The Eastern States Section of the Combustion Institute

Presents the

EASTERN STATES SECTION MEETING OF THE COMBUSTION INSTITUTE

October 18-21, 2009
College Park, Maryland USA

Hosted by the University of Maryland

*Visit **www.essci-fall09.umd.edu** for information and registration*

UNIVERSITY OF MARYLAND

Eastern States Section of the Combustion Institute
Conference Chair Welcome

Attendees of the 2009 Technical Meeting of the Eastern States Section:

I would like to welcome everyone to the 2009 Technical Meeting of the Eastern States Section of the Combustion Institute. Our present tradition is to hold one meeting every two years in the Fall following the US Combustion Meeting. This meeting follows meetings at the University of Central Florida in 2005, and the University of Virginia in 2007.

The General Business Meeting of the Eastern States Section will be held Monday afternoon. Our colleagues at the University of Maryland will host two social events on Campus: a welcoming reception on Sunday evening and a reception on Monday evening in the Riggs Alumni Center.

The ability to put together a meeting of this size requires the help and cooperation of many individuals. In particular, we would like to thank Bill Roberts (Program/Papers Chair), and especially Arnaud Trouvé, who has served as both the arrangements chair for the Eastern States Section Executive Committee and also the local arrangements chair for this meeting. In addition, we would like to thank Barb Waronek and Maureen Cato of the Combustion Institute Office for all of their work in keeping us on task and in the production of this program. Finally, we gratefully acknowledge the financial support of several organizations within the University of Maryland, including the Department of Aerospace Engineering, the Department of Fire Protection Engineering, the Department of Mechanical Engineering and the Energy Research Center.

We are confident that this meeting will uphold the excellent tradition that was begun with our first Sectional meeting in 1967 and we look forward to our next meeting in 2011.

J. Houston Miller
Chair, Eastern States Section
The Combustion Institute

The Eastern States Section of The Combustion Institute
Thanks our sponsors for their generous support of this meeting

- The University of Maryland, Department of Aerospace Engineering
- The University of Maryland, Department of Fire Protection Engineering
- The University of Maryland, Department of Mechanical Engineering
- The University of Maryland, Energy Research Center

Schedule
Fall Technical Meeting of the Eastern States Section of the Combustion Institute
Adele H. Stamp Student Union Building
University of Maryland
October 18-21, 2009

Sunday, October 18, 2009	03:00–05:00	Eastern States Executive Committee Meeting
	06:00–08:30	Registration and Welcome Reception (Atrium)
Monday, October 19, 2009	08:15	Welcome Remarks
	08:30	Invited Speaker: Marshall Long, Yale University, *Imaging Flames: From advanced laser diagnostics to snapshots.*(Carroll room)
	09:30	Sessions A-1; B-1; C-1 (Carroll, Prince George, Jimenez rooms)
	10:10	Break
	12:10	Lunch
	01:30	Invited Speaker: Timothy Lieuwen , Georgia Institute of Technology, *Dynamics of Acoustically Excited, Premixed Flames.*(Carroll room)
	02:30	Session A-2; B-2; C-2 (Carroll, Prince George, Jimenez rooms)
	03:10	Break
	05:10	General Business Meeting (Carroll room)
	06:00-8:00	Reception
Tuesday, October 20, 2009	08:30	Invited Speaker: Edward Dreizin, New Jersey Institute of Technology, *Ignition kinetics and burn rates of Al particles.* (Carroll room)
	09:30	Sessions A-3; B-3; C-3 (Carroll, Banneker, Jimenez rooms)
	10:10	Break
	12:10	Lunch
	01:30	Invited Speaker: Wing Tsang, NIST, *Combustion Kinetics of Real Fuels.*(Carroll room)
	02:30	Session A-4; B-4; C-4 (Carroll, Banneker, Jimenez rooms)
	03:10	Break
	05:30	Adjourn
Wednesday, Oct. 21, 2009	08:30	Invited Speaker: Thomas Bussing, DARPA, *Vulcan Program.* (Carroll room)
	09:30	Sessions A-5; B-5; C-5 (Carroll, Banneker, Jimenez rooms)
	10:10	Break
	12:10	Adjourn

2009 FALL TECHNICAL MEETING
EASTERN STATES SECTIONS OF THE COMBUSTION INSTITUTE
University of Maryland
Monday, October 19, 2009

8:00 **Registration** (Grand Ballroom Lounge)

8:15 **Welcome Remarks: Dr. Darryll Pines, Professor and Dean, A.J. Clark School of Engineering, University of Maryland**

8:30 **Invited Speaker: Marshall Long, Yale University**
Imaging Flames: From advanced laser diagnostics to snapshots.

