

**2016 SPRING TECHNICAL MEETING**  
**EASTERN STATES SECTIONS OF THE COMBUSTION INSTITUTE**  
 Princeton University, New Jersey  
 March 13-16, 2016  
 Sunday, March 13, 2016

**15:00 – 18:00** Friend Center, Olden Street Lobby: Registration  
**16:00 – 17:30** Engineering Quadrangle J223: ESSCI Board Meeting  
**18:00 – 20:00** Friend Center 113 (Convocation Room): Welcome Reception

**Monday, March 14, 2016**

**7:30** Computer Science Lobby: Registration  
**8:00** Friend Center 101:  
 Welcome Remarks/Announcements:  
 Arnaud C. Trouvé, University of Maryland  
 Michael E. Mueller, Princeton University  
 Pablo G. Debenedetti, Dean for Research, Princeton University

**8:30** Friend Center 101:  
 Invited Speaker: James F. Driscoll, University of Michigan  
 Title: *Regimes of Turbulent Premixed Combustion – Measured with New Laser Diagnostics*  
 Session Chair: Daniel C. Haworth, The Pennsylvania State University

	Reaction Kinetics Computer Science 104 Session Chair: N. Cernansky	Fire Computer Science 105 Session Chair: X. Zhao	Sprays and Droplets Friend 006 Session Chair: R. Vander Wal
<b>9:30</b>	<b>1A01: Effects of relative rate information on the optimization of detailed kinetic models</b> <i>J.A. Manion, W.S. McGivern</i> <i>National Institute of Standards and Technology</i>	<b>1B01: Numerical simulations of the structure of wildland fire flames</b> <i>S. Verma, C. Miller, M. Gollner, A. Trouvé</i> <i>University of Maryland</i>	<b>1C01: Progress and challenges in modern spray combustion</b> <i>H.-H. Chiu</i> <i>National Cheng Kung University</i>
<b>9:45</b>	<b>1A02: Automated transition state theory calculations for improved prediction of kinetic parameters</b> <i>P.L. Bhoorasingh, B.L. Slakman, F.S. Khanshan, J. Cain, R.H. West</i> <i>Northeastern University</i>	<b>1B02: A Light-Emitting-Diode (LED) non-dispersive absorption sensor for early fire and hazardous gases detection</b> <i>K. Thurmond<sup>1</sup>, J. Urso<sup>1</sup>, M. Villar<sup>1</sup>, W.P. Partridge Jr.<sup>2</sup>, S.S. Vasu<sup>1</sup></i> <sup>1</sup> <i>University of Central Florida</i> <sup>2</sup> <i>Oak Ridge National Laboratory</i>	<b>1C02: Numerical investigation into the auto-ignition of a multicomponent fuel spray</b> <i>L. Backer, P. Pepiot</i> <i>Cornell University</i>
<b>10:00</b>	<b>1A03: Towards autonomous kinetic model improvement through automated experiments and computations</b> <i>R. Song, N.D. DeLuca, M.P. Burke</i> <i>Columbia University</i>	<b>1B03: Study of in-situ burning flame heat feedback in ice cavities</b> <i>X. Shi, A.S. Rangwala</i> <i>Worcester Polytechnic Institute</i>	<b>1C03: Development and testing of a low-emission, low-pressure spray burner for emulsified crude oil remediation</b> <i>S.G. Tuttle, A.D. Tuesta, K.M. Hinnant, T.N. Loegel</i> <i>Naval Research Laboratory</i>

