



Conference program

All times are given for the Central European Time zone (UTC+1)

25th of April

08:30 *Welcome*

08:45 *Welcome address*

Guillain Mauviel, Vice-President of the University of Lorraine in charge of the Ecological Transition

Guillaume Vanhove, President of the French section of the Combustion Institute

Jérémy Bourgalais & Olivier Herbinet, local organizers

Session 1: Hydrogen 1 (Chair: Simone Hochgreb)

09:00 *Keynote*

Hydrogen as a potential net zero energy carrier for transportation and local power: From microscale modelling to large scale system safety

Konstantina Vogiatzaki (*Oxford University, UK*)

9:45 *Contributed talks*

An initial step in the experimental characterization of ultra-lean hydrogen/air turbulent spherical flames for internal combustion engine applications

Nicolas Villenave, Pierre Bréquigny, Fabrice Foucher

Early-stage flame acceleration in stratified hydrogen-air mixtures: theory and simulation

Sébastien Missey, Omar Dounia, Laurent Selle

Effect of geometrical parameters on the mixing and stabilization of hydrogen flames in a swirled jet-in-cross-flow burner

Nicolas Vaysse, Daniel Durox, Ronan Vicquelin, Sébastien Candel, Antoine Renaud

Effect of hydrogen dilution in a laminar diffusion ethylene flame: focus on soot formation

Geoffrey Guy, Christopher Betrancourt, Jérôme Bonnet, Benedetta Franzelli

10:45 *Coffee Break & Poster session*





11:15 Contributed talks

Experimental investigations of OH and NO radicals in premixed hydrogen flames across a wide range of equivalence ratio

Tirthankar Mitra, Yann Fenard, Nathalie Lamoureux, Pascale Desgroux

Experimental study of steam dilution effects on a lean premixed H₂/air flame

Erwann Bodin, Manuel Kuhn, Cédric Galizzi

Flame stability analysis in domestic cooking burners - Effect of hydrogen addition

Rajalakshmi Ravichandran, David Honoré, Corine Lacour, Sylvain Marc, Michel Lecoer, Stephane Carpentier

Hydrogen combustion in a packed bed of quartz sand

Aki Fujinawa, Ewa Marek

12:15 Lunch break

Session 2: Biofuels (Chair: Pascale Desgroux)

13:15 Keynote

The road towards 100%SAF (Sustainable Aviation Fuels): focus on combustion challenges

Nicolas Jeuland (SAFRAN, France)

14:00 Contributed talks

A chemical kinetic study of tetrahydropyran high-pressure oxidation in a jet-stirred reactor

Bakr Hoblos, Zeynep Serinyel, Guillaume Dayma, Philippe Dagaut

Influence of Ethanol and Iso-butanol Addition on the Combustion Chemistry of Toluene Reference Fuel

Doha Kdouh, Sylvie Gosselin, Nathalie Lamoureux, Kanika Sood, Laurent Gasnot, Luc-Sy Tran

Low-Temperature Oxidation of Tetrahydropyran in a Jet-Stirred Reactor

Caroline Lewin, Jiabiao Zou, Jeremy Bourgalais, Olivier Herbinet, Frédérique Battin-Lelcerc, Aamir Farooq

Modeling of mass and heat transfers in multicomponent droplet phase change

Aymeric Vié, Artur Carvalho Santos, Fernando Luiz Sacomano Filho

15:00 Coffee Break





Session 3: Ammonia 1 (Chair: Agustin Valera Medina)

15:30 Keynote

Pressurized combustion of decomposed ammonia fuels

Mario Ditaranto (SINTEF, Norway)

16:15 Contributed talks

Exploratory numerical study of potential ignition and combustion of leaked pressurized ammonia in auxiliaries to ammonia-fed gas turbines

Baopeng Xu, Jennifer X Wen

LES of a differentiated injection NH₃-H₂ swirled flame: preliminary NO_x analysis

Héctor José Varqas Ruiz, Davide Laera, Ghislain Lartigue, Syed Mashruk, Agustin Valera Medina, Laurent Gicquel

Can chemiluminescence be used as preferential diffusion indicator in partially cracked ammonia flames on a Bunsen burner?

