

**Workshop on Techniques for High-Pressure Combustion
August 29 - September 1, 2011
Argonne National Laboratory, Argonne, Illinois 60439 USA**

**August 29, 2011
Monday Evening**

6:00 - 8:00 PM Registration and Reception at the Argonne Guest House
(substantial hors d'oeuvres and cash bar)

**August 30, 2011
Tuesday Morning: Building 402, Room E1100/1200**

7:45 AM Coffee and Light Breakfast

8:15 AM Welcome and Introduction

8:30 AM Diagnostics: Temperature and Speciation
Introduction by Chair: Margaret Wooldridge (University of Michigan)

8:45 AM Robert Lucht (Purdue) *Laser Measurements for High-Pressure Combustion:
Challenges and Opportunities*

9:15 AM Ronald K. Hanson (Stanford) *Species and Temperature Measurements in Shock Tubes*

9:45 AM Scott Sanders (Wisconsin) *KHz-Rate Temperature and Concentration Measurements
in High Pressure Gases by Hyperspectral Absorption Spectroscopy*

10:15 AM Coffee Break

10:45 AM Wolfgang Meier (DLR-Stuttgart) *Laser Diagnostics for High-Pressure Gas Turbine
Combustion*

11:15 AM Hendrik Bluhm (LBNL-ALS) *Characterization of Combustion Products and
Processes Using Soft X-Ray Spectroscopies*

11:45 AM Discussion

12:15 PM Lunch in the APS Gallery

Tuesday Afternoon: Building 402, Room E1100/1200

1:30 PM Emissions
Introduction by Chair: Henry Curran (NUI-Galway)

1:45 PM Med Colket (UTRC) *Soot Formation and Oxidation at Elevated Pressures*

2:15 PM Judy Wornat (LSU) *Temperature, Pressure and Fuel-Structure Effects on Reaction Pathways for the Formation of Polycyclic Aromatic Hydrocarbons During Fuel Pyrolysis*

2:45 PM Stephen Klippenstein (ANL) *Combustion Chemistry at High Pressure: A Perspective from Theory and Modeling*

3:15 Coffee Break

3:45 PM Bengt Johansson (Lund University) *Low temperature combustion requires high dilution levels - A challenge at high load*

4:15 PM Rolf Reitz (Wisconsin) *Fuel Flexibility and Reactivity Controlled Compression Ignition (RCCI)*

5:45 - 7:15 Dinner at the Argonne Guest House

Tuesday Evening: Argonne Guest House Restaurant

7:30 PM Round Table Discussion- What needs to be measured that isn't being measured?

Chair: Charlie Westbrook (LLNL)

Panelists:

Katherina Kohse-Höinghaus (Bielefeld)

Craig Taatjes (CRF)

Vince McDonell (Irvine)

Russ Durrett (GM)

Mark Linne (Chalmers)

Fred Dryer (Princeton)

August 31, 2011

Wednesday Morning: Building 402, Room E1100/1200

8:00 AM Coffee and Light Breakfast

8:30 AM From Shock Tubes to Engines

Introduction by Chairs: Steve Ciatti (ANL) and Rob Tranter (ANL)

8:45 AM John Dec (CRF) *The Importance of Intermediate-Temperature Reactions in HCCI and HCCI-like Engines*

9:15 AM Eric Petersen (Texas A&M) *Measuring Shock-Tube Ignition and Oxidation at Elevated Pressures*

9:45 AM Scott Goldsborough (Marquette) *Investigating Ignition at Engine Relevant Pressures and Conditions*

10:15 Coffee Break

10:45 Sibendu Som (Argonne National Laboratory) *Validation of Reduced Chemical Kinetic Mechanisms for Engine Simulations*

11:15 Bill Pitz (LLNL) *Needs for the Development and Validation of Chemical Kinetic Models for Surrogates for Transportation Fuels*

11:45 Discussion

12:15 PM Lunch in the APS Gallery

Wednesday Afternoon: Building 402, Room E1100/1200

1:30 Extreme Gradients

Introduction by Chair: Ken Brezinsky (UIC)

1:45 PM Lyle Pickett (CRF) *Diagnostics for Fuel Spray Research at High Pressure and Temperature*

2:15 PM Jesse Kroll (MIT) *Measuring Particle Formation, Growth, and Chemistry Using Advanced Aerosol Mass Spectrometry Techniques*

2:45 PM Michael Drake (GM) *Ignition and Flame Growth in Steep Gradients in a Spray-Guided Gasoline Engine*

3:15 *Coffee Break*

3:45 Volker Sick (Michigan) *High-Speed, High Resolution Imaging near Surfaces*

4:15 Nabiha Chaumeix (CNRS-Orleans) *Soot Formation from Diesel Type of Fuels at Engine-like Conditions using Shock Tubes: a Decade of Studies*

4:45 Discussion

6:30 Dinner at the Argonne Guest House

September 1, 2011

Thursday Morning

7:30 AM Coffee and Light Breakfast

8:00 AM Dilute Mixtures and EGR

Introduction by Chair: Robert Wagner (ORNL)

8:15 AM Brad VanDerWege (Ford) *EGR Effects on Combustion in Boosted SI and CI Engines*

8:45 AM Carl Hergart (Caterpillar) *Challenges and Opportunities in Heavy-Duty Combustion System Development*

9:15 AM Robert Dibble (UC Berkeley) *Effects of EGR and high pressures on autoignition, spark ignition, and microwave assisted spark plugs. Also, Berkeley's Argon engine will be discussed at Argonne Labs :)*

9:45 AM *Coffee Break*

10:15 AM Michael Davis (Argonne) *Chemical-Kinetics Toolkit for Engine Simulations*

10:45 AM Brad Zigler (NREL) *Autoignition Studies Using the Ignition Quality Tester Platform*

11:15 AM Discussion

11:45 AM Wrap-Up and Discussion

12:30 PM Lunch in the APS Gallery

Workshop Conclusion by 1:00 pm.