



Program

2nd International Workshop on Oxy-Fuel Combustion

organised by the

Collaborative Research Center Oxyflame

Feb. 14th – 15th, 2018

Hotel Mercure in Bochum, Germany

February 13th, 2018 from 6.00 pm: Workshop registration

February 13th, 2018 from 7.00 pm: “Come together” and pre-workshop dinner

1st Day, February 14th, 2018

8.00 – 8.30 am	Workshop registration	
8.30 am	R. Kneer	<i>Welcome, Collaborative Research Center Oxyflame</i>
9.00	Keynote lecture (Chair: R. Kneer) V. Rai	<i>Delivering CCS in time: making scientific and societal goals converge</i>
9.40 am	Coffee break	
10.10 am	Keynote lecture (Chair: R. Kneer) T. Faravelli	<i>A kinetic model of coal thermal degradation</i>
10.50 am	Session 1: Modeling (Chair: K. Umeki)	
	N. Guo, T. Li, T. Løvås	<i>Eulerian-Lagrangian simulations of pulverized biomass injection in turbulent flows using spheroidal approximation</i>
	M. Rieth, A.M. Kempf, M. Vascellari, D. Messig, C. Hasse, A. Kronenburg, O.T. Stein	<i>Carrier-Phase DNS of coal combustion in a turbulent mixing layer</i>
	G.L. Tufano, O.T. Stein, A. Kronenburg, A. Frassoldati, T. Faravelli, A. Kempf, M. Vascellari, C. Hasse	<i>Fully-resolved simulations of pulverized coal particle combustion with a detailed multi-step pyrolysis approach</i>
	R. Knapstein, S. Doost F. di Mare, J. Janicka	<i>Large eddy simulation of pulverized oxy-coal combustion</i>
	S. Farazi, A. Attili, S. Heuer, M. Schiemann, V. Scherer, H. Pitsch	<i>Modeling and simulation of porosity in coal combustion under oxy-fuel condition</i>
12.30 pm	Lunch break	



1.30 pm	Session 2: Industrial processes (Chair: V. Scherer)	
	J. Bakken, M. Ditaranto	<i>Modelling of full scale oxy-fuel cement rotary kiln</i>
	F. Carrasco Maldonado, S. Grathwohl, J. Maier, G. Scheffknecht	<i>Oxy-fuel investigations with a down-scaled cement kiln burner</i>
	B. Damstedt, L. Bool, S. Laux, J. Vetter	<i>Oxygen lancing methodologies for industrial processes</i>
	M. Dunker, A. Hiller, J. Brummack, M. Beckmann	<i>Oxy-fuel process for the treatment of the polymer fraction of waste electrical and electrical equipment (WEEE) in an internally recirculating fluidized bed reactor</i>
2.50 pm	Coffee break and poster session (see below for a list of posters)	
4.20 pm	Session 3: Ignition and emissions (Chair O. Senneca)	
	J.M. Bergthorson, M.J. Soo, X.C. Mi, S.G. Goroshin	<i>A thermophysical approach to the ignition and combustion of particles and suspensions</i>
	Y. Xu, S. Li, Q. Yao, Y. Yuan	<i>Investigation of steam effect on ignition of dispersed coal particles in O₂/N₂ and O₂/CO₂ ambiances</i>
	M. Ostrycharczyk, H. Pawlak-Kruczek, M. Czerep, J. Zgóra, K. Krochmalny	<i>Examinations of the sulfur emission from pulverized lignite fuel, under fast pyrolysis and oxy-fuel combustion condition</i>
	L. Frigge, J. Ströhle, B. Epple	<i>Modification of a model for sulfur release during coal pyrolysis to account for oxy-fuel conditions</i>
6.00 pm	Departure for evening program including museum and workshop dinner	
11.30 pm	Return to conference hotel	