Alka Karan, Guillaume Dayma, Christian Chauveau, Fabien Halter

Turbulent Partially Cracked Ammonia/air Premixed Spherical Flames

Seif Zitouni, Pierre Bréquigny, Christine Rousselle

17:15 Free time

19:30 Dinner at the central market of Nancy (52 Rue Saint-Dizier, 54000 Nancy)

Welcome by **Marie-Odile Simonnot**, head of the Laboratoire Réactions et Génie des Procédés (LRGP)

26th of April

Session 4: Solid Fuels (Chair: Valérie Tschamber)

09:00 Keynote

Pyrolysis and gasification of biomass: from mechanisms to reactors

Anthony Dufour (Laboratoire Réactions et Génie des Procédés, France)

09:45 Contributed talks

Biomass Pellet degradation under a controlled heat flux

Alexis Coppalle, Pahola Acevedo, Carole Gobin, Corine Lacour, Vincent Morel





Experimental investigation on fluidized bed combustion of smashed corn cob at 650-700 °C temperatures

Rolandas Paulauskas, Ignas Ambrazevičius, Kęstutis Zakarauskas, Marius Praspaliauskas, Justas Eimontas, Nerijus Striūgas

Pyrolysis and combustion experiments on a wood pellet under low or high heating ramps and associated gaseous emissions

Alain Brillard, Guillaume Gerandi, Valerie Tschamber

Elemental analysis of biomass pellets using LIBS

Alexis Coppalle, Pahola Acevedo, Carole Gobin, Corine Lacour, Vincent Morel

10:45 *Coffee Break & Poster session*

12:15 *Lunch break & Poster session*

Session 5: Ammonia 2 (Chair: Jennifer Wen)

13:15 *Contributed talks*

Comparison of kinetic mechanism predictions of ignition delay time at high pressure for partially-cracked ammonia

Florian Hurault, Pierre Bréquigny, Fabrice Foucher, Christine Mounaïm-Rousselle

Emissions Analyses of Humidified 20% (vol.) Cracked Ammonia Swirling Flows

Jordan Davies, Syed Mashruk, Daisuke Sato, Luca Mazzotta, Daniel Pugh, Agustin Valera Medina

Laminar Burning Velocity of NH₃/NO/N₂ mixtures: an experimental and numerical study

Noé Monnier, Nathalie Lamoureux, Seif Zitouni, Pierre Bréquigny, Christine Mounaïm-Rousselle

Study on spectral characteristics from plasma-assisted flames of ammonia-biogas mixtures with different NH₃ content

Ernest Bykov, Rolandas Paulauskas, Adolfas Jančauskas, Ignas Ambrazevičius

Session 6: Hydrogen 2 (Chair: Benedetta Franzelli)

14:15 *Keynote:*

Benefits and challenges of chemical looping in delivering low-carbon and carbon-capture-ready processes

***Ewa Marek** (Cambridge University, UK)*





15:00 Coffee Break

15:30 Contributed talks

Harnessing the enigmatic ortho-para isomeric conversion for energy-efficient and low-carbon production of liquid hydrogen

Paula Mendoza-Moreno, Ewa Marek

Influence of turbulent inflow conditions on the Large-Eddy Simulation of a non-premixed hydrogen-air jet flame

Félicia Garnier, Thomas Jaravel, Alexis Boudin, Davide Laera, Thierry Poinso

Speed-up drivers for H₂-enriched flames in Porous Media Burners

Enrique Flores-Montoya, Pierre-Alexandre Masset, Thierry Schuller, Laurent Selle

Experimental flame-flow investigations on a dual-swirl coaxial injector

Maxime Leroy, Clément Mirat, Antoine Renaud, Stefano Puggelli, Stéphan Zurbach, Ronan Vicquelin

Early flame development characterization of ultra-lean hydrogen-air flames in an optical spark-ignition engine