Announcements: Arnaud Trouvé, University of Maryland

	A-1: Turbulent I (Carroll) Session Chair: Prof. Saveliev	**B-1: Laminar (Prince George) Session Chair: Prof. Jackson**	**C-1: Fire Research (Jimenez) Session Chair: Dr. Pitts**
9:30	**A-01 A practical application of the bode criterion for prediction of thermoacoustic combustion instabilities.** *Joseph A. Ranalli, Cristopher R. Martin, Uri Vandsburger* *Virginia Tech*	**B-01 Flame propagation and counterflow nonpremixed ignition of mixtures of methane and ethylene.** *W. Liu, A. P. Kelley, C. K. Law* *Princeton University*	**C-01 Convective heat transfer scaling of ignition delay and burning rate with heat flux and stretch rate in the equivalent low stretch apparatus.** *S. L. Olson* *NASA Glenn Research Center*
9:50	**A-02 An algorithm for accurate prediction of turbulent burning velocity for under-resolved premixed flames.** *Hossam El-Asrag, Jean-Christophe Nave, Ahmed Ghoniem* *Massachusetts Institute of Technology*	**B-02 Mechanism of fast flame acceleration in cylindrical tubes with obstacles.** *V. B. Akkerman[1], C. K. Law[1], D. M. Valiev[2], V. V. Bychkov[2], L. E. Eriksson[3]* *[1]Princeton University [2]Umea University [3]Chalmers University*	**C-02 Design considerations for a ground-based flammability test method for screening spacecraft materials.** *George Sidebotham[1], Sandra Olson[2]* *[1]The Cooper Union [2]NASA Glenn Research Center*
10:10	**BREAK**		

10:30	**A-03 Prediction of emissions using RANS: simulation of lean premixed methane air flames in swirl stabilized combustor.** *Jagannath Nanduri[1], Don Parsons[1], Ismail Celik[1], P. A. Strakey[2]* *[1]West Virginia University* *[2]National Energy Technology Laboratory*	**B-03 The effect of compressibility on flame acceleration in tubes.** *V. B. Akkerman[1], C. K. Law[1], V. V. Bychkov[2], D. M. Valiev[2]* *[1]Princeton University [2]Umea University*	**C-03 Fire spread and growth on flexible polyurethane foam.** *William M. Pitts, Gregory Hasapis, Patrick Macatangga,* *National Institute of Standards and Technology*
10:50	**A-04 Analytical modeling of spatial phenomena dictating the frequency response of turbulent premixed flames.** *C. Martin, J. Ranalli, U. Vandsburger* *Virginia Tech*	**B-04 A new model for flame kernel formation and propagation of methane-air premixed mixtures.** *Kian Eisazadeh Far[1], Hameed Metghalchi[1], James C. Keck[2]* *[1]Northeastern University [2]Massachusetts Institute of Technology*	**C-04 Development of tools for smoke residue and deposition analysis.** *Siamak Riahi[1,2], Craig Beyler[1], Judith Hartman[3], Kim Roddis[2]* *[1]Hughes Associates [2]George Washington University* *[3]United States Naval Academy*
11:10	**A-05 An assessment of SGS turbulent combustion models in predicting emissions from lean premixed methane/air flames.** *Jagannath Nanduri[1], Ismail Celik[1], Peter Strakey[2]* *[1]West Virginia University* *[2]National Energy Technology Laboratory*	**B-05 Effects of hydrogen addition on spherically expanding n-butane flames.** *Chenglong Tang, Yuyang Li, Zuohua Huang, C K. Law* *Princeton University.*	**C-05 An examination of Cross Correlation Velocimetry's ability to predict characteristic turbulent length scales in fire induced flow.** *Scott Rockwell, Ali Rangwala, Andy Klein* *Worcester Polytechnic Institute*
11:30	**A-06 Glycerol combustion and emissions.** *Myles D. Bohon, Brian Metzger, William L. Roberts* *North Carolina State University*	**B-06 A fully coupled, compact finite difference method for the numerical solution of time-dependent flames.** *Richard R. Dobbins, Mitchell D. Smooke* *Yale University*	**C-06 Performance evaluation criteria of fire blanket materials for structure protection in wildland-urban interface fires.** *Fumiaki Takahashi[1], Timothy M. Murray[1], Amber Abbott[1], Sheng-Yen Hsu[1], James S. T'ien[1], Sandra L. Olson[2]* *[1]Case Western Reserve University* *[2]NASA Glenn Research Center*
11:50	**A-07 Understanding blowoff dynamics of bluff body stabilized turbulent flames in a prototypical combustor.** *Swetaprovo Chaudhuri, Stanislav Kostka, Steven G. Tuttle, Michael W. Renfro, Baki M. Cetegen,* *University of Connecticut*	**B-07 Computational and experimental study of an axisymmetric laminar coflow *n*-heptane flame.** *Beth Anne V. Bennett, Charles S. McEnally, Lisa D. Pfefferle, Mitchell D. Smooke* *Yale University*	**C-07 Scaling techniques for fire forensics.** *C. Chan[1], A. Carey[1], T. Layton[1], A.W. Marshall[1], J.G. Quintiere[1], D.T. Sheppard[2]* *[1]University of Maryland* *[2]ATF Fire Research Laboratory*