10:15 – 10:45	<b>BREAK – Computer Science, Lobby</b>		
	<b>Reaction Kinetics II Computer Science 104 Session Chair: N. Cernansky</b>	<b>Fire II Computer Science 105 Session Chair: X. Zhao</b>	<b>Sprays and Droplets II Friend 006 Session Chair: R. Vander Wal</b>
10:45	<b>1A04: Automated discovery of non-Boltzmann bimolecular reaction pathways</b> <i>K. McCullough, R. Song, M.P. Burke Columbia University</i>	<b>1B04: Regimes of fire suppression spray penetration</b> <i>E.D. Link, T.M. Myers, A.C. Trouvé, A.W. Marshall University of Maryland</i>	<b>1C04: On bouncing and absorption of drop impacting liquid film</b> <i>X. Tang<sup>1</sup>, A. Saha<sup>1</sup>, C.K. Law<sup>1,2</sup>, C. Sun<sup>2</sup></i> <sup>1</sup> Princeton University <sup>2</sup> Tsinghua University
11:00	<b>1A05: A smart CSP method and correlated dynamic adaptive chemistry and transport modeling with hydrogen/air mixtures</b> <i>W. Sun, Y. Ju Princeton University</i>	<b>1B05: Numerical simulation of flame splitting phenomenon in concurrent flame spread over thin solid fuel with two-stage pyrolysis</b> <i>C. Li, Y.-T.T. Liao Case Western Reserve University</i>	<b>1C05: n-Decane droplet combustion: Dual stage combustion and single stage “cool flame” burning</b> <i>T. Farouk<sup>1</sup>, F.L. Dryer<sup>2</sup></i> <sup>1</sup> University of South Carolina <sup>2</sup> Princeton University
11:15	<b>1A06: Stiff ODE solvers for detailed chemistry in CFD</b> <i>A. Imren, D.C. Haworth The Pennsylvania State University</i>	<b>1B06: Methane- and propane-induced explosions in vented enclosures</b> <i>H. Sezer<sup>1</sup>, V. Akkerman<sup>2</sup>, O.J. Ugarte<sup>3</sup>, A.S. Rangwala<sup>1</sup></i> <sup>1</sup> Worcester Polytechnic Institute <sup>2</sup> West Virginia University <sup>3</sup> University of Maryland	<b>1C06: Fundamental combustion studies of algae-derived biofuels</b> <i>Y. Xu<sup>1</sup>, Y. Shen<sup>1</sup>, I. Keresztes<sup>1</sup>, A.M. Condo Jr.<sup>1</sup>, D. Phillips<sup>2</sup>, P. Pepiot<sup>1</sup>, C.T. Avedisian<sup>1</sup></i> <sup>1</sup> Cornell University <sup>2</sup> Solazyme Inc.
11:30 – 12:45	<b>Lunch on your own</b>		
<b>12:45 – 14:15 Friend Center 101</b> <b>Invited Speaker: Dr. Judith A. Swan, Princeton University</b> <b>Title: <i>Technical Writing Workshop: Writing Scientific Abstracts from the Readers’ Perspective</i></b> <b>Session Chair: Michael E. Mueller, Princeton University</b>			

	Soot Computer Science 104 Session Chair: P. Zhao	Turbulent Flames Computer Science 105 Session Chair: M. Gollner	Coal/Biomass/New Devices Friend 006 Session Chair: T. Farouk
14:15	<b>1A07: Curvature in soot nanostructure: Origins and tests</b> <i>C.-H. Huang, J.P. Abrahamson, R.L. Vander Wal</i> <i>The Pennsylvania State University</i>	<b>1B07: Joint statistics of mixture fraction and progress variable in piloted partially-premixed jet flames</b> <i>R.S. Barlow<sup>1</sup>, H. Cutcher<sup>2</sup>, G. Magnotti<sup>1</sup>, A.R. Masri<sup>2</sup></i> <sup>1</sup> Sandia National Laboratory <sup>2</sup> The University of Sydney	<b>1C07: A computational study of radiative heat transfer in pulverized coal jet flame</b> <i>B. Wu<sup>1</sup>, S.P. Roy<sup>2</sup>, X. Zhao<sup>1</sup>, M.F. Modest<sup>2</sup></i> <sup>1</sup> University of Connecticut <sup>2</sup> University of California, Merced
14:30	<b>1A08: Pressure effects on incipiently sooting partially premixed counterflow flames of ethylene</b> <i>K. Gleason, F. Carbone, A. Gomez</i> <i>Yale University</i>	<b>1B08: High-speed LIF-OH imaging of H<sub>2</sub>-air turbulent premixed flames propagation in an obstructed chamber</b> <i>A. Al-Harbi</i> <i>King Abdulaziz City for Science and Technology</i>	<b>1C08: Tunable diode laser absorption spectroscopy for CO<sub>2</sub> and H<sub>2</sub>O concentration measurements in biomass combustion systems</b> <i>J. Weisberger, P. DesJardin</i> <i>University of Buffalo</i>
14:45	<b>1A09: Sooting tendencies of biodiesel fuels</b> <i>M.L. Lichtenberg<sup>1</sup>, C.S. McEnally<sup>2</sup>, D.D. Das<sup>2</sup>, L.D. Pfefferle<sup>2</sup></i> <sup>1</sup> Greens Farms Academy <sup>2</sup> Yale University	<b>1B09: Experimental and numerical investigation on using 2-D dilatation as a marker for heat-release in turbulent reacting flows</b> <i>J.A. Wagner<sup>1</sup>, B. Roy Chowdhury<sup>1</sup>, M.W. Renfro<sup>2</sup>, B.M. Cetegen<sup>1</sup></i> <sup>1</sup> University of Connecticut <sup>2</sup> University of Kentucky	<b>1C09: Fuel burn rate, emissions and gas temperature from a domestic two-stage wood-fired hydronic heater</b> <i>J.P. Richter, B.T. Bojko, J.C. Mollendorf, P.E. DesJardin</i> <i>University of Buffalo</i>
15:00 – 15:30	<b>BREAK – Computer Science, Lobby</b>		
	Soot II Computer Science 104 Session Chair: P. Zhao	Turbulent Flames II Computer Science 105 Session Chair: M. Gollner	Coal/Biomass/New Devices II Friend 006 Session Chair: T. Farouk
15:30	<b>1A10: Sooting tendencies of diesel and jet fuel surrogate components</b> <i>D.D. Das, C.S. McEnally, L.D. Pfefferle</i> <i>Yale University</i>	<b>1B10: Experimental analysis on the effect of turbulence on the structure and dynamics of a bluff-body stabilized conical lean premixed flame</b> <i>B. Roy Chowdhury, B.M. Cetegen</i> <i>University of Connecticut</i>	<b>1C10: Flamelet generated manifold modeling for biomass combustion</b> <i>B.T. Bojko, P.E. DesJardin</i> <i>University at Buffalo</i>
15:45	<b>1A11: Effects of fuel structure on soot precursors in a laminar co-flow flame</b> <i>A. Makwana, A. Jain, M. Linevsky, S. Iyer, R. Santoro, T. Litzinger, Y. Xuan, J. O'Connor</i> <i>The Pennsylvania State University</i>	<b>1B11: Flow turbulence and fuel effects on the blowoff of a bluff-body stabilized conical lean premixed flame</b> <i>B. Roy Chowdhury, B.M. Cetegen</i> <i>University of Connecticut</i>	<b>1C11: A reduced kinetic model for secondary reactions of biomass gasification</b> <i>H. Goyal, P. Pepiot</i> <i>Cornell University</i>

