustion Processes
Sebastian Kaiser	P. Kranz, D. Fuhrmann, M. Goschütz, S.A. Kaiser, University of Duisburg-Essen, Germany S. Bauke, K. Golibrzuch, H. Wackerbarth, Laser-Laboratorium Göttingen eV, Germany	In-cylinder LIF Imaging, IR-absorption Point Measurements, and a CFD Simulation to Evaluate Mixture Formation in a CNG-Fueled Engine
Kyoungdoug Min	P. Kawelke, J. Luciani, L. Beckmann, J. Zachow, Volkswagen AG, Germany Sunyoung Moon, Hyungjin Shin, Kihong Kim, Kyoungdoug Min, Seoul National University, Korea	Combustion Characteristics of Low Reactivity Fuels under Dual Fuel Combustion
Mark Musculus	D Longman, M Biruduganti, A Shah, R Scarcelli, J Kim, S Som, P Chinnathambi – Argonne National Laboratory, USA B Zigler, M Ratcliff, S Yellapantula, M Rahimi, R Grout, J Luecke, W Collins – National Renewable Energy Laboratory, USA S Curran, J Pihl, J Szybist, M Moses-DeBusk, C Lerin, S S Majumdar – Oak Ridge National Laboratory, USA M Musculus, Z Li, R Rajasegar, D Carpenter – Sandia National Laboratories, USA Y Niki – National Institute of Maritime, Port, and Aviation Technology, Japan Jose Maria Garcia Oliver – Universidad Polytechnic	Fundamental Advancements in Pre-Chamber Spark-Ignition and Emissions Control for Lean-Burn Natural-Gas Engines

William Northrop	William Northrop, Hyewon Lee, Ying Lin, Seokwon Cho, University of Minnesota, USA Satbir Singh, Carnegie Mellon Institute, USA Andrew Steele, Johnson Matthey, USA Mark Musculus, Judit Zador, Greg Roberts, Zheming Li – Sandia National Laboratories, USA	Catalytic Oxidative Coupling of Methane (OCM) for Enabling Advanced NG Combustion
Christine Rousselle	Christine Rousselle – Université d'Orléans, France Kevin Stork, Gurpreet Singh, Michael Weismiller – US Department of Energy, USA	OH* Chemiluminescence Imaging and 0-D Chemical Kinetic Modeling of End Gas Autoignition for Spark Ignited Natural Gas
Christine Rousselle	Christine Rousselle, Charles Lhuillier, Pierre Brequigny, Université d'Orléans, France	Ammonia as One Future E-fuel
Yuri Wright	Jann Koch, Christian Schürch, Yuri M. Wright and Konstantinos Boulouchos, ETH Switzerland	Hydrogen/methane Admixtures in IC Engines
Guoqing Xu	G. Xu, R. Hegde, I. Vasile, Liebherr Machines Bulle SA, Switzerland K. Bardis, P. Kyratos, Y.M. Wright, M. Kotzagianni, K. Boulouchos ETH, Switzerland	Unscavenged Prechamber: From Fundamentals to Engine Development
Yuri Wright	Yuri Wright, ETH, Switzerland	Gas Engines Task Wrap-up

Gas Turbines Task		
Presenter	Authors	Title
Peter Janshon	Peter Janshon, PSI, Switzerland	Introduction - International Energy Agency Technology Collaboration Program
Phil Bowen	Phil Bowen, Dan Pugh, A. Valera-Medina, A. Crayford, J. Runyon, R. Marsh, A. Giles, B. Goktepe, University of Cardiff, UK	on Clean and Efficient Combustion
Mario Ditaranto	Mario Ditaranto, SINTEF, Norway	SINTEF Inputs to IEA TCP Combustion GT Session
Dominik Ebi	Dominik Ebi, Paul Scherrer Institute, Switzerland	Investigation of Flame Flashback at Gas Turbine Relevant Conditions through Experiment and Modelling
Junqi Guo	Yong Fan-1&2, Junqi Guo-2, Yuji Suzuki-2, Osamu Kurata-1, Norihiko Iki-1 1-National Institute of Advanced Industrial Science and	Mesoscale Combustion for Hydrogen Gas Turbine Applications

Nicolas Noiray	Nicolas Noiray, Oliver Schulz, Markus Weilenmann, Claire Bourquard, Yuan Xiong, ETH, Switzerland	Combustion Dynamics in Sequential Combustors
Peter Janshon	Dominik Ebi, Ulrich Doll, PSI, Switzerland Peter Janshon, PSI, Switzerland	Gas Turbine Task Wrap-up