12:10	**LUNCH**		
1:30	**Invited Speaker: Timothy Lieuwen, Georgia Institute of Technology** ***Dynamics of Acoustically Excited, Premixed Flames.*** (Carroll room)		
	Session A-2: Spray **(Carroll)** **Session Chair: Prof. Oehlschlaeger**	**Session B-2: Soot** **(Prince George)** **Session Chair: Dr. Bennett**	**Session C-2: Heterogeneous** **(Jimenez)** **Session Chair: Prof. Fang**
2:30	**A-08 Instantaneous and time-resolved blowoff transition measurements for two-dimensional bluff body-stabilized flames in vitiated flow.** *Steven G. Tuttle, Stanislav Kostka Jr., Swetaprovo Chaudhuri, Marat Kulakhmetov, Baki M. Cetegen, Michael W. Renfro* *University of Connecticut*	**B-08 Impact of intake oxygen enrichment in a diesel engine on the crystalline structure and oxidative reactivity of diesel soot.** *Hee Je Seong, Andre L. Boehman* *The Pennsylvania State University*	**C-08 Initiation of transient ion emission by nanocomposite thermite reactions.** *Lei Zhou[1], Nicholas Piekiel[1], Snehaunshu Chowdhury[1], Michael R. Zachariah[1], Donggeun Lee[2]* *[1]University of Maryland, College Park* *[2]Pusan National University*
2:50	**A-09 Atomization of a superheated jet fuel.** *J. Lee[1], M. Corn[1], C. Fotache[1], S. Gopalakrishnan[2], D. Schmidt[1]* *[1]United Technologies Research Center UTC* *[2]University of Massachusetts Amherst*	**B-09 Examination of sooting tendency of three ring aromatic hydrocarbons and their saturated counterparts.** *Eduardo J. Barrientos, Andre L. Boehman* *The Pennsylvania State University*	**C-09 Simultaneous pressure and optical measurements of nanoaluminum-based thermites: An investigation of the reaction mechanism.** *Kyle Sullivan, Michael Zachariah* *University of Maryland at College Park*
3:10	**BREAK**		
3:30	**A-10 Modeling and experimental study of pure and blended bio-fuel droplets injected into hot stream of air.** *A. Saha, R. Clapp, R. Kumar, S. Basu* *University of Central Florida*	**B-10 Classification of ignition regimes in HCCI combustion using computational singular perturbation.** *Saurabh Gupta[1], Hong G. Im[1], Mauro Valorani[2]* *[1]University of Michigan* *[2]University of Rome "La Sapienza"*	**C-10 Catalytic combustion of ethanol and butanol for microburner applications.** *Ivan C. Lee, Douglas A. Behrens, C. Michael Waits* *US Army Research Laboratory*