Caio Ramalho Leite, Pierre Bréquigny, Jacques Borée, Fabrice Foucher

Filtered tabulated chemistry for multi-regime hydrogen combustion

Samuel Dillon, Renaud Mercier, Benoît Fiorina

Thermal Radiation Acceleration Effects in premixed Steam-Diluted Hydrogen Flames

Julie Ben Zenou, Ronan Vicquelin

17:15 Farewell address





Poster session

Combustion of NH₃/CH₄ Mixtures in a Swirl Burner: Study of Non-Premixed Flames with Fuel Radial Injection

Antoine Morel, Toufik Boushaki

Comparative study on the effect of premixed equivalence ratio on engine characteristics of ammonia fuelled engine under CI vs SI combustion mode

Caneon Kurien, Pierre Bréquigny, Bruno Moreau, Christine Mounaïm-Rousselle

Efficiency of catalytic and non-catalytic ceramic foam for the filtration of particle emitted from a domestic wood stove

Valérie Tschamber, Gontrand Leysens, Gwenaëlle Trouve, Guillaume Moser, Bruno Cartoixa

Experimental and Modeling Study of the Oxidation of Methane in a Jet-Stirred Reactor with CO₂ and H₂O dilution

Le Minh Dinh, Olivier Herbinet, Frédérique Battin-Leclerc

Experimental and numerical comparison of hydroxyl radical distributions in lean premixed hydrogen-air flames

Matthieu Durand, Francesco Schiavone, Davide Laera, Schuller Thierry

Experimental and numerical study of the laminar burning velocity of benzaldehyde and benzylalcohol

Nicolas Delort, olivier herbinet, Roda Bounaceur, Frédérique Battin-Leclerc

Experimental study on the stabilization of premixed laminar flames of H₂/CH₄/air mixtures on a perforated plate

Adnane Soule, Cédric Galizzi, Manuel Kuhni

Exploring n-Propylbenzene Ignition in the Context of its Synthesis from Lignin: Experimental Investigation and Modeling Analysis of a Potential Sustainable Aviation Fuel

Mateus Paiva, Yann Fenard, Robert Wojcieszak, Fabio Bellot Noronha, Guillaume Vanhove

Fluorescence and Raman spectroscopy applications for energy processes

Philippe Arnoux

Numerical simulation of aluminium combustion

Jean Villard

Plasma-assisted combustion for energy intense industry

Nerijus Striūgas, Raminta Skvorčinskienė, Andrius Tamošiūnas, Rolandas Paulauskas

Study of the effect of equivalence ratios and biofuel amounts on the formation of aromatics in biofuel-fuel mixture premixed flames

Kanika Sood, Sylvie Gosselin, Laurent Gasnot, Luc-Sy Tran

The evolution of 3D surfaces and properties of turbulent spherical flames of methane and hydrogen mixtures

Simone Hochgreb, Yutao Zheng, Shaik Pervez Ahmed





Time Schedule

Thursday, 25th April		Friday, 26th April	
8:30-8:45	welcome		
8:45-9:00	welcome adress	8:30-9:00	welcome
9:00-9:45	keynote 1 (Konstantina Vogiatzaki)	9:00-9:45	keynote 4 (anthony dufour)
9:45-10:00	talk 1	9:45-10:00	talk 17
10:00-10:15	talk 2	10:00-10:15	talk 18
10:15-10:30	talk 3	10:15-10:30	talk 19
10:30-10:45	talk 4	10:30-10:45	talk 20
10:45-11:15	coffee break		
11:15-11:30	talk 5	10:45-12:15	coffee & poster session
11:30-11:45	talk 6		
11:45-12:00	talk 7		
12:00-12:15	talk 8		
12:15-13:15	lunch break	12:15-13:15	lunch break
13:15-14:00	keynote 2 (Nicolas Jeuland)	13:15-13:30	talk 21
14:00-14:15	talk 9	13:30-13:45	talk 22
14:15-14:30	talk 10	13:45-14:00	talk 23
14:30-14:45	talk 11	14:00-14:15	talk 24
14:45-15:00	talk 12	14:15-15:00	keynote 5 (Ewa Marek)
15:00-15:30	coffee break	15:00-15:30	coffee break
15:30-16:15	keynote 3 (Mario Ditaranto)	15:30-15:45	talk 25
16:15-16:30	talk 13	15:45-16:00	talk 26
16:30-16:45	talk 14	16:00-16:15	talk 27
16:45-17:00	talk 15	16:15-16:30	talk 28
17:00-17:15	talk 16	16:30-16:45	talk 29
		16:45-17:00	talk 30
		17:00-17:15	talk 31
		17:15	end of the meeting
17:15-19:30	free time		
19:30-24:00	Social Event		



