INTERNATIONAL FLAME RESEARCH FOUNDATION

Topic-Oriented Technical Meeting 52

Oxy-fuel combustion and CCUS

27th - 28th May 2026
Essen, Germany

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SCHEDULE DAY 1

WEDNESDAY 27 MAY

Time	Session	*Authors/Affiliation (*presenter in bold)
08:30	**Arrival, registration and refreshments**	
09:00	**Welcome**	**Christoph Wieland**, GWI **Martin Schiemann, DCC** - IFRF German Committee **Sébastien Caillat**, IFRF
09:15	Keynote: **Oxy-fuel combustion and Carbon Capture: concepts, applications and potentials in industry and power generation** **Jörg Leicher**, GWI, Essen	
10:00	**Session 1**	
	Flame stabilization characteristics of high-pressure CO_2-diluted methane oxy-flames with coaxial swirled flows	**Hugo Samson**, Jérôme Bonnety, Ronan Vicquelin, Christopher Betrancourt, Clément Mirat, University Paris-Saclay, CNRS, CentraleSupélec, Laboratoire EM2C, France
	The industrial implementation of a burner capable to operate in preheated air-fuel mode, oxy-fuel mode or preheated air-oxy-fuel mode	**Tuur De Preter**, Joaquín de Diego, Akira Morokuma, Yoshiyuki Hagihara, Jorge Visús, Nippon Sanso Euro-Holding, 2250 Olen, Belgium, Nippon Sanso Euro-Holding, Madrid 28020, Spain, Nippon Sanso Holdings Corporation, Yamanashi, Japan, Nippon Sanso Holdings Corporation, Tokyo 142-8558, Japan, Nippon Sanso España, Madrid 28020, Spain
10:40	**Break**	
11:00	**Session 2**	
	Effects of the dilutions of fuel and oxidizer by CO_2 on oxycombustion flames for CCUS	**Laura Pirateque-Henao**, Bertrand Lecordier, Corinne Lacour, Armelle Cessou, David Honoré, INSA Rouen Normandie, Univ Rouen Normandie, CNRS CORIA UMR 6614, France
	From natural gas to hydrogen: industrial oxycombustion through combined experimental trials and CFD simulations	**Chaimae Bariki**, Rémi Tsiava, Bernard Labégorre, Jean Caudal, Air Liquide, Innovation Campus Paris, France
	Oxy-fuel with low NOx despite high nitrogen presence in aluminium and steel industry	**Martin Demuth**, Andrew Richardson, Stefan Schwarz, Christian Kislinger, Messer Austria GmbH, Austria, Messer North America, USA, Graz University of Technology, Institute of Thermal Engineering, Austria
12:00	**Lunch**	
13:30	Keynote: **Oxy-fuel combustion capture in selected industrial and gas power processes, Mario Ditaranto**, SINTEF Energy Research, Trondheim	
14:20	**Session 3**	
	Experimental investigation of NOx emissions during oxyfuel combustion of natural gas-hydrogen blends with the addition of false air	**Franziska Ott**, Martin Niesen, Nico Schmitz, Christian Wuppermann, Dept for Industrial Furnaces and Heat Engineering, RWTH Aachen University, Germany
	Challenges in measuring flame characteristics under hydrogen-oxyfuel conditions	**Anna Hasche**, Klara Victoria Voß, Hartmut Krause, Sven Eckart, 1 TU Bergakademie Freiberg, Germany, Centre of Excellence, for Safety Research, Czech Republic

Time	Session	*Authors/Affiliation (*presenter in bold)
15:00	**Fast poster presentations**	
P01	**Oxyfuel Biomethane Combustion and CO_2 Capture Pathways for Renewable Carbon Cycles in High-Temperature Industries**	**Klara Victoria Voß**, Anna Hasche, Sven Eckart, Hartmut Krause, Institute of Thermal Engineering, TU Bergakademie Freiberg, Germany, Centre of Excellence for Safety Research (CESAR), VSB – Technical University of Ostrava, Czech Republic
P02	**Experimental investigation of oxyfuel combustion of hydrogen-containing fuel gases in industrial glass burners**	**Paul Kisza**, Klara Voß, Anna Hasche, Hartmut Krause, Sven Eckart, TU Bergakademie Freiberg, Germany, Centre of Excellence for Safety Research, VSB – Technical University of Ostrava, Czech Republic
P03	**Modeling radiation heat transfer of natural gas–hydrogen blends in a lab-scale oxyfuel furnace**	**A. M. Garcia**, J. Losacker, J. Visús Pool, N. Schmitz, C. Wuppermann, Department for Industrial Furnaces and Heat Engineering, RWTH Aachen University, Germany, Market Development Department, Combustion Applications. Nippon Gases España, Spain
P04	**Experimental and numerical investigation of alternative plasma gases for enhanced radiation in microwave plasma torches**	**Dominik Liebsch**, Ralph Behrend, Hartmut Krause, Sven Eckart, TU Bergakademie Freiberg, Germany, Centre of Excellence for Safety Research, Czech Republic
P05	**The newly built HyMaX burner: achieving net-zero emissions through swirl-stabilized hydrogen oxy-combustion with steam dilution**	**Tobias Guivarch**, Jérôme Bonnety, Christopher Betrancourt, Clément Mirat, Ronan Vicquelin, Université Paris-Saclay, CNRS, CentraleSupélec, Laboratoire EM2C, France
P06	**Experimental characterization of swirl-stabilized pulverized fuel flames: impacts of oxy-fuel atmospheres and fuel diversity**	**Anna Maßmeyer**, Institute of Heat and Mass Transfer, RWTH Aachen University, Germany
P07	**Flame stabilisation of CH_4/ H_2/NH_3 mixtures with oxygen enrichment and its impact on flame monitoring**	Yohan John, **Dirk Möntmann**, Christoph Nailis, OWI Science for Fuels GmbH – affiliated to RWTH Aachen, Germany
P08	**Effects of moderate oxygen enrichment ($\leq$ 25 % O_2) on flame structure and NOx formation in industrial air fuel burners**	**Hassan Mohanna**, Sébastien Caillat, Fives Stein, France
P10	**Oxy-fuel combustion of solid biomass in a pilot-scale downdraft furnace**	Florian M. Schmidt, Emil Thorin, Henrik Wiinikka, Markus Carlborg, **Alexey Sepman**, Thermochemical Energy Conversion Laboratory, Department of Applied Physics and Electronics, Umeå University, Sweden, RISE, Piteå, Sweden, Energy Engineering, Division of Energy Science, Luleå University of Technology, Sweden