2nd Day, February 15th, 2018

8.00 am	Keynote lecture (Chair: H. Pitsch) R. Axelbaum	<i>Developments in pressurized oxy-fuel-combustion technologies</i>
8.40 am	Keynote lecture (Chair: H. Pitsch) T. Fletcher	<i>Improvements to a detailed fundamental char conversion model for oxy-fuel combustion</i>
9.20 am	Session 4: Large scale experiments (Chair: A. Fry)	
	J. Szuhanszki, K.N. Finney, K. Milkowski, M. Pourkashanian	<i>Oxy-fuel combustion of coal and biomass at the UKCCSRC PACT 250 kW combustion test facility</i>
	J. Hees, S. Bürkle, L. Becker, D. Zabrodiec, S. Wagner, A. Dreizler, R. Kneer	<i>A complementary approach for the experimental investigation of solid oxy-fuel combustion using optical diagnostics</i>
10.10 am	Coffee break	
10.40 am	Keynote lecture (Chair: F. DiMare) M. Alzueta	<i>Minimizing pollutant emissions in oxy-fuel combustion</i>
11.20 am	2 parallel sessions	
	Session 5: Gas flames (Chair: A. Dreizler, room: Kandinsky)	
	A. Degenève, P. Jourdain, J. Caudal, C. Mirat, R. Vicquelin, T. Schuller	<i>A comparison between the temperature and heat transfer of premixed swirling CO₂-diluted methane oxy-flames and methane/air flame</i>
	A. Gunnarsson, H. Simonsson, D. Bäckström, M. Mannazhi, P.E. Bengtsson, K. Andersson	<i>Soot formation and radiative transfer in oxy-fuel and oxygen-enhanced propane flames</i>
	P. Habisreuther, B. Stelzner, P. Vlavakis, A. Loukou, N. Zarzalis, D. Trimis	<i>Structure transition from oxygen-enhanced to oxy-fuel methane non-premixed flames near extinction</i>
	J. Leicher, A. Giese, K. Görner	<i>Modeling of natural gas / oxygen flames in thermal processing industries</i>



Session 6: Radiation (Chair: R. Kneer, room: Monet)	
B. Adams, T. Hosler	<i>Impact of particle properties on radiative heat flux in a pressurized oxy-coal combustor</i>
T. Gronarz, R. Kneer	<i>Application of Mie inversion for the determination of complex indices of refraction of coal and ash particles from experiments</i>
M. Schiemann, T. Gronarz, P. Graeser, J. Gorewoda, R. Kneer, V. Scherer	<i>A correlation between char emissivity and temperature</i>
L. Houghton, B. Adams, A. Fry, A. Gunnarsson, K. Andersson	<i>Measuring radiation from high pressure oxy-coal flames</i>
12.40 pm	Lunch break
1.40 pm	Session 7: Char conversion and pyrolysis (Chair: T. Fletcher)
A. D. Garcia, R. Gebart, K. Umeki	<i>The influence of operation parameters on local conditions and fuel conversion of biomass flame</i>
K. Weber, L. Wang, S. Heuer, V. Scherer, T. Li, G. Varhegyi, Ø. Skreiberg, M. Grønli, T. Løvås	<i>CO₂ gasification kinetics of biomass chars derived from flash pyrolysis of birch bark and forest residue</i>
C. Schneider, P. Stoesser, S. Rincon, T. Kolb	<i>Reaction kinetics and reactive surface area during gasification of high-temperature biomass char with CO₂</i>
F. Scala	<i>Fluidized bed combustion of coal char particles under oxy-fuel conditions</i>
O. Senneca, N. Vorobiev, A. Wütscher, F. Ceriello, S. Heuer, C. Wedler, M. Richter, R. Span, M. Schiemann, M. Muhler, V. Scherer	<i>Assessment of combustion rates of coal chars for oxy-combustion</i>
K. Lotz, A. Wütscher, T. Eckhard, M. Muhler	<i>The impact of mineral matter on the evolved pyrolysis gas</i>
J. Köser, N. Vorobiev, M. Schiemann, B. Böhm	<i>Investigation of single coal particle combustion using in-situ multi-parameter diagnostics</i>
4.00 pm	End of workshop



