









IFQ 2024 Conference Program  
September 2<sup>nd</sup> – 6<sup>th</sup> 2024  
Garmisch-Partenkirchen, Germany

**Sunday 1<sup>st</sup> of September 2024**








**4:00 pm – 6:00 pm**

Welcome get together/Registration  
Dinner open 6:00 pm – 8:00 pm

# Day One: Monday 2<sup>nd</sup> of September 2024

	7:00 – 8:00 am	Breakfast	
<b>Session 1: Fuel Quality and Industrial Processes</b>			
	8:00 am	Welcome & Information	Prof. Scheffknecht & Jörg Maier
	8:10 am	Keynote: Opportunities and trends towards carbon neutrality in the context of sustainable and circular metallurgical processes	Prof. Charitos
<b>1.1</b>	8:50 am	Renewable energy carriers in rotary lime kilns: Insights from collaborative research	Markus Broström
<b>1.2</b>	9:15 am	Effect of sintering on the morphology of lime powder flashed calcinated in CO <sub>2</sub>	Therese Vikström
	9:40 am	Coffee Break until 10:30 am	
<b>Session 2: Fuel Quality and Combustion Performance I</b>			
<b>2.1</b>	10:30 am	Development of an empirical method for determining macro-kinetics of pyrolysis of biogenic and waste derived fuels in a SEG environment	Felix Mangold
<b>2.2</b>	10:55 am	Characterization of the ignition and combustion behavior of biogenic residues	Matteo Giesen
<b>2.3</b>	11:20 am	Study of Small-scale CHP unit operation with Japanese woodchips	Kenichi Sasauchi
<b>2.4</b>	11:45 am	Computational modeling of co-combustion of eucalyptus leaves and eucalyptus leaves char with pulverized reject coal in a DTF	Barun Kumar Nandi
	12:00 – 1:30 pm	Lunch	
<b>Session 3: Gasification</b>			
<b>3.1</b>	1:30 pm	From cashew nut shells to synthesis gas – Operation of a 1 MW dual fluidized bed steam gasifier and downstream gas cleaning units	Thomas Karl Hannl
<b>3.2</b>	1:55 pm	Gas cleaning efficiency for removing NH <sub>3</sub> and HCN from dual fluidized bed steam gasification product gas	Katharina Fürsatz
<b>3.3</b>	2:20 pm	Plasma gasification of sewage sludge – quality of the gas and vitrified residues	Michał Ostrycharczyk
	2:45 – 6:00 pm	Ad-hoc meetings	
	6:00 – 7:30 pm	Dinner	
<b>Session 4: Ash Transformation and Fusibility</b>			
<b>4.1</b>	7:30 pm	Ash transformation in pulverized fuel combustion of rice husks-pilot scale study	Samarthkumar Pachchigar
<b>4.2</b>	7:55 pm	Ash fusibility analysis of blended woody biomass fuels for suppressing clinker formation in gasifiers	Kenji Koido
<b>4.3</b>	8:20 pm	Comparing the fusible nature of drop tube furnace coal ash, laboratory coal ash and power station deposits, to determine the best material for assessing deposit potential	Liza Elliott
	8:45 pm	Happy hour	