Low-Temperature Combustion (LTC) Task		
Presenter	Authors	Title
Magnus Sjöberg	Magnus Sjöberg, Sandia National Laboratories, USA	Introduction - Low Temperature Combustion (LTC) Task
Öivind Andersson	Öivind Andersson, Lund University, Sweden	Climate Performance of Powertrains and Fuels - Simplified LCA of Kia Niro
Öivind Andersson	Erik Svensson, Lund University, Sweden Fabrice Foucher, Nicolas Seignour, Université d'Orléans, France Ahmed Kacef, GREMI, CNRS, France	Partially Premixed Combustion with Methanol
Fabrice Foucher	Michele Bardi, Guillaume Pilla, and Mickaël Matrat, IFP Energies Nouvelles, France Isaac Ekoto, Sayan Biswas, Sandia National Laboratories, USA	LTC Compression Ignition Engine Assisted by Ozone Seeding
Antonio García	J. Benajes, A. García, J. Monsalve, D. Villalta, R. Sari, S. Martinez-Boggio, Universidad Polytechnic Valencia / CMT, Spain	Numerical and Experimental Evaluation of RCCI Combustion: Driving Cycle and After-treatment Results
Tsukasa Hori	Tsukasa Hori, Osaka University, Japan	Brief summary of SIP and Skyactive-X
Magnus Sjöberg	Dario Lopez-Pintor, John Dec, and Gerald Gentz, Sandia National Laboratories, USA	Understanding and Quantifying the Reasons OI is Not Adequate for LTGC Engines – Beyond MON conditions
Magnus Sjöberg	Magnus Sjöberg, Sandia National Laboratories, USA	Octane Appetite of Mixed-Mode Combustion in a DISI Engine
James Szybist	James Szybist, Oak Ridge National Laboratory, USA	For Co-Optima, What Fuel Properties do Light-duty Multimode Engines Want?
Magnus Sjöberg	Magnus Sjöberg, Sandia National Laboratories, USA	Low Temperature Combustion (LTC) Task Wrap-up

Solid Fuel Combustion Task		
Presenter	Authors	Title
Alba Dieguez-Alonso	S. Risse*, I. Schneider*, C. Strecker**, C. Hecka**, A. Dieguez-Alonso*, F. Behrendt*, *Technische Universität Berlin, Germany **h-techeavy oil GmbH, Gladbeck, Germany	Desulphurization of Vacuum Residue with High Sulphur Content in a Semi Batch Slurry Reactor via Hydrogenation
Alba Dieguez-Alonso	A. Dieguez-Alonso, Technische Universität Berlin, Germany	Collaborative work on the understanding and optimization of solid fuels combustion
Jacobo Porteiro	University of Vigo, Spain; TU-Berlin, Germany, TU-Graz, Austria; UCLouvain, Universidad de Medellin, Colombia; IST-Lisboa, Portugal; UCLM, Universidad de Ciudad Real, Spain; Edith-Cowan University, Australia; University of Alberta, Canada; UCL, Belgium	New Advances in the Development of a Comprehensive Biomass Combustion/Gasification Model
Jacobo Porteiro	César A. Bermúdez, Jacobo Porteiro, Luis G. Varela, Sergio Chapela, David Patiño, University of Vigo, Spain	CFD Simulation of a Large-Scale Biomass Furnace

Soot Task		
Presenter	Authors	Title
Paul Miles	Paul Miles, Sandia National Laboratories, USA	Introduction - Why study soot?
M. Bardi D. Aubagnac Karkar	K. Shway, M. Bardi, G. Bruneaux, S. Kaiser, M. Chemak, D. Aubagnac Karkar, O. Colin, L. Vervish University of Duisburg-Essen, Germany IFPEN, France UMR 6614 – CORIA, France	Pool Fires in GDI Engines: Experimental and Numerical Studies of Fuel Film Evaporation and Soot Formation
Christophe Barro	Christophe Barro, Konstantinos Boulouchos, ETH, Switzerland	Soot Formation and DPF Regeneration with Alternative Fuels - Project ReVerDi
José M García-Oliver	CMT Universitat Politècnica de València, Spain IFP Energies Nouvelles, France Sandia National Laboratories, USA	A Review of Soot (Modelling) Research under the Converge Working Group and the Engine Combustion Network
Sebastian Kaiser	Sebastian Kaiser, Niklas Jüngst, University of Duisburg-	Development of Laser-Diagnostic Techniques for Liquid-film
Kyoungdoug Min	Jongwon Chung, Woojae Kim, Kyoungdoug Min, Seoul National University, Korea	Visualization of Soot from Gasoline Liquid Fuel on the Wall

