

AFOSR and ARO Basic Combustion Research Review 2014

Dr. Chipping Li | June 2-5, 2014 | Arlington, VA

Basic Research Innovation and Collaboration Center (BRICC)
4075 Wilson Blvd., Suite 350
Arlington, VA 22203

Monday, June 2, 2014

Time	Topic	Speaker
0730 - 0755	Registration	
0755 – 0800	Opening Remarks	Ralph Anthenien, ARO Chiping Li, AFOSR
Turbulent Combustion (Chair: James Driscoll)		
0800 - 0830	Ignition and Propagation of Turbulent Expanding Flames	C. K. Law Princeton
0830 - 0900	Turbulent Flame Propagation and Chemistry	Yiguang Ju Princeton
0900 - 0930	Turbulent Transport in Premixed Flames Approaching Extinction	Peter Lindstedt Imperial College
0930 - 1000	Differential Diffusion and Pressure Effects on Turbulent Burning Velocities	Timothy Lieuwen Georgia Tech
1000 - 1015	BREAK	
1015 - 1045	Turbulent Jet Flame	Fokion Egolfopoulos USC
1045 - 1115	4D Computational Hyper-spectral Imaging of Turbulent Flows	Jay Gore Purdue
1115 - 1145	Multi-Scale Dynamics, Energy Transfer, and Backscatter in High-Reynolds Number Turbulent Reacting Flows	Jeffrey Sutton Ohio State
1145 - 1300	LUNCH	
Turbulent Combustion Cont. (Chair; Julian Tishkoff)		
1300 - 1345	Premixed Flame Structure and Propagation Characteristics in Intense Turbulence and in Compressible Flows	Suresh Menon, Georgia Tech Robert Pitz, Vanderbilt
1345 - 1430	Premixed Turbulent Combustion in High Reynolds Number Regimes	James Driscoll Michigan
1430 - 1500	Rate-Controlling Effects from High-Intensity Turbulence-Flame Interactions Using 4D Measurements	Adam Steinberg U Toronto
1500 - 1530	Turbulent Flame Structure	Alexei Poludnenko, NRL Elaine Oran, Maryland
1530 - 1545	BREAK	
1545 - 1615	Turbulent Flames in Hypersonic Flows	Do Hyungrok Notre Dame
1615 - 1700	Energy Transformation, Transfer and Release Dynamics in High-Speed Turbulent Flows	Paul Dimotakis, Caltech Graham V. Candler, Minnesota

1700	MEETING ADJOURNED FOR THE DAY
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Tuesday, June 3, 2014		
Time	Topic	Speaker
0730 – 0755	Registration	
0755 – 0800	Daily Announcements	Ralph Anthenien, ARO Chiping Li, AFOSR
Turbulent Combustion Cont. (Chair; Chiping Li)		
0800 - 0830	Energy Backscatter and Small/Large-Scale Interactions in Turbulent Reacting Flows	Javier Urzay and Matthias Ihme Stanford
0830 - 0900	Assessing Model Assumptions for Turbulent Premixed Combustion at High Karlovitz Number	Guillaume Blanquart Caltech
0900 - 0930	Insights in Model Assumptions and Road to Proper Model Validation for Turbulent Combustion	Venke Sankaran AFRL
0930 - 1100	Challenges and Opportunities in Turbulent Combustion Research and LES modeling, Focusing on Energy and Momentum Interactions among Different Scales (Forward and Backward)	Discussion Chaired by Chiping Li (AFOSR) and Ray Chen (NSF)
1100 - 1230	LUNCH	
Combustion Chemistry (Chair: Hai Wang)		
1230 - 1315	Ultra-Fast Optical Approaches for Fundamental Exploration of Combustion Chemistry Pathways	James Gord, AFRL Sukesh Roy, Spectrum Energy
1315 - 1345	Automated Discovery of New Chemical Reactions	William Green MIT
1345 – 1415	A New Paradigm to Identify Reaction Pathways	Angela Violi Michigan
1415 - 1445	Automated Discovery of Complex Reaction Networks: Reaction Topology, Thermo-Chemistry and Kinetics	Jim Pfaendtner University of Washington
1445 - 1500	BREAK	
1500 - 1530	Evaluation of the ReaxFF Reactive Force Field Capability for Large-Scale Simulations of Hydrocarbon Combustion	Adri van Duin Penn State
1530 - 1600	The Ab Initio Nanoreactor: Discovering Chemical Reaction Networks	Todd Martinez Stanford
1600 - 1630	Non-Idea Conditions and Related Uncertainties in Combustion Chemistry Experiments	Matthias Ihme Stanford
1630 - 1700	Shock Tube Measurements for Determining Pyrolysis Pathway of JP8	Ron Hanson and David Davison Stanford
	MEETING ADJOURNED FOR THE DAY	