## Day Two: Tuesday 3<sup>rd</sup> of September 2024







	7:00 – 8:00 am	Breakfast	
<b>Session 5: Fuel Quality and Combustion Performance II</b>			
5.1	8:00 am	Keynote: A review on the impact of fuel quality conference serie on the green transformation, sustainability and operation in modern power boilers	Prof. Frandsen
5.2	8:40 am	A study of possible improvements for power generation in waste fired combined heat and power plants	Thomas Allgurén
5.3	9:05 am	Combustion characteristics of dried sewage sludge in a bubbling fluidized bed combustor	Matěj Vodička
5.4	9:30 am	Combustion characteristics of high ash coal, petroleum coke, jackfruit leaves char and their ternary blends	Barun Kumar Nandi
	9:55-10:30 am	Coffee Break until 10:30 am	
<b>Session 6: Impacts of Additives</b>			
6.1	10:30 am	Study of anti-clinker additive for a combined heat and power unit fueled with Japanese chips	Yoshihiko Ninomiya
6.2	10:55 am	Characteristics of Aluminosilicate Additives for Potassium Capture during Biomass Combustion	Pavel Skopec
6.3	11:20 am	Experimental investigation of high temperature conversion of sewage sludge mixtures with additives in an entrained flow reactor as part of a phosphorus recovery process	Christian Schmidberger
6.4	11:45 am	An exploratory study of the transformation of phosphorus additives during biomass pyrolysis	Wenkai Zhang
	12:10	Excursion Information	
	12:20 – 1:30 pm	Lunch	
	1:30 – 6:00 pm	<b>Excursion*</b>	
	6:00 – 7:30 pm	Dinner	
	7:30 pm	Happy hour	

\* Excursion Information: The Olympic ski stadium in Garmisch-Partenkirchen






- Basic fitness and a head for heights are required.
- Weather-appropriate clothing and sturdy shoes are mandatory.

If these requirements are not met, the ski jump guide may refuse participation.




## Day Three: Wednesday 4<sup>th</sup> of September 2024

	7:00 – 8:00 am	Breakfast	
<b>Session 7: Ash Deposition &amp; Agglomeration</b>			
7.1	8:15 am	Time of strength development in fly ash compacts	Liza Elliott
7.2	8:40 am	Full-scale investigations of slagging/fouling of Rhenish and Central German lignites	Abdou Suso
7.3	9:05 am	Ash deposition in the heat exchange tubes of gas-fired boilers and its impact on heat transfer performance	Wu Yang
	9:30 -10:30 am	Coffee Break until 10:30 am	
<b>Session 8: Aerosols &amp; Ash Deposits</b>			
8.1	10:30 am	Current understanding of alkali chemistry in combustion processes using state-of-the-art measurement systems and what remains to be solved	Viktor Andersson
8.2	10:55 am	Investigation of SiO <sub>2</sub> particle deposition on pure and sulfated KCl initial deposit layers	Jakob Meister
8.3	11:20 am	Behavior of ashes and inorganic trace elements during combustion of fuel mixtures with up to 100 % biomass	Patrick Schuster
8.4	11:45 am	Effects of increasing sugarcane straw share on fouling, slagging, and corrosion potential in biomass combustion: insights from experimental analysis and thermodynamic equilibrium calculations	Yaniel Garcia Lovella
	12:10 – 1:30 pm	Lunch	
<b>Session 9: Corrosion</b>			
9.1	1:30 pm	High temperature corrosion behavior of superheater steels at 600 °C: insights from laboratory and field exposures	Vicent Ssentenza
9.2	1:55 pm	Laboratory studies on the ageing behaviour of waste incinerator superheater ash deposits	Roland Balint
9.3	2:20 pm	High-temperature corrosion caused by KOH release from the oxygen carrier in the air reactor in chemical looping combustion	Emil Vainio
	2:45 – 6:00 pm	Ad-hoc meetings	
	6:00 – 7:30 pm	Dinner	
9.4	7:30 pm	Effect of the presence of melt on KOH induced corrosion in the air reactor in chemical looping combustion	Emil Vainio
9.5	7:55 pm	Formation of CaCl <sub>2</sub> on superheater deposits and its role on high-temperature corrosion in biomass and waste combustion	Alessandro Ruoizzi
	8:20 pm	Happy hour	

