

2018 SPRING TECHNICAL MEETING
WESTERN STATES SECTION OF THE COMBUSTION INSTITUTE
 Hosted by Oregon State University - Cascades, Bend, OR

Sunday, 25 March 2018

2:00 – 5:00 pm Cantera Workshop and Forum in Dinning Hall 205: Prof. Steven C. DeCaluwe, *Colorado School of Mines*

Monday, 26 March 2018

7:30 – 4:00 **Registration:** Tykeson Hall

7:30 – 8:00 **Continental Breakfast:** Dining Hall

8:00 - 8:15 **Welcome Address in Tykeson 111:** Dr. Rebecca L. Johnson, *Vice President, Oregon State University - Cascades*

Welcome Remarks: Prof. Fletcher J. Miller, *WSSCI Chair, San Diego State University*
 Prof. Christopher Hagen, *Oregon State University*

8:15 – 9:15 **Plenary Lecture in Tykeson 111: Ronald K. Hanson, *Stanford University***

Session Chair: David Blunck, *Oregon State University*

9:15 – 9:25	BREAK		
	Laminar Flames/Microcombustion Tykeson 111 Session Chair: N. Labbe	Coal Dining 205 Session Chair: T. Holland	Engines/Energy Tykeson 109 Session Chair: D. Olsen
9:25 – 9:45	1A01: Experimental and computational investigation of autoignition of high molecular weight alkanes in nonpremixed flows <i>M. Innerkofler, M. Hunyadi-Gall, F. Pizzetti, M. Turello, A. Cuoci, A. Frassoldati, E. Pucher, K. Seshadri</i>	1B01: The effect of oxygen penetration on apparent pulverized coal char combustion kinetics <i>C.R. Shaddix, E.S. Hecht, C. Gonzalo-Tirado</i>	1C01: Characterization of knock propensity via observations of end-gas autoignition from laser-ignited, premixed flames in a rapid compression machine <i>A. Zdanowicz, J. Mohr, S. Bhoite, M. Baumgardner, J. Tryner, C. Dumitrache, A. Yalin, A.J. Marchese</i>
9:45 – 10:05	1A02: Perturbations in reacting flows: New scaling analyses <i>J. Santner, S.S. Goldsborough</i>	1B02: Experimental and numerical modeling of coal flames <i>E. Beagle, C. Dunn, L. McLaughlin, R. Mokhtarpoor, M. Stoellinger, E. Belmont</i>	1C02: Investigation of spray characteristics for multi-component fuel <i>K. Yasutomi, C.J. Mueller, L.M. Pickett, S.A. Skeen</i>
10:05 – 10:25	1A03: Effect of stoichiometric mixture fraction on hydrogen edge-flames in a counter-flow burner <i>Z. Zhou, S.S. Applebaum, G.N. Narayanan, P.D. Ronney</i>	1B03: Co-firing rice husks with a PRB coal and the formation of ash aerosol and deposits <i>Y. Wang, X. Li, J.O.L. Wendt</i>	1C03: Investigation of ignition delay characteristics of ethyl decanoate and its blends with <i>n</i> -heptane using a fuel ignition tester <i>E. Al-Gharibeh, K. Kumar, C.-J. Sung</i>

