



Program

1st International Workshop on Oxy-Fuel Combustion

organised by the

Collaborative Research Center Oxyflame

Feb. 10th – 11th, 2016

Hotel Schloss Montabaur in Montabaur, Germany

February 9th, 2016

6.00 - 07.00 pm Workshop pre-registration

7.00 pm "Come together" at Restaurant "Casino", Hotel Schloss Montabaur

1st Day, February 10th, 2016

8.30 – 9.00 am Workshop registration

9.00 am R. Kneer *Welcome, Introduction*

9.05 am R. Kneer *Collaborative Research Center Oxyflame*

9.50 am **Opening Session**

Chair: Reinhold Kneer

Keynote lectures (30 minutes talk, 10 minutes discussion)

9.50 am Keynote lecture 1

O. Senneca: *Relevance of structure and reactivity of solid fuels
in combustion systems*

10.30 am Coffee break

11.00 am Keynote lecture 2

S. Hochgreb: *Probing the structure of turbulent pulverized coal flames:
A review of non-intrusive methods*

11.40 am Keynote lecture 3

Ph. J. Smith: *Oxy-coal power boiler simulation and validation
through extreme computing*

12.20 am Lunch break



- 1.20 pm **Session 1: Coal Combustion**
Chair: Philip J. Smith
Each presentation 20 minutes (15 minutes talk, 5 minutes discussion)
- D. Zabrodiec: *Experimental investigation and comparison of radiation characteristics of pulverized coal flames in CO₂/O₂- and N₂/O₂- atmospheres*
- P. Jourdain: *Analysis of CO₂-diluted premixed swirling CH₄ oxy-flames*
- J.C. Sutherland: *An assessment and comparison of various coal combustion models*
- M. Rieth: *Massively parallel flamelet LES of a semi-industrial pulverized coal furnace*
- J. Köser: *Ignition and volatile combustion of single coal particles within hot N₂/O₂ and CO₂/O₂ atmospheres generated by premixed flames*
- R. Knapstein / A.S. Doost: *Development of models and methods towards the simulation of an oxy-coal combustion chamber*
- 3.20 pm Coffee break
- 3.50 pm Poster session
- 4.50 pm **Session 2: Char, Particles, Reaction Kinetics**
Chair: Heinz Pitsch
Each presentation 20 minutes (15 minutes talk, 5 minutes discussion)
- N. Jaouen: *An automated approach to derive and optimize reduced chemical schemes for oxy-fuel combustion*
- B. Stelzner: *Super-adiabatic flame temperatures in premixed methane flames: A comparison between oxy-fuel and conventional air combustion*
- L. Ma: *Large eddy simulation of oxy-fuel spray combustion*
- N.E.L. Haugen: *What is the effect of turbulence on heterogeneous conversion of char in the high and low Damköhler number regimes?*
- L. Schneiders: *On the accuracy of Lagrangian models for heavy non-spherical particles in turbulence*
- S. Farazi: *Fully resolved simulation of coal particle array combustion in an oxy-fuel atmosphere*
- 7.35 pm Meet for walk to dinner
- 8.00 pm Workshop dinner & poster award, Hotel Schlemmer (Historic Center, Montabaur)



2nd Day, February 11th, 2016

8.00 am **Session 3: Particle level effects**

Chair: Reinhold Kneer

Keynote lectures (30 minutes talk, 10 minutes discussion)

8.00 am Keynote lecture 4

S. Li: *Measurements on oxy-fuel combustion of pulverized coal:
Combustion characteristics and particle formation*

8.40 am Keynote lecture 5

J. Mathews: *Large-scale atomistic evaluations of coal char reactivity in oxygen:
Following porosity and pore size development*

9.20 am Coffee break

9.35 am **Session 4: Pyrolysis, Gasification**

Chair: Viktor Scherer

Each presentation 20 minutes (15 minutes talk, 5 minutes discussion)

P. Stoesser: *Droptube experiments to characterize secondary
pyrolysis of biomass char*

C. R. Shaddix: *Determination of the high-temperature CO₂ gasification rate of
pulverized coal chars at 1 atm*

S. Ahn: *Numerical analysis of an effect of CO₂ recirculation on a two stage
entrained flow coal gasifier*

O.T. Stein: *Pyrolysis and ignition of single coal particles using direct numerical
simulation and a flamelet/progress variable approach*

10.55 am Coffee break



11.15 am **Continuation Session 4: Pyrolysis, Gasification**

B. Apicella: *Characterization of carbonaceous particulate (soot and char) from fast pyrolysis and early oxy-combustion of coal in a drop tube*

K. Umeki: *Influence of inter-particle distance on soot formation from oxygen blown entrained flow gasification*

N. Vorobiev: *Influence of devolatilization conditions on char burnout in N₂-dominated and oxy-fuel atmospheres*

A. Wütscher: *Detailed investigations on particle related effects in oxy-fuel coal combustion: Pyrolysis, char burnout and release of sulphur and chlorine components*

12.40 am Lunch break

1.40 pm **Session 5: Radiation**

Chair: Nevin Selçuk

Each presentation 20 minutes (15 minutes talk, 5 minutes discussion)

1.40 pm Keynote lecture 6 (30 minutes talk, 10 minutes discussion)

N. Selçuk *Radiative heat transfer in combustors containing particle laden flue gases*

2.20 pm R. Johansson: *Radiative heat transfer in oxy-fired flames under pressurized conditions*

M. Alberti: *Radiative heat transfer in a high pressure entrained flow gasifier*

V. Kez: *Radiation modelling of oxy-fuel coal combustion including effects of gas and particle radiation as well as wall deposit influences*

C. Thiel: *Characterization of mineral matter particles during combustion of solid fuels under oxy-fuel conditions*

3.45 pm Coffee, end of workshop