	Soot II Computer Science 104 Session Chair: P. Zhao	Turbulent Flames II Computer Science 105 Session Chair: M. Gollner	Coal/Biomass/New Devices II Friend 006 Session Chair: T. Farouk
<b>16:00</b>	<b>1A12: Soot oxidation measurements in a hydrocarbon free diffusion flame</b> <i>P.M. Anderson, H. Guo, P.B. Sunderland</i> <i>University of Maryland</i>	<b>1B12: Extreme facilitation of flame propagation by turbulence through differential diffusion</b> <i>S. Yang, A. Saha, W. Liang, F. Wu, C.K. Law</i> <i>Princeton University</i>	<b>1C12: Design of a flow controlled heterogeneous combustor with multiple instrumentation techniques for the in-situ evaluation of combustion catalysts</b> <i>A.C. Terracciano, S. Vasu, N. Orlovskaya</i> <i>University of Central Florida</i>
<b>16:15</b>	<b>1A13: Modeling subfilter soot-turbulence interactions in nonpremixed jet flames</b> <i>J.K. Lew<sup>1</sup>, M.E. Mueller<sup>1</sup>, S. Mahmoud<sup>2</sup>, Z.T. Alwahabi<sup>2</sup>, B.B. Dally<sup>2</sup>, G.J. Nathan<sup>2</sup></i> <sup>1</sup> <i>Princeton University</i> <sup>2</sup> <i>The University of Adelaide</i>	<b>1B13: Effects of water and CO<sub>2</sub> dilution on the burning characteristics of methane/air premixed flames in a reactor-assisted turbulent slot burner</b> <i>C.B. Reuter, S.H. Won, Y. Ju</i> <i>Princeton University</i>	<b>1C13: Mechanochemical nitration of aromatic compounds</b> <i>O.S. Lagoviyer, L. Krishtopa, M. Schoenitz, E.L. Dreizin</i> <i>New Jersey Institute of Technology</i>
<b>16:30</b>	<b>1A14: Soot evolution in turbulent nonpremixed ethylene/hydrogen bluff body flames</b> <i>S. Deng<sup>1</sup>, M.E. Mueller<sup>1</sup>, Q.N. Chan<sup>2</sup>, N.H. Qamar<sup>3</sup>, B.B. Dally<sup>4</sup>, Z.T. Alwahabi<sup>4</sup>, G.J. Nathan<sup>4</sup></i> <sup>1</sup> <i>Princeton University</i> <sup>2</sup> <i>The University of New South Wales</i> <sup>3</sup> <i>FCT-Combustion</i> <sup>4</sup> <i>The University of Adelaide</i>	<b>1B14: The effect of ozonolysis activated autoignition on jet flame stabilization</b> <i>X. Gao<sup>1</sup>, W. Sun<sup>1</sup>, T. Ombrello<sup>2</sup>, C. Carter<sup>2</sup></i> <sup>1</sup> <i>Georgia Institute of Technology</i> <sup>2</sup> <i>U.S. Air Force Research Laboratory</i>	<b>1C14: Gliding arc plasma reformer with efficient heat recuperation</b> <i>H. Pearlman, C.-H. Chen, M. Demydovych, J. Mott</i> <i>Advanced Cooling Technologies, Inc.</i>
<b>16:45</b>	<b>1A15: Measurement of radiative heat flux from soot emissions in the short wave infrared band</b> <i>S. Safaei<sup>1</sup>, A.S. Rangwala<sup>1</sup>, V. Raghavan<sup>2</sup>, T.M. Muruganandam<sup>2</sup></i> <sup>1</sup> <i>Worcester Polytechnic Institute</i> <sup>2</sup> <i>Indian Institute of Technology Madras</i>	<b>1B15: Flame stabilization behavior of a heated reacting premixed jet in a hot vitiated crossflow</b> <i>J.W. Dayton, J.A. Wagner, B.M. Cetegen</i> <i>University of Connecticut</i>	<b>1C15: Ignition and flame propagation by dual-pulsed laser-induced breakdowns</b> <i>S.-k. Im<sup>1</sup>, L. Wermer<sup>1</sup>, M. Bak<sup>2</sup>, J. Hansson<sup>1</sup></i> <sup>1</sup> <i>Worcester Polytechnic Institute</i> <sup>2</sup> <i>Sungkyunkwan University</i>
<b>Explore Downtown Princeton with Friends and Colleagues</b>			