## Day Four: Thursday 5<sup>th</sup> of September 2024

	7:00 – 8:00 am	Breakfast	
<b>Session 10: Emissions</b>			
	8:00 am	Keynote: Title to be determined	
<b>10.1</b>	8:40 am	Investigation of NO <sub>x</sub> emission reduction using air staging from biomass residue combustion in an entrained flow combustion reactor	Prof. Wenchao Ma Gabriel Roeder
<b>10.2</b>	9:05 am	Emission and corrosion characteristics of fine PM from typical components of MSW	Wu Yang
<b>10.3</b>	9:30 am	Online monitoring of fossil CO <sub>2</sub> emissions from mixed-fuel combustion using in situ flue gas measurements	Emil Thorin, Markus Broström
	10:00 am	Coffee Break until 10:30 am	
<b>Session 11: Oxyfuel &amp; Oxygen Carriers</b>			
<b>11.1</b>	10:30 am	The fate of potassium in entrained-flow oxy-fuel combustion of softwood	Emil Thorin
<b>11.2</b>	10:55 am	The influence of oxyfuel conditions on inorganics during black liquor conversion	Tor Sewring
<b>11.3</b>	11:20 am	O <sub>2</sub> and H <sub>2</sub> enriched combustion modelled for a Twin Shaft Regenerative Lime Kiln	Per Holmgren
<b>11.4</b>	11:45 am	Bed layer formation and structural integrity in ilmenite bed particles utilized in fluidized bed combustion of chicken litter	Ali Valizadeh
	11:50 – 1:30 pm	Lunch	
<b>Session 12: Modelling &amp; Beyond I</b>			
<b>12.1</b>	1:30 pm	Study on ammonia direct combustion in industrial furnaces	Fumiteru Akamatsu
<b>12.2</b>	1:55 pm	Oscillating combustion of ammonia as a carbon-free energy source for heat generation	Janine Wiebe
<b>12.3</b>	2:20 pm	Modeling of biomass digestion coupled with high-temperature electrolysis for efficient biofuels production systems	Towhid Gholizadeh Baris
	2:30 – 4:00 pm	Ad-hoc meeting	
<b>Session 13: Biochar</b>			
<b>13.1</b>	4:00 pm	Microstructure of pine wood biochar	Anna Strandberg
<b>13.2</b>	4:25 pm	Co-Pyrolysis of Municipal Sewage Sludge with Agricultural Residue: A Theoretical and Experimental Study for Engineered Biochar Production	Naeimeh Vali
<b>13.3</b>	4:50 pm	Utilization of (CO <sub>2</sub> +Steam) hm-contaminated activated biochar for model tar decomposition	Nastaran Abbaspour
<b>13.4</b>	5:15	Time-resolved understanding of biochar properties during gasification of biomass residues – of relevance for soil- and wastewater applications	Anna Strandberg
	6:00 pm	Conference Dinner + student awards	

## Day Five: Friday 6<sup>th</sup> of September 2024

	7:00 – 8:00 am	Breakfast	
<b>Session 14: Emissions &amp; Modeling</b>			
14.1	8:15 am	Mathematical model for the determination of nitrous oxide (N <sub>2</sub> O) and nitrogen oxides (NO <sub>x</sub> ) emissions during thermal sewage sludge treatment in fluidized bed furnaces	Daniel Bernhardt
14.2	8:40 am	Modeling NO formation in CFD models of recovery boilers using a global reaction mechanism: Impacts of fuel nitrogen release	Rasmus Fagerlund
14.3	9:05 am	Prediction of NO <sub>x</sub> emissions from a Kraft recovery boiler using long short-term memory (LSTM) neural networks	Farzad Jafarionar
14.4	9:30 am	spICP-TOF-MS characterizations of nano-size single particles generated from coal combust	Chong Tian
	10:00 am	Coffee Break until 10:30 am	
<b>Session 15: Modelling &amp; Beyond II</b>			
15.1	10:30 am	Modeling of melt movement within kraft recovery boiler deposits	Jonne Niemi
15.2	10:55 am	Black liquor droplet swelling a parametric CFD study into impacts on kraft recovery boiler combustion processes	Markus Engblom
15.3	11:20 am	Carryover droplet size distribution in kraft recovery boilers: comparison of cfd modelling and measurements	Viswamoorthy Raju
	11:45 – 1:30 pm	Lunch	