3:50	**A-11 Autoignition behavior of surrogate gasoline fuels during spray combustion in a constant-volume chamber.** *Peter L. Perez, Andre L. Boehman* *The Pennsylvania State University*	**B-11 Laminar smoke points of microgravity coflow diffusion flames.** *K.T. Dotson, P.B. Sunderland, Z.–G. Yuan, D.L. Urban* *University of Maryland*	**C-11 Time-resolved mass spectrometry of nanocomposite thermite reactions.** *Lei Zhou, Nicholas Piekiel, Snehaunshu Chowdhury, Kyle Sullivan, Michael R. Zachariah* *University of Maryland Park*
4:10	**A-12 Modeling the effect of multi-component fuel evaporation on combustion kinetics.** *R. Joklik* *Combustion Science & Engineering, Inc.*	**B-12 Reactivity and nanostructure of diesel soot generated by a compression ignition engine using biodiesel, Fischer-Tropsch and ultra low sulfur diesel fuels.** *Kuen Yehliu, Randy Vander Wal, André L. Boehman* *The Pennsylvania State University*	**C-12 Ignition of aluminum powders by electro-static discharge.** *Ervin Beloni, Edward L. Dreizin* *New Jersey Institute of Technology*
4:30	**A-13 Droplet evaporation due to gas-phase volumetric compression.** *Michael V. Johnson[1], Scott Goldsborough[1], Suresh Aggarwal[2]* *[1]Marquette University* *[2]University of Illinois Chicago*	**B-13 Particle transport and instrument calibration for particulate matter measurements of aircraft emissions.** *D. Liscinsky[1], A. Bhargava[2], B. Anderson[3], E. Winstead[3]* *[1]United Technologies Research Center* *[2]Pratt and Whitney [3]NASA Langley Research Center*	**C-13 Characterization of fine aluminum powder coated with nickel as a potential fuel additive.** *Shashank L. Vummidi, Yasmine Aly, Mirko Schoenitz, Edward L. Dreizin* *New Jersey Institute of Technology*
4:50	**A-14 Collision dynamics and mixing of unequal-size droplets.** *Dong Liu[1], Peng Zhang[1], Chung K. Law[1], Yincheng Guo[2]* *[1]Princeton University [2]Tsinghua University*	**B-14 Effects of m-xylene addition on soot in laminar, N2-diluted ethylene diffusion flames at pressures from 1 to 5 atm.** *A.V. Menon, M. J. Linevsky, T. A. Litzinger, R. J. Santoro* *The Pennsylvania State University*	**C-14 Ignition and waste heat recovery through catalytic combustion of reformate exhaust in PEM fuel cell systems.** *Ian M. Young[1], Atul Bhargav[1], Gregory S. Jackson[1], C.J. Tesluk[2], G.W. Brunson, W.A. Whittenberger[3]* *[1]University of Maryland [2]Ballard Power Systems* *[3]Catacel Corporation*
5:10	**GENERAL BUSINESS MEETING** (Carroll room)		
5:30-8:00	**RECEPTION – Hall of Fame of the Riggs Alumni Center**		

Tuesday, October 20, 2009

8:30 **Invited Speaker: Edward Dreizin, New Jersey Institute of Technology**
Ignition kinetics and burn rates of Al particles.

	Session A-3: Reaction Kinetics I (Carroll) Session Chair: Prof. Goldsborough	Session B-3 : IC Engines (Banneker) Session Chair: Prof. Cadou	Session C-3: Detonations (Jimenez) Session Chair: Prof. Renfro
9:30	**A-15 Size-resolved reaction kinetics and reaction rate anisotropy of unsupported Zn nanocrystals.** *Xiaofei Ma, Michael R. Zachariah* *University of Maryland-College Park*	**B-15 Numerical study on the effect of CH_4 addition to H_2 flames flashback.** *Nasser Shelil, A.J. Griffiths, N. Syred* *Cardiff University, United Kingdom*	**C-15 On the fluid dynamics of acoustically perturbed swirling non-premixed flames.** *Uyi Idahosa, Navid Khatami, Abhishek Saha, Chengying Xu, Saptarshi Basu* *University of Central Florida*
9:50	**A-16 A fitting formula for the falloff curves of unimolecular reactions with tunneling.** *Peng Zhang, Chung K. Law* *Princeton University*	**B-16 Additive effects on ignition and combustion characteristics of natural gas.** *S.B. Gupta, B. Bihari, M.V. Johnson* *Argonne National Laboratory*	**C-16 Assessment of syngas kinetic models for the prediction of a turbulent nonpremixed flame.** *Osama A. Marzouk, E. David Huckaby* *U.S. Department of Energy*
10:10	**BREAK**		
10:30	**A-17 Thermal decomposition of HN_3.** *Vadim D. Knyazev[1], Oleg P. Korobeinichev[2]* *[1]The Catholic University of America* *[2]Institute of Chemical Kinetics and Combustion*	**B-17 Soot visualization in an optical diesel engine fueled with diesel and bio-diesel fuels using multiple injection strategies.** *Tiegang Fang[1], Chia-fon Lee[2]* *[1]North Carolina State University* *[2]University of Illinois at Urbana-Champaign*	**C-17 Laser-initiated, microwave driven ignition in methane/air mixtures.** *J. B. Michael, A. Dogariu, M. N. Shneider, R. B. Miles* *Princeton University*