Poster session		
1	A. I. Escudero, S. Espatolero, M. C. Mayoral, J. M. Andrés, S. Blanco, J. Fernández, L. I. Díez	<i>Towards oxy-steam combustion: the effect of increasing the steam concentration in oxy-coal-fired reactors</i>
2	B. Apicella, C. Russo, A. Ciajolo, L. Cortese, F. Cerciello, F. Stanzione, A. Wütscher, M. Muhler, O. Senneca	<i>High temperature pyrolysis of lignite and synthetic coals in a heated strip reactor: effect of N₂ versus CO₂ atmospheres</i>
3	B. Gövert, T. Kreitzberg, S. Pielsticker, R. Kneer	<i>Experimental investigation of pyrolysis and char burnout kinetics in a Well-Stirred-Reactor under flame and burn-out conditions</i>
4	C. Wedler, M. Richter, R. Span	<i>Determination of excess-sorptive kinetics, equilibrium loadings and heats of adsorption of gaseous oxy-fuel-components on the used solid fuels</i>
5	D. Kim, H. An, W. Yang, Y. Lee	<i>Experimental study of combustion and emission characteristics of lab-scale pressurized oxy-fuel combustion for syngas</i>
6	Fa. Rädler	<i>Heat and mass transfer processes during solid fuel combustion CFD modeling and validation for burner and boiler development</i>
7	H. Lim, T. Z. Tumsa, Y. Lee, S. C. Choi, T. Y. Chae, Y. Lee, H. An, C. Mock, W. Yang	<i>Development of novel power generation system based on pressurized oxy-combustion</i>
8	J. Hees, D. Zabrodiec, R. Kneer, A. Dreizler	<i>Experimental investigation of a pulverized coal burning process to validate numerical models</i>
9	J. Köser, N. Vorobiev, B. Böhm, M. Schiemann	<i>Investigation of ignition and combustion processes of solid fuel particles under oxy-fuel conditions</i>
10	K. Fröhlich, W. Schröder	<i>Development of fluid-particle interaction models in turbulent flows</i>
11	K. Lotz, T. Eckhard, M. Muhler	<i>Kinetic investigations on catalytic properties of mineral matter in oxy-fuel combustion</i>
12	L. Becker, A. Dreizler	<i>Detailed experimental investigation and characterization of oxy-coal-burners via laser-optical methods</i>
13	L. Frigge, B. Epple	<i>Experimental determination of reaction kinetics for the release of chlorine and sulfur species and for the conversion of these species in the gas phase</i>
14	M. Abián, Á. Millera, R. Bilbao, M. U. Alzueta	<i>Effect of nitrogen oxides (NO and NO₂) on the wet oxidation of CO/CO₂ mixtures</i>
15	M. Baroncelli, D. Felsmann, H. Pitsch	<i>Experimental investigation of coal combustion under oxy-fuel conditions in a counterflow reactor</i>
16	M. Ostrycharczyk, H. Pawlak-Kruczek, M. Czerep, K. Krochmalny	<i>Examinations of the mercury emission from the pulverized coal oxy-combustion process</i>



17	M. Vascellari, D. Messig, A. Scholtissek, C. Hasse, M. Xia, B. Fiorina, N. Darahiba	<i>Numerical and experimental study of a stagnation pulverized coal burner under oxy-fuel conditions</i>
18	M. von Bohnstein, J. Ströhle	<i>Spectral modeling of thermal radiation in oxy-fuel pulverized coal flames</i>
19	N. Haugen, J. Kruger, T. Løvås, E. Karchnivy	<i>The effect of turbulence char conversion for a range of Reynolds numbers and particle size distributions</i>
20	O. Farias Moguel, A. G. Clements, J. Szuhánszki, D. B. Ingham, L. Ma, M. Pourkashanian	<i>Studies on the coherence of swirled oxy-coal flames by means of large eddy simulations</i>
21	O. Senneca, C. Russo, A. Ciajolo, F. Cerciello, L. Cortese, F. Stanzione, S. Heuer, M. Schiemann, V. Scherer, B. Apicella	<i>Pyrolysis of walnut shells in N₂ and CO₂ atmospheres at different heating conditions</i>
22	P. Graeser, M. Schiemann	<i>Measurement of the emissivity of fuel particles in oxy-fuel atmospheres</i>
23	R. Edland, T. Allgurén, F. Normann, K. Andersson	<i>The formation of NO_x and soot in oxygen-enriched propane flames</i>
24	S. Heuer, N. Vorobiev, V. Scherer	<i>Experimental investigation of pyrolysis and char burnout kinetics in a plug flow reactor with focus on the ignition and early char burnout phase</i>
25	S. Bürkle, S. Wagner, V. Ebert	<i>Robust diagnostic methods based on absorption spectroscopy for coal combustion processes: measurement of gas species, temperatures and particle load</i>
26	S. Doost, J. Janicka, F. di Mare	<i>Unsteady modeling and simulation of oxy-fuel combustion chambers</i>
27	S. Farazi, A. Attili, H. Pitsch	<i>Direct numerical simulation and modeling of oxy-fuel combustion</i>
28	T. Gronarz, R. Kneer	<i>Modelling of radiative properties of particles in pulverized coal flames during oxy-fuel-combustion</i>
29	V. Angenent, Ö. Yönder, C. Hättig, R. Schmid	<i>Atomistic multiscale simulation of char combustion</i>