William Northrop	William Northrop, David Kittelson, Noah Bock, Joonho Jeon, Weiqi Chen, University of Minnesota, USA John Williams, BP Kiran Premchand, FCA	Particle Measurement Technology: Focus on Challenges for GDI Engines
Christine Rousselle	Camille Hespel, Fabrice Foucher, Chetankumar Patel, Christine Rousselle, Université d'Orléans, France	Effect of Ambient Species on Soot Production – Spray A Configuration
Kelly Senecal	Kelly Senecal, Convergent Science, USA	Soot Modeling Progress at Convergent Science

Sprays in Combustion Task		
Presenter	Authors	Title
Ossi Kaario	Ossi Kaario, Aalto University, Finland	Introduction - Spray Task Highlights 2019
Tsuneaki Ishima	Tsuneaki Ishima, Hisanobu Kawashima, Gunma University, Japan	Spray Characterization by PDA and Visualization
Ossi Kaario	Zeeshan Ahmad, Ossi Kaario, Cheng Qiang, Martti Larmi, Aalto University, Finland	Study of Pilot fuel Properties on Lean Diesel-Methane Dual-Fuel Combustion in a Heavy-duty Engine
Christopher Powell	Brandon Sforzo, Aniket Tekawade, Alan Kastengren, Christopher Powell, Argonne National Laboratory, USA	Fuel Injector Nozzle Geometry and Its Effects on Internal Flow and the External Spray
Christopher Powell	Christopher Powell, Argonne National Laboratory, USA	Changes to US DOE-funded Light-Duty Spray Research
Beat von Rotz	Beat von Rotz, Winterthur Gas & Diesel, Switzerland	Alternative Fuels – Spray and Combustion Research for Future Large 2-Stroke Engine Solutions
Yuri Wright	N. Frapolli, C. Barro, Y.M. Wright and K. Boulouchos, ETH, Switzerland	Modelling Fuel Wall Film Dynamics and Soot Formation in GDI Engines
Yuri Wright	D. Sakellarakis, W. Vera-Tudela, C. Barro, Y.M. Wright, K. Boulouchos, ETH, Switzerland U. Doll, PSI, Switzerland	Tracer LIF and 3D-CFD of High-Pressure Under-Expanded Jets at Engine Conditions
Christopher Powell	M. Banholzer, M. Pfitzner, UniBW Munich, Germany Chris Powell, Argonne National Laboratory, USA Ossi Kaario, Aalto University, Finland	Spray in Combustion Task Wrap-up

Systems Analysis Proposed Task

Presenter	Authors	Title
Gilles Bruneaux	Gilles Bruneaux, IFPEN, France	Introduction and Wrap-up: System Analysis Task (Combustion Benefit at System Level)
Choongsik Bae	Choongsik Bae, Korea Advanced Institute of Science and Technology (KAIST), Korea	Feasibility Evaluation of Automotive Powerplants using MERIT Function
Antonio García	J. Benajes, A. García, J. Monsalve, D. Villalta, R. Sari, S. Martinez Boggio, CMT Universitat Politècnica de	Evaluation of Hybrid Powertrains under Dual Fuel RCCI combustion
Gil Georges	Gil Georges, ETH, Switzerland	Thread 1: Energy flows; Thread 2: Vehicle fleets; Thread 3: Energy infrastructures
Ossi Kaario	Yuri Kroyan, Michal Wojcieszuk, Ossi Kaario, Martti Larmi, Aalto University, Finland	Modeling the Impact of Alternative Fuel Properties on Engine Performance
Kannan Ramachandran	K. Ramachandran, Tom Kober, PSI, Switzerland Gilles Bruneaux, IFPEN, France	Outline / Proposal for a IEA-TCP joint project involving TCP Combustion & ETSAP
Joris Melgar	Joris Melgar, IFPEN, France	IFP Energies Nouvelles System Analysis
Gurpreet Singh	Gurpreet Singh, Department of Energy, USA	Vehicle Energy Consumption & Performance
Steven Wiryadinata	Steven Wiryadinata, Sandia National Laboratories, USA	HDV systems analysis at Sandia National Laboratories

Exhaust Aftertreatment Proposed Task

Presenter	Authors	Title
Stephan Renz	Stephan Renz, SFOE, Switzerland	Introduction - Idea for New Collaborative Task – Exhaust After Treatment
Christophe Barro	Christophe Barro, ETH, Switzerland	Intelligent SCR
Davide Ferri	Davide Ferri, PSI, Switzerland	Exhaust Gas Aftertreatment Technologies
James Szybist	Sreshtha Sinha Majumdar, Josh A. Pihl, Todd J. Toops, Oak Ridge National Laboratory, USA	Reactivity of High-Performance Fuels on a Commercial Three-Way Catalyst for Control of SI Engine Emissions
James Szybist	Vitaly Y. Prikhodko, Josh A. Pihl, Calvin Thomas, Todd J. Toops and James E. Parks II, Oak Ridge National Laboratory, USA	Passive SCR for Lean NOx Emissions Control