10:50	**A-18 Ignition delay in combustion of ethylene: A shock tube study.** *Saumitra Saxena[1], M.S.P. Kahandawala[1], S.S. Sidhu[1], Hai Wang[2]* *[1]University of Dayton Research Institute* *[2]University of Southern California*	**B-18 An experimental investigation of H_2 emissions of a heavy-duty H_2-diesel dual fuel engine.** *T. Gatts, C. M. Liew, S. Liu, H. Li, T. Spencer, N. Clark* *West Virginia University*	**C-18 Performance studies of a pulse detonation rocket engine for use as an unsteady ejector in a rocket-based combined cycle engine.** *Nicholas Mercurio, Sibtosh Pal, Roger Woodward, Robert Santoro* *The Pennsylvania State University*
11:10	**A-19 The role of chemical explosive mode in flames.** *T.F. Lu[1], C.S. Yoo[2], J.H. Chen[2]* *[1]University of Connecticut* *[2]Sandia National Laboratories*	**B-19 An Experimental Investigation of NO_2 emission characteristics of a heavy-Duty H_2-diesel dual fuel engine.** *S. Liu, C. Liew, H. Li, T. Gatts, S. Wayne, B. Shade, N. Clark* *West Virginia University*	**C-19 Simulation of rotating detonation engines.** *Douglas A. Schwer, K. Kailasanath* *Naval Research Laboratory*
11:30	**A-20 Kinetics of hydrogen abstraction reactions of monomethylhydrazine by OH radical.** *Hongyan Sun, Chung K. Law* *Princeton University* .	**B-20 An experimental investigation of exhaust emissions of a 1999 Cummins ISM370 Diesel engine supplemented with H_2.** *C. Liew[1], H. Li[1], T. Gatts[1], S. Liu[1], S. Xu[1], B. Rapp[1], B. Ralston[1], N. Clark[1], Y. Huang[2]* *[1]West Virginia University* *[2]Huston Advanced Research Center*	**C-20 Experimental investigation of gradient mechanism of detonation initiation.** *A.Rakitin[1], A.Starikovskiy[2]* *[1]NEQLab Research BV [2]Drexel University*
11:50	**A-21 Laminar burning speeds of ethanol-air-diluent mixtures.** *Kian Eisazadeh Far[1], Ali Moghaddas[1], Hameed Metghalchi[1], M.Molki[2]* *[1]Northeastern University [2]Damescus University*	**B-21 Effects of fuel composition, turbulence, and turbulence/chemistry interactions on emissions from compression-ignition engines.** *Hedan Zhang, Greg Lilik, André Boehman, Daniel Haworth* *The Pennsylvania State University*	**C-21 Simulations of flame acceleration and deflagration-to-detonation transitions in large-scale methane-air mixtures.** *David A. Kessler, Vadim N. Gamezo, Elaine S. Oran* *Naval Research Laboratory*
12:15	**LUNCH**		

1:30	**Invited Speaker: Wing Tsang, NIST/DOC** ***Combustion Kinetics of Real Fuels.*** (Carroll room)		
	Session A-4: Reaction Kinetics II (Carroll) **Session Chair: Prof. Lu**	**Session B-4: Diagnostics & Stationary (Banneker)** **Session Chair: Dr. Nanduri**	**Session C-4: New Technology (Jimenez)** **Session Chair: Prof. Marshall**
2:30	**A-22 Iso-dodecane pyrolysis model development.** *S. Zeppieri[1], M. Colket[1], M. Wójtowicz[2], M. Serio[2]* *[1]United Technologies Research Center* *[2]Advanced Fuel Research, Inc.*	**B-22 Simultaneous water vapor and oxygen measurements in aqueous high expansion fire suppression foams using TDLAS.** *Eric A. Fallows, James W. Fleming* *US Naval Research Laboratory*	**C-22 Kinetics of OH radicals below self-ignition threshold in plasma enhanced combustion.** *Andrey Nikipelov[1], Liang Wu[2], Jamie Lane[2], Irina N. Ciobanescu Husanu[2], Nicholas P. Cernansky[2], David L. Miller[2], Alexander A. Fridman[2], Andrey Yu. Starikovskiy[2]* *[1]Moscow Institute of Physics and Technology* *[2]Drexel University*
2:50	**A-23 Quantum calculations of important isomerization reaction rates.** *Sandeep Sharma[1], Sumathy Raman[1,2], William H. Green[1]* *[1] Massachusetts Institute of Technology* *[2]Exxon Mobil Research and Engineering*	**B-23 On use of OH* and CO_2* chemiluminescence for heat release rate measurement in diluted flames.** *J.A. Ranalli[1], D. Ferguson[1], J. Escobar[2, 3]* *[1]National Energy Technology Lab* *[2]West Virginia University* *[3]National Energy Technology Lab*	**C-23 The photo-induced ignition of quiescent fuel/air mixtures containing suspended carbon nanotubes.** *Andrew M. Berkowitz, Matthew A. Oehlschlaeger* *Rensselaer Polytechnic Institute*
3:10	**BREAK**		
3:30	**A-24 Elementary mechanism for gas phase mercury conversion in H_2, O_2, chloro and bromo C_1-hydrocarbon and NO_x combustion environments.** *Itsaso Auzmendi Murua, Joseph W. Bozzelli* *New Jersey Institute of Technology*	**B-24 A stabilized cool flame reactor for laser diagnostic studies of HO_2 and OH radicals at pre-ignition reaction conditions.** *Jamie Lane, Nicholas Cernansky, David Miller* *Drexel University*	**C-24 Testing and analysis of CO and O_2 emissions from $CH_4/O_2/CO_2$ flames.** *A. Amato, R. Hudak, D. Noble, P. D'Carlo, D. Scarborough, J. Seitzman, T. Lieuwen* *Georgia Institute of Technology*