List of participants

LASTNAME	FIRSTNAME	MAIL	Institution
Arnoux	Philippe	philippe.arnoux@univ-lorraine.fr	CNRS
Battin-Leclerc	Frédérique	frederique.battin-leclerc@univ-lorraine.fr	CNRS
Ben Zenou	Julie	julie.benzenou@centralesupelec.fr	Université Paris-Saclay, CNRS, CentraleSupélec
Bodin	Erwann	erwann.bodin@insa-lyon.fr	INSA Lyon
Borrill	Eleanor	elborrill1@sheffield.ac.uk	University of Sheffield
Bourgalais	Jérémy	jeremy.bourgalais@univ-lorraine.fr	CNRS
Bréquigny	Pierre	pierre.brequigny@univ-orleans.fr	Univ. Orléans
Brillard	Alain	alain.brillard@uha.fr	Université de Haute-Alsace
Bykov	Ernest	ernest.bykov@lei.lt	Lithuanian Energy Institute
Coppalle	Alexis	alexis.coppalle@coria.fr	CNRS
Davies	Jordan	daviesj129@cardiff.ac.uk	Cardiff University
Delort	Nicolas	nicolas.delort@univ-lorraine.fr	CNRS
Desgroux	Pascale	pascale.desgroux@univ-lille.fr	CNRS-Université de Lille
Dillon	Samuel	samuel.dillon@centralesupelec.fr	CentraleSupélec / Université Paris-Saclay
Dinh	Le Minh	le-minh.dinh@univ-lorraine.fr	CNRS
Ditaranto	Mario	Mario.Ditaranto@sintef.no	SINTEF
Dufour	Anthony	anthony.dufour@univ-lorraine.fr	CNRS
Durand	Matthieu	matthieu.durand2@imft.fr	Toulouse INP
Felden	Anna	A.M.J.Felden@tudelft.nl	TU Delft
Fiorina	Benoit	benoit.fiorina@centralesupelec.fr	Université Paris Saclay, CentraleSupélec
Flores-Montoya	Enrique	enrique.floresmontoya@imft.fr	Institut National Polytechnique (INP) de Toulouse
Franzelli	Benedetta	benedetta.franzelli@ecp.fr	CNRS/CentraleSupélec, Université Paris-Saclay
Freitas Paiva	Mateus	mateus.freitaspaiwa.etu@univ-lille.fr	CNRS et l'Université de Lille (UMR 8522)
Fujinawa	Aki	af793@cam.ac.uk	University of Cambridge, Department of Chemical Engineering and Biotechnology
Galizzi	Cédric	cedric.galizzi@insa-lyon.fr	INSA Lyon - CNRS - UCBL
Garnier	Félicia	garnier@cerfacs.fr	CERFACS
Guy	Geoffrey	geoffrey.guy@centralesupelec.fr	Université Paris-Saclay, CNRS, CentraleSupélec.
Hassene	Mariem	mariem.hassene@cnrs-orleans.fr	CNRS
Herbinet	Olivier	olivier.herbinet@univ-lorraine.fr	CNRS - Université de Lorraine
Hoblos	Bakr	bakr.hoblos@cnrs-orleans.fr	Université d'Orléans
Hochgreb	Simone	sh372@cam.ac.uk	University of Cambridge
Hurault	Florian	florian.hurault1@univ-orleans.fr	University of Orleans
Illuminati	Paolo	paolo.illuminati@centralesupelec.fr	CentraleSupélec
Jeuland	Nicolas	nicolas.jeuland@safrangroup.com	SAFRAN

Low-Carbon Combustion 3rd Edition

co-organized by LRGP CNRS-University of Lorraine, and the French and British Sections of the Combustion Institute