	Laminar Flames/Microcombustion Tykeson 111 Session Chair: N. Labbe	Coal Dining 205 Session Chair: T. Holland	Engines/Energy Tykeson 109 Session Chair: D. Olsen
10:25 – 10:45	1A04: Investigation of combustion characteristics of primary reference fuels in heated microchannels <i>S.N. Roohani, V. Naralasetti, P. Sharma, V.M. Sauer, I. Schoegl</i>	1B04: Experimental co-combustion of coal, biochar and blends in a laminar flame burner <i>E. Beagle, L. McLaughlin, E. Belmont</i>	1C04: Second law implications of utilizing hydrogen for energy storage <i>Z. Taie, G. Villaverde, J. Speaks, C. Hagen</i>
10:45 – 11:00	BREAK – Hallway and Tykeson 111		
	Laminar and Turbulent Flames Tykeson 111 Session Chair: D. Blunck	Coal and Heterogeneous Dining 205 Session Chair: E. Beagle	
11:00 – 11:20	1A05: Flame propagation in quasi-2D channels: Stability, rates and scaling <i>S. Shen, X. Ma, P. Ronney</i>	1B05: An <i>a priori</i> analysis of mixture fraction-based modeling of coal combustion <i>J. McConnell, J.C. Sutherland</i>	
11:20 – 11:40	1A06: Experimental characterization of freely propagating <i>n</i> -heptane cool flames at sub-atmospheric pressures <i>M.Q. Brown, M.C. Brown, M. Hajilou, E. Belmont</i>	1B06: Ash aerosol formation during pressurized oxy-coal combustion <i>X. Li, Y. Wang, J.O.L. Wendt</i>	
11:40 – 12:00	1A07: Investigation of the structure of <i>n</i> -heptane cool flames using CH ₂ O PLIF imaging <i>M. Hajilou, M. Brown, M. Brown, E. Belmont</i>	1B07: ISS experiments on combustion of heptane/hexadecane droplets <i>C.L. Vang, B.D. Shaw</i>	
12:00 – 12:20	1A08: Incorporating differential and thermal diffusion in tabulated chemistry <i>J. Schlup, G. Blanquart</i>	1B08: Flame spread in microgravity and critical conditions for radiative extinction <i>R. Chan, L. Carmignani, S. Bhattacharjee</i>	
12:20 – 1:20	LUNCH – Dining Hall Women in Combustion Lunch – Dining Hall 205		
	Turbulent Flames Tykeson 111 Session Chair: D. Lignell	Biomass/Fire Dining 205 Session Chair: E. Belmont	
1:20 – 1:40	1A09: Investigation on the role of phase change of a liquid fuel spray on the flame stability and behavior <i>R.A. Alsulami, A. Jadhav, B. Windell, B.C. Windom</i>	1B09: Torrefaction time and environment dependence of Miscanthus Elephant grass properties <i>A. Howell, E. Belmont</i>	
1:40 - 2:00	1A10: Assessing the impact of chemical kinetic model reduction on premixed turbulent flame characteristics <i>A.J. Fillo, K.E. Niemeyer</i>	1B10: Comparison of three methods for driving the wind field over a km-scale computational domain <i>B. Ells, F. Miller</i>	
2:00 - 2:20	1A11: An analysis of grid resolution requirements for direct numerical simulations of turbulent jet flames <i>N. Burali, G. Blanquart</i>	1B11: The impact of fuel loading on buoyancy induced counter-rotational vortices <i>T. Holland, M. Holmes, T. Banerjee, R. Linn</i>	

	Turbulent Flames Tykeson 111 Session Chair: D. Lignell	Biomass/Fire Dining 205 Session Chair: E. Belmont
2:20 – 2:40	1A12: Physics-based turbulence forcing scheme for numerical simulations of reacting flows <i>G. Beardsell, G. Blanquart</i>	1B12: Towards a data driven model of fire intensity for chaparral crown fires <i>J. Cobian-Iñiguez, A.H. Aminfar, M. Princevac</i>
2:40 - 2:55	BREAK - Hallway and Tykeson 111	
	Innovative Technologies Tykeson 111 Session Chair: J. Cole	Soot/Diagnostics Dining 205 Session Chair: F. Miller
2:55 - 3:15	1A13: Effects of differential diffusion on nonpremixed-flame temperature <i>A. Almagro, O. Flores, M. Vera, A. Liñán, A.L. Sánchez, F.A. Williams</i>	1B13: Simplified modeling for soot formation from solid fuels <i>A.J. Josephson, R.R. Linn, D.O. Lignell</i>
3:15 - 3:35	1A14: Combustion of graphite nanoparticles with copper (II) oxide in a thermogravimetric analyzer with evolved gas analysis <i>S. Stuhlman, K. Kumar</i>	1B14: LES soot-radiation predictions of buoyant fire plumes <i>H. Koo, J.C. Hewson, R.C. Knaus</i>
3:35 - 3:55	1A15: High burning rate dip-coated nanothermite-clad wires <i>E. Tolmachoff, J. Kalman, J. Essel, A. Ihnen</i>	1B15: Experimental characterization of liquid-gas slip in high pressure, swirl stabilized, liquid-fueled combustors <i>B. Emerson, H. Ozogul</i>
3:55 – 4:15	1A16: Hydrocarbon-fueled electrical power generator with no moving parts <i>J. Wongwiwat, P. Bhuripanyo, P. Ronney</i>	1B16: Study of high temperature absorption lineshapes using frequency comb lasers <i>P. Schroeder, M. Cich, J. Yang, B. Drouin, R. Cole, A. Draper, G. Rieker</i>
5:30	Reception – Dining Hall	