3:50	**A-25 Thermochemistry and kinetic modeling for OH addition to ethylene and propene and subsequent hydroxyethyl radical + O_2 reactions in atmospheric chemistry.** *Suarwee Snitsiriwat, Gabriel da Silva, Joseph W. Bozzelli* *New Jersey Institute of Technology*	**B-25 Flame structure of non-forced acoustically driven flames using proper orthogonal decomposition.** *Kristin M. Kopp-Vaughan, Michael W. Renfro* *University of Connecticut*	**C-25 Empirical investigation of operable fuels for micropulsejets.** *S.A. Steinmetz[1], F. Zheng[1], J.A. Scroggins[1], N.L. Cousineau[1], J.S. Sayres[1], T.L. Turner[2], W.L. Roberts[1]* *[1]North Carolina State University [2]Permafuels, Inc.*
4:10	**A-26 Low temperature oxidation of n-Butylcyclohexane.** *Robert H. Natelson, Matthew S. Kurman, Nicholas P. Cernansky, David L. Miller* *Drexel University*	**B-26 Limitations and improvements to an FT-IR based non-intrusive diagnostic technique for making temperature measurements.** *Anand Veeraragavan, Chris Cadou* *University of Maryland*	**C-26 Investigation of bimodal nano/micron aluminum-ice (ALICE) propellants.** *Terrence L. Connell, Jr.[1], Grant A. Risha[1], Richard A. Yetter[1], Vigor Yang[2], Steven F. Son[3]* *[1]The Pennsylvania State University* *[2]Georgia Institute of Technology [3]Purdue University*
4:30	**A-27 Decomposition of methylbenzyl radicals in the oxidation and pyrolysis of xylenes.** *Gabriel da Silva[1], Joseph W Bozzelli[2]* *[1]Univeristy Melbourne* *[2]New Jersey Institute of Technology*	**B-27 Separation Number Analysis™ applied to power boilers for assessing the process impacts of new coals and firing configurations.** *Murray F. Abbott, Simon P. Hanson* *Fuel & Furnace Consulting, Inc*	**C-27 Kinetics of plasma assisted combustion at low reduced electric fields.** *Liang Wu, Alexander A. Fridman, A. Yu. Starikovskiy* *Drexel University*
4:50	**A-28 Abstraction of allylic hydrogen of propene by alkyl radicals. Thermochemistry and kinetic study.** *Anjani Gunturu, Joseph W. Bozzelli* *New Jersey Institute of Technology*	**B-28 Pollutant emission from coal combustion with flue gas recycle.** *Ning Wu, Liqin Zhang, Qiang Song, Qiang Yao, Shuiqing Li* *Tsinghua University*	**C-28 Hydrocarbons to syngas reforming by high–voltage nanosecond pulse discharge.** *A.Nikipelov[1], A.Rakitin[2], A.Starikovskiy[3]* *[1]Moscow Institute of Physics and Technology* *[2]NEQLab Research BV [3]Drexel University*
5:10	**A-29 Reaction pathways in hypergolic MMH/RFNA combustion.** *Nicole Labbe[1], Phillip Westmoreland[2]* *[1]University of Massachusetts, Amherst* *[2]North Carolina State University*	**B-29 Nitric oxide measurements during air-fired and oxy-fuel combustion of coal and coal/sawdust mixtures.** *Scott A. Skeen, Ben M. Kumfer, Richard L. Axelbaum* *Washington University in St. Louis*	**C-29 Ignition of a liquid fuel jet by electrical discharge propagating along the jet.** *P. Gray, A.V. Saveliev* *North Carolina State University*
5:30	**Adjourn for evening**		

Wednesday, October 21, 2009

8:30 **Invited Speaker: Thomas Bussing, DARPA**
Vulcan Program. (Carroll room)