Tuesday, March 15, 2016

**8:00**                    **Computer Science, Lobby: Registration**

**8:15**                    **Friend Center 101:**  
**Announcements: Michael E. Mueller, Princeton University**

**8:30**                    **Friend Center 101:**  
**Invited Speaker: Gregory T. Linteris, National Institute of Standards and Technology**  
**Title: Sustainable Refrigerants and Fire Suppressants: Is this a Combustion Problem?**  
**Session Chair: Arnaud Trouvé, University of Maryland**

	Reaction Kinetics III Computer Science 104 Session Chair: J. Manion	Laminar Flames Computer Science 105 Session Chair: C. McEnally	IC and GT Engines Friend 006 Session Chair: P. Pepiot
<b>9:30</b>	<b>2A01: Quantum chemical and kinetic modelling of methyvinyl+O<sub>2</sub> reaction</b> <i>X. Chen, C.F. Goldsmith</i> <i>Brown University</i>	<b>2B01: Dynamics and burning limits of premixed cool flames at high pressures</b> <i>Y. Ju</i> <i>Princeton University</i>	<b>2C01: Gas turbine nvPM formation and oxidation semi-empirical model for commercial aviation</b> <i>J. Abrahamson, R. Vander Wal</i> <i>The Pennsylvania State University</i>
<b>9:45</b>	<b>2A02: Quantum chemical study on <math>\alpha</math>-acrolein radicals association reactions with <sup>3</sup>O<sub>2</sub></b> <i>H. Wang, J.W. Bozzelli</i> <i>New Jersey Institute of Technology</i>	<b>2B02: The effect of diluent on flame structure and laminar burning speeds of H<sub>2</sub>/CO/oxidizer/diluent</b> <i>O. Askari, K. Vien, Z. Wang, H. Metghalchi</i> <i>Northeastern University</i>	<b>2C02: Non-linear modal interactions in premixed flames subjected to helical flow disturbances</b> <i>V. Acharya, T. Lieuwen</i> <i>Georgia Institute of Technology</i>
<b>10:00</b>	<b>2A03: Prompt dissociations of small hydrocarbon radicals</b> <i>N.J. Labbe, R. Sivaramakrishnan, S.J. Klippenstein, J.A. Miller</i> <i>Argonne National Laboratory</i>	<b>2B03: Flame propagation in premixed mixtures of liquid biofuels</b> <i>B. Almansour, S. Alawadhi, S. Vasu</i> <i>University of Central Florida</i>	<b>2C03: Impact of air swirler rotation direction on the flow field and performance of a lean direct injection concept fuel injector</b> <i>X. Ren<sup>1</sup>, K.B. Brady<sup>2</sup>, C.-J. Sung<sup>1</sup>, H. Mongia<sup>3</sup>, P. Lee<sup>4</sup></i> <i><sup>1</sup>University of Connecticut</i> <i><sup>2</sup>Innovative Scientific Solutions, Inc.</i> <i><sup>3</sup>Purdue University</i> <i><sup>4</sup>Woodward FST</i>
<b>10:15 – 10:45</b>	<b>BREAK – Computer Science, Lobby</b>		