25 – 26 April 2024 - Nancy, France



Karan	Alka	alka.karan@cnrs-orleans.fr	ICARE
Kdouh	Doha	doha.kdouh@univ-lille.fr	University of Lille
Kurien	Caneon	caneon.kurien@univ-orleans.fr	UNIVERSITY OF ORLEANS
Lamoureux	Nathalie	nathalie.lamoureux@univ-lille.fr	Université de Lille
Leroy	Maxime	maxime.leroy@centralesupelec.fr	U. Paris-Saclay / Safran Tech
Li	Mingyuan	margaux12033@mail.ustc.edu.cn	Centre national de la recherche scientifique
Maestro	Dario	dario.maestro@totalenergies.com	TotalEnergies
Marek	Ewa	ejm94@cam.ac.uk	University of Cambridge
Mendoza-Moreno	Paula	pvm21@cam.ac.uk	University of Cambridge
Mirat	Clément	clement.mirat@centralesupelec.fr	CNRS - CentraleSupélec
Missey	Sébastien	sebastien.missey@imft.fr	Institut National Polytechnique de Toulouse
Mitra	Tirthankar	tirthankar.mitra@univ-lille.fr	University of Lille
Monnier	Noé	noe.monnier@etu.univ-orleans.fr	Université d'Orléans
Morel	Antoine	antoine.morel@cnrs-orleans.fr	Université d'Orléans
Paulauskas	Rolandas	Rolandas.paulauskas@lei.lt	Lithuanian Energy Institute
Ramalho Leite	Caio	caio.rleite@univ-orleans.fr	Université d'Orléans
Ravichandran	Rajalakshmi	rajalakshmi.ravichandran@insa-rouen.fr	INSA ROUEN
Serinyel	Zeynep	zeynep.serinyel@cnrs-orleans.fr	Université d'Orléans
Sood	Kanika	kanika.sood@univ-lille.fr	CNRS, Université de Lille
Soule	Adnane	adnane.soule@insa-lyon.fr	INSA Lyon
Tretola	Giovanni	giovanni.tretola@eng.ox.ac.uk	University of Oxford
Tschamber	valerie	valerie.tschamber@uha.fr	Université de Haute-Alsace
Valera Medina	Agustin	ValeraMedinaA1@cardiff.ac.uk	Cardiff University
Vanhove	Guillaume	guillaume.vanhove@univ-lille.fr	Université de Lille
Vargas Ruiz	Héctor José	vargas@cerfacs.fr	TotalEnergies
Vaysse	Nicolas	nicolas.vaysse@centralesupelec.fr	CNRS, CentraleSupélec, Université Paris-Saclay
Vicquelin	Ronan	ronan.vicquelin@centralesupelec.fr	CNRS, CentraleSupélec, Université Paris-Saclay
Vié	Aymeric	aymeric.vie@centralesupelec.fr	CentraleSupélec-Université Paris-Saclay
Villard	Jean	villard@cerfacs.fr	CERFACS
Villenave	Nicolas	nicolas.villenave@univ-orleans.fr	Orléans University
Vogiatzaki	Konstantina	k.vogiatzaki@brighton.ac.uk	Oxford University
Wen	Jennifer	j.wen@surrey.ac.uk	University of Surrey
Wojcieszak	Robert	robert.wojcieszak@univ-lille.fr	Centre National de la Recherche Scientifique
Ying	Zhaoping	zhaoping.ying@iwr.uni-heidelberg.de	Heidelberg University
Zitouni	Seif	seif-eddine.zitouni@univ-orleans.fr	University Orleans





Acknowledgments

The organizers would like to warmly thank the University of Lorraine and the CNRS for the financial and logistical support, and in particular Marie-Odile Simonnot, Head of the LRGP, Chloé Manchon, communication manager of the LRGP, Florence Cherpitelle, travel manager of the LRGP, and Christine Léonard, administrative manager at LRGP, David Lacroix, Director of the EMPP research pole, and Anne Incerti, support manager at the EMPP research pole.

Our thanks also go to the Groupement Français de Combustion without whom the organization of such an event would not have been possible, and more particularly Guillaume Vanhove, President, who gave us the opportunity to organize the congress in Nancy, Zeynep Serinyel, secretary, and Pierre Bréquigny, treasurer of the association.