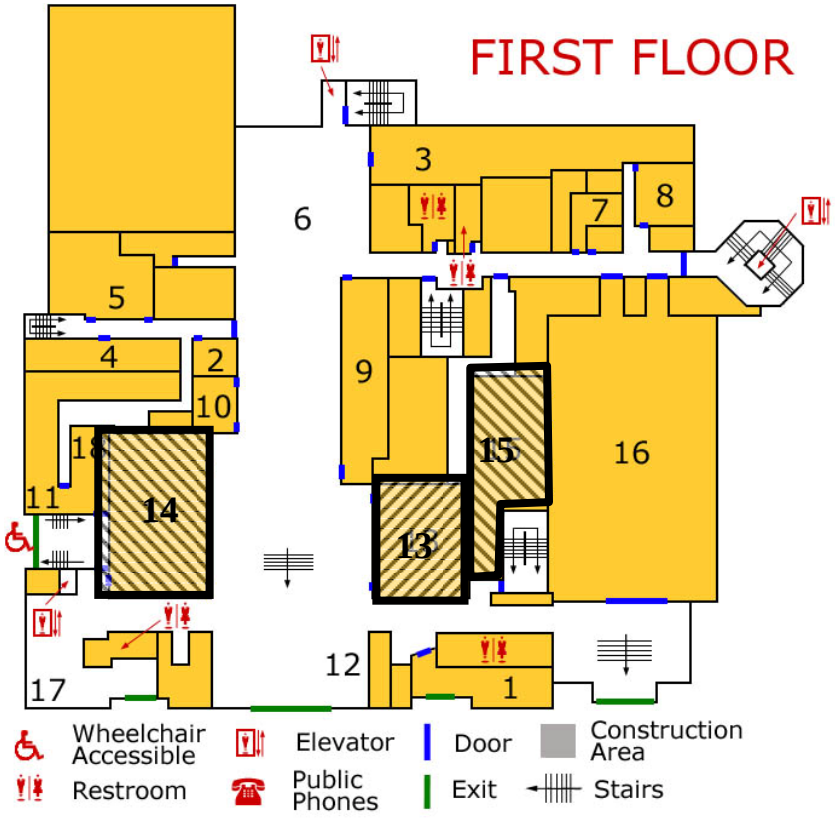
	Session A-5: Reaction Kinetics & Heterogeneous Combustion (Carroll) Session Chair: Prof. Basu	**Session B-5: Soot & Other (Banneker A) Session Chair: Prof . Sunderland**	**Session C-5: Laminar Flames II (Jimenez) Session Chair: Dr. Zeppieri**
9:30	**A-30 Propanol ignition at shock tube conditions.** *M.V. Johnson[1], S.S. Goldsborough[1], Z. Serinyel[2], P. O'Toole[2], E. Larkin[2], G. O'Malley[2], H.J. Curran[2]* *[1]Marquette University* *[2]National University of Ireland, Galway*	**B-30 Characterization of photo-ignition of single walled carbon nanotubes.** *Matthew Loomis, Jongguen Lee, Richard Yetter* *The Pennsylvania State University*	**C-30 Combustion of JP-8 surrogates and parent species in centerbody burner.** *Viswanath Katta, William Roquemore* *Wright-Patterson Air Force Base*
9:50	**A-31 Dihydrogen mediated hydrogen transfer reactions.** *Rubik Asatryan, Joseph W. Bozzelli* *New Jersey Institute of Technology*	**B-31 Reaction mechanism for hypergolic ignition of dicyanamide-based ionic liquids.** *Suresh S. Iyer, Thomas A. Litzinger* *Penn State University*	**C-31 Asymptotic analysis of radiative extinction in laminar counterflow diffusion flames.** *P. Narayanan, H. R. Baum, A. Trouvé* *University of Maryland*
10:10	**BREAK**		
10:30	**A-32 On the initiation of nanothermite reactions.** *Snehaunshu Chowdhury, Kyle Sullivan, Nicholas Piekiel, Lei Zhou, Michael R. Zachariah* *University of Maryland*	**B-32 Impact of pressure on hydrocarbon emissions and soot formation in the combustion of ethylene: A shock tube study.** *Saumitra Saxena, M.S.P. Kahandawala, S.S. Sidhu* *University of Dayton Research Institute*	**C-32 Response of Premixed Swirling Flames to Transverse Excitation.** *Vishal Acharya , Shreekrishna , Dong-hyuk Shin , Tim Lieuwen* *Georgia Institute of Technology*