Wednesday, June 4, 2014		
Time	Topic	Speaker
0730 - 0755	Registration	
0755 – 0800	Daily Announcements	Ralph Anthenien, ARO Chiping Li, AFOSR
Combustion Diagnostics (Chair, Ralph Anthenien)		
0800 - 0830	Fundamental Investigation of Jet Fuel Spray and Ignition Process in an Optically Accessible Piston Engine	David Rothamer Wisconsin
0830 - 0900	Ballistic Imaging and Scattering Measurements for Diesel Spray Combustion: Optical Development and Phenomenological Studies	Terry Parker Colorado School of Mines
0900 - 0930	Spatial and Temporal Characteristics of Primary Atomisation and Droplet Clustering in Sprays	Yannis Hardalupas Imperial College
0930 - 1030	Particle-Free Spatially-Resolved Two-Component Velocimetry for Fluid Flows: Formulation of the Problem	Mirko Gamba U Michigan
1000 - 1015	BREAK	
1015 - 1045	Volumetric Combustion Diagnostics	Ma Lin Virginia Tech
1045 - 1115	Hybrid fs/ps CARS and Quasi-Continuous Burst-Mode Imaging for Investigating Turbulent Combustion Dynamics	Terry Meyer Iowa State
1115 - 1230	LUNCH	
Combustion and Diagnostics in High-Speed Flow (Chair; Jim McDaniel)		
1230 - 1330	Diagnostics, Ignition and Multiphase Injection for High-Speed Combustion	Campbell Carter, Steve Lin and Timothy Ombrello, AFRL/RZ
1330 - 1400	Turbulent Flame in High-Speed Flows	Chris Gyon UVa.
Plasma Assisted Combustion (Chair; Cam Carter)		
1400 - 1430	Studies of Ignition and Flameholding by Nonequilibrium Plasmas	Sergey Leonov OSU
1430 - 1500	Plasma-Combustion Kinetics	Svetlana Starikovskaya Polytechnique
1500 - 1530	Overview of PAC MURI Kinetics Mechanism and Future Outlook	Walter Lempert OSU
1530 - 1545	BREAK	
1545 – 1700	Business Meeting	
1700	MEETING ADJOURNED FOR THE DAY	

Thursday, June 5, 2014		
Time	Topic	Speaker
0730 - 0755	Registration	
0755 – 0800	Daily Announcements	Ralph Anthenien, ARO Chiping Li, AFOSR
Special Session on TDLAS History and Successful Transition (Chair: Chiping Li)		
0800 - 0830	TDLAS Deployed in HighFire	Mike Brown AFRL
0830 - 0900	TDLAS for Turbine Engine Applications	James Gord and Andrew Caswell, AFRL
0900 - 0945	History and Future of TDLAS	Ron Hanson, Stanford
0945 - 1000	BREAK	
Detonation/RDE and Innovative Energy Conversion Approaches (Chair: Joe Doychak)		
1000 - 1030	Supersonic Combustion and Detonation	Ken Yu Maryland
1030 – 1115	Basic Detonation Research and Recent Development of RDE at AFRL	Fred Schauer AFRL
1115 – 1300	LUNCH	
Reactive Flow Simulations (Chair: Suresh Menon)		
1300 - 1330	Local Limit Phenomena, Flow Compression, and Fuel Cracking Effects	Tianfeng Lu U Conn
1330 - 1415	Multi-physics Simulation of Supercritical Fuels and Data Supported Reactive Flow Simulations	Jack Edwards and Tarek Echehki NC State
1415 - 1500	Numerical Simulation of Chemically Reacting Flows	Mitchell Smooke Yale
1500 - 1600	Closing Remarks and Further Discussions	
1600	MEETING ADJOURNED	