	<b>Reaction Kinetics IV</b> <b>Computer Science 104</b> <b>Session Chair: J. Manion</b>	<b>Laminar Flames II</b> <b>Computer Science 105</b> <b>Session Chair: C. McEnally</b>	<b>IC and GT Engines II</b> <b>Friend 006</b> <b>Session Chair: P. Pepiot</b>
<b>10:45</b>	<b>2A04: Optimized rate expressions for soot oxidation by OH and O<sub>2</sub></b> <i>H. Guo<sup>1</sup>, P.M. Anderson<sup>2</sup>, P.B. Sunderland<sup>2</sup></i> <sup>1</sup> Federal Aviation Administration <sup>2</sup> University of Maryland	<b>2B04: First ever atomistic-scale simulation of hydrocarbon ignition front propagation under supercritical conditions: validation against experiment and continuum model</b> <i>C. Ashraf, A. Jain, Y. Xuan, A. C.T. van Duin</i> <i>The Pennsylvania University</i>	<b>2C04: Dynamics of a flame interacting with pressure waves in a long chamber following jet ignition</b> <i>M.E. Feyz, A. Tarraf, M.R. Nalim</i> <i>Purdue School of Engineering and Technology</i>
<b>11:00</b>	<b>2A05: Gas phase oxidation of mercury by halogens (Cl, Br, I) in combustion effluents: Influence of operating conditions</b> <i>I. Auzmendi-Murua, F. Guzman, J.W. Bozzelli</i> <i>New Jersey Institute of Technology</i>	<b>2B05: Morphology and propagation of cellularly unstable flames</b> <i>A. Saha, S. Yang, F. Wu, C.K. Law</i> <i>Princeton University</i>	<b>2C05: Diesel engine combustion of amorphous reactive mixed-metal nanopowders suspended in jet fuel</b> <i>B.T. Fisher<sup>1</sup>, J.S. Cowart<sup>2</sup>, A. Epshteyn<sup>1</sup>, M.R. Weismiller<sup>1</sup>, Z.J. Huba<sup>1</sup></i> <sup>1</sup> Naval Research Laboratory <sup>2</sup> U.S. Naval Academy
<b>11:15</b>	<b>2A06: Development of a chemical reaction mechanism for aqueous hydroxylammonium nitrate</b> <i>K.Q. Zhang, S.T. Thynell</i> <i>The Pennsylvania State University</i>	<b>2B06: Theory of flame acceleration in open/vented obstructed pipes</b> <i>V. Akkerman<sup>1</sup>, J. Sadek<sup>1</sup>, V. Bychkov<sup>2</sup></i> <sup>1</sup> West Virginia University <sup>2</sup> Umeå University	<b>2C06: Radiative heat transfer and turbulence-radiation interactions in a heavy-duty diesel engine</b> <i>C. Paul<sup>1</sup>, A. Sircar<sup>1</sup>, A. Imren<sup>1</sup>, S. Ferreyro-Fernandez<sup>1</sup>, S.P. Roy<sup>2</sup>, W. Ge<sup>2</sup>, D.C. Haworth<sup>1</sup>, M.F. Modest<sup>2</sup></i> <sup>1</sup> The Pennsylvania State University <sup>2</sup> University of California, Merced
<b>11:30</b>	<b>2A07: A quantum mechanics investigation for RDX ring-opening reactions</b> <i>L. Patidar, S.T. Thynell</i> <i>The Pennsylvania State University</i>	<b>2B07: Effect of gas compression on flame acceleration in obstructed cylindrical tubes</b> <i>V. Akkerman<sup>1</sup>, D. Valiev<sup>2</sup></i> <sup>1</sup> West Virginia University <sup>2</sup> Umeå University	<b>2C07: Chemical explosive mode analysis for reacting spray flames under diesel engine conditions</b> <i>C. Xu<sup>1</sup>, M.M. Ameen<sup>2</sup>, S. Som<sup>2</sup>, T. Lu<sup>1</sup></i> <sup>1</sup> University of Connecticut <sup>2</sup> Argonne National Laboratory
<b>11:45 – 13:00</b>	<b>Lunch on your own</b>		
<b>13:00 – 14:00</b>	<b>Friend Center 101</b> <b>Irvin Glassman Young Investigator Award and Lecture</b> <b>Invited Speaker: Jacqueline O'Connor, The Pennsylvania State University</b> <b>Title: <i>Use of Advanced Fuel Injection Strategies for Emissions Reduction in Diesel Engines</i></b> <b>Session Chair: Paul Papas, United Technologies Research Center</b>		