10:50	**A-33 Influence of reactant fuel class on the flame synthesis of carbon nanostructures.** *Brendan Hall[1], Chuanwei Zhuo[1], Yiannis A. Levendis[1], Henning Richter[2]* *[1]Northeastern University [2]Nano-C*	**B-33 A Computational analysis of soot precursor generation: propargyl chemistry and permanently blue flames at high Z_{st}.** *Scott A. Skeen, Gregory Yablonsky,* *Richard L. Axelbaum* *Washington University in St. Louis*	**C-33 Development of a wick-fed diffusion flame burner for liquid hydrocarbon fuels.** *Venkatesh R. Iyer, Suresh S. Iyer, Milton J. Linevsky,* *Thomas A. Litzinger, Robert J. Santoro* *The Pennsylvania State University*
11:10	**A-34 Flame synthesis of metal oxide nanorods.** *W. Merchan-Merchan[1], A.V. Saveliev[2], M. Desai[1]* *[1]University of Oklahoma* *[2]North Carolina State University*	**B-34 Numerical simulations of soot kinetics in spherical diffusion flames.** *V.R. Lecoustre[1], P.B. Sunderland[1], B.H. Chao[2],* *R.L. Axelbaum[3]* *[1]University of Maryland* *[2]University of Hawaii* *[3]Washington University in St. Louis*	**C-34 Experimental and computational investigation of flow effects on local extinction strain rate of ethylene and methane counterflow diffusion flames.** *B.Sarnacki[1], G.Esposito[1], V.Katta[2], R. Krauss[1],* *H.Chelliah[1]* *[1]University of Virginia* *[2]Innovative Scientific Solutions Inc.*
11:30	**A-35 Temporally analyzed multi-wavelength pyrometry of an Al/CuO nanothermite.** *Michael R. Weismiller, Jongguen Lee,* *Richard A. Yetter* *The Pennsylvania State University*	**B-35 Performance scaling in miniature internal combustion engines.** *Shyam Menon, Chris Cadou* *University of Maryland*	**C-35 Numerical modeling of axisymmetric coflow flames using a parallel Newton-based solver.** *Luca Tosatto, Bennet Anne V. Bennett,* *Mitchell Smooke* *Yale University*

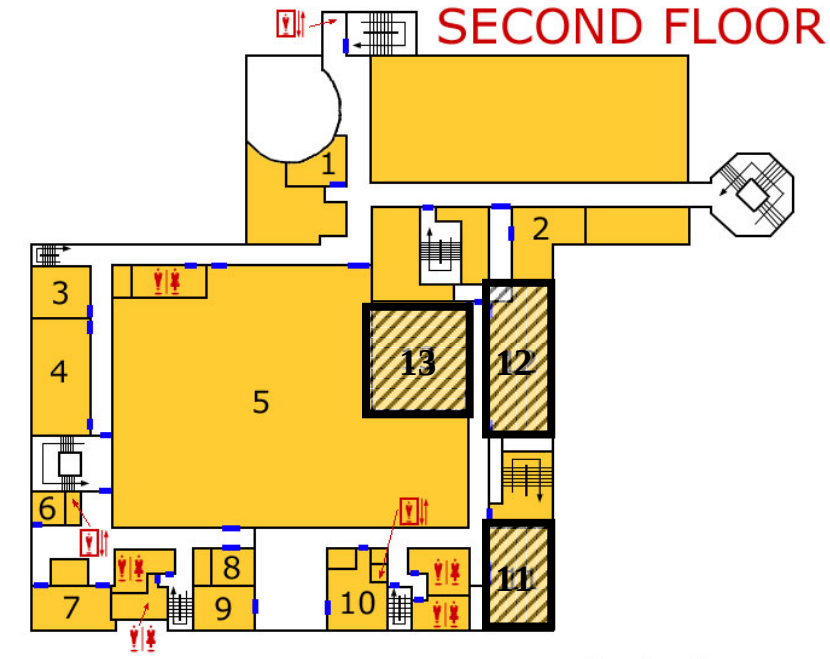
AUTHOR LIST

Adele H. Stamp Student Union Building – Floor Plan

(for more information, visit *http://www.essci-fall09.umd.edu*)



1 - The Coffee Bar
2 - Community Service-Learning
3 - Adele's
4 - Graduate Student Suite
5 - Reservations Office
6 - North Court
7 - Undergraduate/Graduate Legal Aid
8 - Nanticoke Room
9 - Union Gallery
10 - Piscataway Room
11 - Off Campus Housing
12 - Information Desk
13 - Prince George's Room
14 - The Atrium
15 - Grand Ballroom Lounge
16 - Grand Ballroom
17 - Reading Room
18 - Office of Fraternity & Sorority Life



1 - IT Services
2 - Audio Visual Support
3 - Thurgood Marshall Room
4 - Margaret Brent Room
5 - Colony Ballroom
6 - Harriet Tubman
7 - Pyon Su Room
8 - Edgar Allen Poe Room
9 - Calvert Room
10 - Crossland Room
11 - Jimenez Room
12 - Benjamin Banneker Room
13 - Charles Carroll Room

University of Maryland at College Park – Campus Map

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