SCHEDULE
DAY 1

Time	Session	*Authors/Affiliation (*presenter in bold)
15:00	**Fast poster presentations continued**	
P11	**Machine-learning-accelerated chemistry and soot modelling for 3D CFD simulations of CLC reactors**	**Abderrahim Sahim**, Olivier Colin, Karine Truffin, IFP Energies nouvelles (IFPEN), R116 – Numerical Modelling of Energy Systems, France
P12	**Modeling of biomass pyrolysis in a fluidized bed using 3D numerical simulation within an Euler-Euler framework**	**Vincent Baruzzini**, Enrica Masi, Olivier Simonin, Alice Wittmann, Cornelius Schönnenbeck, Guillaume Gerandi, Univ Toulouse, Toulouse INP, CNRS, IMFT, France, Laboratory of Risk Management and Environment, University of Upper Alsace, France
P13	**Oxyfuel-combustion of RDF: retrofit of a 440 kWth grate furnace and pilot trials**	**Tim Budick**, Fraunhofer UMSICHT, Germany
15:30	**Poster session** and refreshments	
16:30	**GWI laboratory visit**	
17:30	**End of day one**	
18:00	**Dinner at GWI**	

THURSDAY
28 MAY

Time	Session	*Authors/Affiliation (*presenter in bold)
08:30	**Arrival and refreshments**	
09:00	Keynote: **Solid fuels in oxy-fuel applications, Martin Schiemann**, Ruhr-University Bochum	
09:50	**Session 4**	
	Emission of environmental pollutants from oxy-coal combustion in fluidized bed	**Ichiro Naruse**, Ryo Yoshiie, Yasuaki Ueki, Nagoya University, Japan, Gifu University, Japan, Aichi Institute of Technology, Japan
	Volatilisation of minor and trace elements during cement clinker production in high CO_2 atmosphere	**Amanda Vikström**, Karin Sandström, Markus Broström[1], Matias Eriksson Centre for Sustainable Cement and Quicklime Production, Department of Applied Physics and Electronics, Umeå University, Sweden, RECEM – Research School for Excellence in Cementitious Materials Science, Umeå University, Sweden, Industrial Doctoral School for Research and Innovation, Umeå University, Sweden, Swedish Mineral Processing Research Association – MinFo, Sweden
10:30	**Break**	
11:00	**Session 5**	
	Industrial oxy-combustion performance in cement kilns	**Noureddine Mechaal**, Fives Pillard, France
	CFD evaluation of the oxy-fuel technology applied to rotary cement kiln	Robert Lewtak, Beata Glot, **Jarosław Hercog**, Piotr Jóźwiak, Institute of Power Engineering – National Research Institute, Thermal Processes Department, Poland
	Effect of the oxy-fuel combustion of toluene on pollutant emission	**Mohammad Issa**, Frédérique Battin-Leclerc, Olivier Herbinet, Sylvie Gosselin, Pascale Desgroux, Luc-Sy Tran, Univ. Lille, CNRS, UMR 8522 – PC2A – Physicochimie des Processus de Combustion et de l'Atmosphère, France, Univ. Lorraine, CNRS, LRGP – Laboratoire Réactions et Génie des Procédés, France
12:00	**Lunch**	
13:30	Keynote: **Exploring CCUS: Chemical Looping Combustion as a Step Towards a Carbon-Free Energy** **Patrice Font**, IFP Energies nouvelles, Solaize	
14:20	**Session 6**	
	Oxyfuel process for CO_2 capture in waste incineration– effects on the operation of waste incineration	**Qui Lu**, Daniel Bernhardt, Y. Wang, Michael Beckmann, Chair for Energy Process Engineering, Technical University Dresden, Germany
	Efficient SFW Oxy+ based eFuel plant concepts	**Pasi Petra**, Pasi Liimatainen, Mohamed Magdeldin, Sumitomo SHI FW, Varkaus, Finland, Sumitomo SHI FW, Espoo, Finland

SCHEDULE
DAY 2

Time	Session	*Authors/Affiliation (*presenter in bold)
15:00	**Break**	
15:20	**Session 7**	
	Single pine pellet gasification at 900°C under CO_2 and H_2O atmospheres for biomass chemical looping combustion applications	Alice Wittmann, Jean-François Brilhac, **Cornelius Schönnenbeck**, Guillaume Gerandi, Alain Brillard, Valérie Tschamber, Université de Haute-Alsace, LGRE UR 2334, France
	Techno-economic assessment of CO_2 capture from oxygen-enriched flue gases using PZ-AMP	**Miia Nevander**, Markus Hurskainen, VTT Technical Research Centre of Finland Ltd, Espoo, Finland, 2 VTT Technical Research Centre of Finland Ltd, Jyväskylä, Finland
16:20	**Wrap up (future directions) – Closing talk** **David Honoré**, vice-chair of IFRF French Committee	
16:30	**End of TOTeM 52**	