	<b>Reaction Kinetics V</b> <b>Computer 104</b> <b>Session Chair: R. Sivaramakrishnan</b>	<b>Turbulent Flames III</b> <b>Computer 105</b> <b>Session Chair: R. Barlow</b>	<b>Heterogeneous Combustion</b> <b>Friend 006</b> <b>Session Chair: A. Saha</b>
<b>14:00</b>	<b>2A08: Detailed and compact combustion kinetic models for iso-dodecane and gevo Alcohol-to-Jet (ATJ) alternative fuel</b> <i>F.M. Haas, S.H. Won, F.L. Dryer</i> <i>Princeton University</i>	<b>2B08: LES/PDF simulation of a methane turbulent flame using a combined pre-partitioned adaptive chemistry/ISAT methodology</b> <i>Y. Liang, A. Newale, S.B. Pope, P. Pepiot</i> <i>Cornell University</i>	<b>2C08: Quantifying the combustion characteristics of nano-aluminum based microstructures</b> <i>R.J. Jacob, M.R. Zachariah</i> <i>University of Maryland</i>
<b>14:15</b>	<b>2A09: A computational and experimental study of ignition behavior of gasoline surrogate fuels under low-temperature combustion conditions</b> <i>J. Han<sup>1</sup>, V.B. Kalaskar<sup>2</sup>, D. Kang<sup>2</sup>, D.C. Haworth<sup>1</sup>, A.L. Boehman<sup>2</sup></i> <sup>1</sup> <i>The Pennsylvania State University</i> <sup>2</sup> <i>University of Michigan</i>	<b>2B09: Numerical investigation of kinetic energy dynamics during autoignition of n-heptane/air mixture</b> <i>P.L.K. Paes, Y. Xuan</i> <i>The Pennsylvania State University</i>	<b>2C09: Electrostatic discharge of stoichiometric Al-CuO nanocomposite thermites prepared by various means</b> <i>I. Monk<sup>1</sup>, M. Schoenitz<sup>1</sup>, E.L. Dreizin<sup>1</sup>, J.B. Delisio<sup>2</sup>, G.C. Egan<sup>2</sup>, M.R. Zachariah<sup>2</sup></i> <sup>1</sup> <i>New Jersey Institute of Technology</i> <sup>2</sup> <i>University of Maryland</i>
<b>14:30</b>	<b>2A10: Prediction of two-stage ignition of primary reference fuels using a staged Livengood-Wu correlation under homogeneous reciprocating engine conditions</b> <i>M. Tao, P. Zhao</i> <i>Oakland University</i>	<b>2B10: Model form uncertainty quantification in turbulent combustion simulations</b> <i>M.E. Mueller<sup>1</sup>, V. Raman<sup>2</sup></i> <sup>1</sup> <i>Princeton University</i> <sup>2</sup> <i>University of Michigan</i>	<b>2C10: Molecular aluminum and nitrocellulose composite additives for burn rate enhancement of liquid propellants</b> <i>P.M. Guerieri<sup>1</sup>, S. DeCarlo<sup>1</sup>, J.B. DeLisio<sup>1</sup>, B. Eichhorn<sup>1</sup>, T. Connell<sup>2</sup>, R.A. Yetter<sup>2</sup>, M.R. Zachariah<sup>1</sup></i> <sup>1</sup> <i>University of Maryland</i> <sup>2</sup> <i>The Pennsylvania State University</i>
<b>14:45</b>	<b>2A11: Applications of the 3.4µm laser absorption technique for the study of high temperature pyrolysis and ignition of various hydrocarbon fuels</b> <i>B. Koroglu, O. Pryor, J. Lopez, L. Nash, S. Vasu</i> <i>University of Central Florida</i>	<b>2B11: A priori evaluation of the generalized Langevin models under the influence of flames</b> <i>A. Mathioudakis, X. Zhao</i> <i>University of Connecticut</i>	<b>2C11: Combustion of boron in products of an air-acetylene premixed flame</b> <i>K.-L. Chintersingh, Q. Nguyen, M. Shoenitz, E.L. Dreizin</i> <i>New Jersey Institute of Technology</i>
<b>15:00 – 15:30</b>	<b>BREAK – Computer Science, Lobby</b>		

	<b>Reaction Kinetics VI</b> <b>Computer Science 104</b> <b>Session Chair: R. Sivaramakrishnan</b>	<b>Turbulent Flames IV</b> <b>Computer Science 105</b> <b>Session Chair: R. Barlow</b>	<b>Heterogeneous Combustion II</b> <b>Friend 006</b> <b>Session Chair: A. Saha</b>
<b>15:30</b>	<b>2A12: Flow reactor measurements and kinetic modeling of nitrogen oxides (NO<sub>x</sub>) perturbed synthetic natural gas oxidation</b> <i>F.E. Alam<sup>1</sup>, F.M. Haas<sup>2</sup>, T.I. Farouk<sup>1</sup>, F.L. Dryer<sup>2</sup></i> <sup>1</sup> University of South Carolina <sup>2</sup> Princeton University	<b>2B12: Analysis of generalized diffusion in turbulent hydrogen-air flames at large pressure using direct numerical simulation</b> <i>Z. Ma<sup>1</sup>, R.S. Miller<sup>2</sup></i> <sup>1</sup> West Virginia University Research Corporation <sup>2</sup> Clemson University	<b>2C12: Oxidation of different Al-Mg alloy powders in oxygen</b> <i>H. Nie, M. Schoenitz, E.L. Dreizin</i> <i>New Jersey Institute of Technology</i>
<b>15:45</b>	<b>2A13: Investigation of oxygen ion mobility as a metric for thermite ignition temperature</b> <i>X. Wang, W. Zhou, G.C. Egan, M.R. Zachariah</i> <i>University of Maryland</i>	<b>2B13: Effects of small-scale heat release on turbulence scaling in premixed and nonpremixed flames</b> <i>J.F. MacArt, T. Grenga, M.E. Mueller</i> <i>Princeton University</i>	<b>2C13: Oxidation of nano-sized aluminum powders</b> <i>N. Rodkevich<sup>1</sup>, M. Lerner<sup>1</sup>, A.B. Vorozhtsov<sup>2</sup>, H. Nie<sup>3</sup>, A. Abraham<sup>3</sup>, M. Schoenitz<sup>3</sup>, E.L. Dreizin<sup>2,3</sup></i> <sup>1</sup> Russian Academy of Sciences <sup>2</sup> Tomsk State University <sup>3</sup> New Jersey Institute of Technology
<b>16:00</b>	<b>2A14: Investigation of ignition and pyrolytic time scales of propanol isomers</b> <i>S. Jouzdani, A. Zhou, B. Akih-Kumgeh</i> <i>Syracuse University</i>	<b>2B14: Large eddy simulation of radiation effects on pollutant emissions in diluted turbulent premixed flames</b> <i>A.C. Nunno, T. Grenga, M.E. Mueller</i> <i>Princeton University</i>	<b>2C14: Composite B-Mg powders prepared by mechanical milling</b> <i>X. Liu, K-L. Chintersingh, M. Schoenitz, E.L. Dreizin</i> <i>New Jersey Institute of Technology</i>
<b>16:15</b>	<b>2A15: n-Heptane low temperature oxidation kinetics in nanosecond-pulsed plasma discharges</b> <i>A. Rousso<sup>1</sup>, J. Lefkowitz<sup>1</sup>, S. Yang<sup>2</sup>, W. Sun<sup>2</sup>, Y. Ju<sup>1</sup></i> <sup>1</sup> Princeton University <sup>2</sup> Georgia Institute of Technology	<b>2B15: Large eddy simulation of a turbulent jet flame with inhomogeneous inlets using a two mixture fraction flamelet modeling approach</b> <i>B.A. Perry<sup>1</sup>, M.E. Mueller<sup>1</sup>, A.R. Masri<sup>2</sup></i> <sup>1</sup> Princeton University <sup>2</sup> The University of Sydney	<b>2C15: Effect of flow conditions on burn rates of metal particles</b> <i>S. Wang<sup>1</sup>, S. Mohan<sup>2</sup>, E.L. Dreizin<sup>1</sup></i> <sup>1</sup> New Jersey Institute of Technology <sup>2</sup> Naval Surface Warfare Center
<b>16:45 – 17:45</b>	<b>ESSCI General Member Meeting</b> <b>Friend Center 101</b> <b>(All Encouraged to Attend)</b>		
<b>18:00 – 19:00</b>	<b>Cocktail Hour</b> <b>Prospect House</b>		
<b>19:00 – 22:00</b>	<b>ESSCI Banquet</b> <b>Prospect House</b>		



Wednesday, March 16, 2016

**8:15**                    **Computer Science 104:**  
**Announcements: Michael E. Mueller, Princeton University**

**8:30**                    **Computer Science 104:**  
**Invited Speaker: Robert H. Socolow, Princeton University**  
**Title: *Intersections of a Low-Carbon Energy Future with Combustion***  
**Session Chair: Yiguang Ju, Princeton University**

	<b>Reaction Kinetics VII</b> <b>Computer Science 104</b> <b>Session Chair: M. Burke</b>	<b>Laminar Flames III</b> <b>Computer Science 105</b> <b>Session Chair: S. Vasu</b>	<b>Fire III</b> <b>Friend 112</b> <b>Session Chair: W. Sun</b>
<b>9:30</b>	<b>3A01: Modeling NO<sub>x</sub> emissions for air-breathing rotating detonation engines</b> <i>D.A. Schwer, K. Kailasanath</i> <i>Naval Research Laboratory</i>	<b>3B01: Autoignited DME/air coflow flames in oscillating flows</b> <i>S. Deng<sup>1</sup>, P. Zhao<sup>1,2</sup>, M.E. Mueller<sup>1</sup>, C.K. Law<sup>1</sup></i> <sup>1</sup> Princeton University <sup>2</sup> Oakland University	<b>3C01: Microgravity burning using a gas burner emulator</b> <i>J.G. Quintiere<sup>1</sup>, A. Markan<sup>1</sup>, P.B. Sunderland<sup>1</sup>, J. deRis<sup>2</sup>, D. Stocker<sup>3</sup></i> <sup>1</sup> University of Maryland <sup>2</sup> FM Global <sup>3</sup> NASA Glenn Research Center
<b>9:45</b>	<b>3A02: A study of the RCCE constraint potential formulation incorporating a constraint selection algorithm</b> <i>F. Hadi, V. Yousefian, M.R.H. Sheikhi, H. Metghalchi</i> <i>Northeastern University</i>	<b>3B02: Laminar premixed flame propagation and non-premixed ignition of toluene and xylenes</b> <i>D. Han<sup>1,2</sup>, S. Deng<sup>1</sup>, W. Liang<sup>1</sup>, P. Zhao<sup>1,3</sup>, F. Wu<sup>1</sup>, Z. Huang<sup>2</sup>, C.K. Law<sup>1,4</sup></i> <sup>1</sup> Princeton University <sup>2</sup> Shanghai Jiao Tong University <sup>3</sup> Oakland University <sup>4</sup> Tsinghua University	<b>3C02: Buoyancy driven thermal calorimeter</b> <i>J.G. Quintiere<sup>1</sup>, R.E. Lyon<sup>2</sup>, S. Crowley<sup>2</sup></i> <sup>1</sup> University of Maryland <sup>2</sup> FAA Technical Center
<b>10:00</b>	<b>3A03: Numerical investigation of shock tube flows with tailored driver gases and driver inserts</b> <i>D. Coombs, P. Michalowski, B. Akih-Kumgeh</i> <i>Syracuse University</i>	<b>3B03: Gas-phase interactions of phosphorus containing compounds with cup-burner diffusion flames</b> <i>F. Takahashi<sup>1</sup>, V.R. Katta<sup>2</sup>, G.T. Linteris<sup>3</sup>, V.I. Babushok<sup>3</sup></i> <sup>1</sup> Case Western Reserve University <sup>2</sup> Innovative Scientific Solutions, Inc. <sup>3</sup> National Institute of Standards and Technology	<b>3C03: Simulation of the suppression of turbulent line fires by base-injected water mist</b> <i>S. Vilfayeau, T. Myers, A. Marshall, A. Trouvé</i> <i>University of Maryland</i>
<b>10:15 – 10:45</b>	<b>BREAK – Computer Science, Lobby</b>		

	<b>Reaction Kinetics VIII</b> <b>Computer Science 104</b> <b>Session Chair: M. Burke</b>	<b>Laminar Flames IV</b> <b>Computer Science 105</b> <b>Session Chair: S. Vasu</b>	<b>Fire IV</b> <b>Friend 112</b> <b>Session Chair: W. Sun</b>
<b>10:45</b>	<b>3A04: Thermodynamic and chemical kinetic characteristics of NTC turnover states</b> <i>W. Ji<sup>1</sup>, P. Zhao<sup>2</sup>, X. He<sup>1</sup>, C.K. Law<sup>1,3</sup></i> <sup>1</sup> Tsinghua University <sup>2</sup> Oakland University <sup>3</sup> Princeton University	<b>3B04: Methane-air-dust fire in a mining passage: The role of gas compression in a flame acceleration scenario</b> <i>S. Demir<sup>1</sup>, S.H. Chalagalla<sup>1</sup>, A.R. Calavay<sup>1</sup>, V. Akkerman<sup>1</sup>, A.S. Rangwala<sup>2</sup></i> <sup>1</sup> West Virginia University <sup>2</sup> Worcester Polytechnic Institute	<b>3C04: Sample width effects on heat feedback during flame propagation over thermally thin PMMA</b> <i>L. Jiang<sup>1,2</sup>, M.J. Gollner<sup>2</sup>, J.-H. Sun<sup>1</sup></i> <sup>1</sup> University of Science and Technology of China <sup>2</sup> University of Maryland
<b>11:00</b>	<b>3A05: On the explosion limits of H<sub>2</sub>/CO/O<sub>2</sub> mixtures</b> <i>J. Liu<sup>1,2</sup>, W. Liang<sup>1</sup>, C.K. Law<sup>1</sup></i> <sup>1</sup> Princeton University <sup>2</sup> Beijing Jiaotong University	<b>3B05: A role of local planar flame speed variations in the global finger-flame acceleration scenario</b> <i>S. Demir<sup>1</sup>, H. Sezer<sup>2</sup>, V. Akkerman<sup>1</sup></i> <sup>1</sup> West Virginia University <sup>2</sup> Worcester Polytechnic Institute	<b>3C05: Numerical study of upward flame spread over discrete fuels</b> <i>J.H. Park, Y.-T. T. Liao</i> <i>Case Western Reserve University</i>
<b>11:15</b>	<b>3A06: G-Scheme-based simplification and analysis methodology for hydrocarbon ignition</b> <i>T. Grenga<sup>1</sup>, S. Paolucci<sup>2</sup>, M. Valorani<sup>3</sup></i> <sup>1</sup> Princeton University <sup>2</sup> University of Notre Dame <sup>3</sup> Sapienza University of Rome	<b>3B06: Impacts of the Lewis and Markstein numbers effects on the flame acceleration in channels</b> <i>V. Akkerman<sup>1</sup>, S. Bilgili<sup>1</sup>, V. Bychkov<sup>2</sup>, D. Valiev<sup>2</sup>, S. Demir<sup>1</sup>, H. Morella<sup>1</sup></i> <sup>1</sup> West Virginia University <sup>2</sup> Umeå University	<b>3C06: Laser-induced optical breakdown and shock waves in combustible mixtures near flammability limits</b> <i>N.D. Peters, B. Akih-Kumgeh</i> <i>Syracuse University</i>
<b>11:30</b>		<b>3B07: Second-stage ignition limit of self-sustaining partially premixed cool flames</b> <i>C.B. Reuter, S.H. Won, Y. Ju</i> <i>Princeton University</i>	<b>3C07: Mixing in turbulent flows: influence of particle injection</b> <i>G. Di Cristina<sup>1</sup>, S.-k. Im<sup>1</sup>, A. Rangwala<sup>1</sup>, V. Raghavan<sup>2</sup></i> <sup>1</sup> Worcester Polytechnic Institute <sup>2</sup> Indian Institute of Technology Madras
<b>11:45</b>	<b>ADJOURN</b> <b>Lunch on your own</b>  <b>Princeton Combustion Lab Tour</b> <b>Meet in Engineering Quadrangle Main Lobby at 13:30</b>		

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