Tuesday, 27 March 2018

7:30 – 12:00 **Registration:** Tykeson Hall7:30 – 8:00 **Continental Breakfast:** Dining Hall8:00 - 8:05 **Opening Remarks and Announcement in Tykeson 111:** Prof. Christopher Hagen, *Oregon State University*8:05 – 9:05 **Plenary Lecture in Tykeson 111:** Erica L. Belmont, *University of Wyoming***Session Chair:** Christopher Hagen, *Oregon State University*

9:05 – 9:15	BREAK	
	Kinetics I Tykeson 111 Session Chair:	Diagnostics Dining 205 Session Chair: B. Windom
9:15 – 9:35	2A01: Attractive manifolds: Progress in PCA parameterization of chemical source terms <i>E. Armstrong, J.C. Sutherland</i>	2B01: Synchrotron-based measurement of aluminum agglomerates above the burning surface of solid propellants at motoring conditions <i>A.R. Demko, J. Kalman, K.E. Matusik, A. Kastengren</i>
9:35 - 9:55	2A02: Studying explosive modes and cool flames with transient, non-premixed flamelets <i>M.A. Hansen, J.C. Sutherland</i>	2B02: Toward a calibration-free multi-band multi-wavelength pyrometry using low dynamic range CMOS cameras for combustion diagnostics <i>V.M. Sauer, S.N. Roohani, I. Schoegl</i>
9:55 - 10:15	2A03: A chemical kinetic model reduction and pyrolysis model for wildland fire direct numerical simulation <i>J.F. Glusman, A.S. Makoweicki, N.T. Wimer, K.E. Niemeyer, G.B. Rieker, P.E. Hamlington, J.W. Daily</i>	2B03: Time resolved flame temperature measurements using a streak camera spectrometer <i>M. Orth, R. Orth, J. Gab, A. Satija, J. Hayashi, F. Akamatsu, R. Lucht, T. Pourpoint</i>
10:15 - 10:35	2A04: Role of NNH in low-NOx hydrogen combustion <i>A.L. Purohit, A. Nalbandyan, A.H. Chime, P.C. Malte, I.V. Novosselov</i>	2B04: Visualizing fuel mixture fraction via high-speed extinction imaging of C70 Fullerene doped diesel sprays <i>S. Daly, C. Hagen, J. Manin, E. Cenker, L. Pickett, S. Skeen</i>
10:35 – 10:50	BREAK - Hallway and Tykeson 111	
	Kinetics II Tykeson 111 Session Chair: G. Blanquart	Educational Outreach/Diagnostics Dining 205 Session Chair: A.J. Fillo
10:50 – 11:10	2A05: A new jet-stirred reactor for chemical kinetics experiments <i>A.A. Davani, P.D. Ronney</i>	2B05: Ethane cracker diagnostic development <i>M.R. Lane, D.R. Wagner, Z.A. Taie, C.L. Hagen</i>

	Kinetics II Tykeson 111 Session Chair: G. Blanquart	Educational Outreach/Diagnostics Dining 205 Session Chair: A.J. Fillo
11:10 – 11:30	2A06: Chemical kinetic modeling of natural gas engine combustion with dedicated exhaust gas recirculation <i>C. Van Roekel, D.T. Montgomery, D.B. Olsen</i>	2B06: LIB LAB the Library Laboratory: Hands-on multimedia science communication <i>A.J. Fillo, K.E. Niemeyer</i>
11:30 – 11:50	2A07: Experimental and computational investigation of partially-premixed methoxymethane flames <i>Y. Jiang, R. Gehmlich, T. Knoblinger, K. Seshadri</i>	2B07: GridFire: An online interactive tool for fire science education <i>J. Cobian, M. De Leo-Winkler, T. Arp, M. Princevac</i>
11:50 - 12:10	2A08: Effect of CO ₂ dilution on ignition probability of CH ₄ /air ignition kernels <i>J.M. Bonebrake, T.M. Ombrello, D.L. Blunck</i>	2B08: An educational, online video training course to improve biomass cookstove research <i>V.H. Rapp, D.L. Wilson, J.J. Caubel, S.S. Chen, A.J. Gadgil</i>
12:10	Adjourn	

2018 WSSCI Spring Technical Meeting Author List

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Baumgardner, M.1C01	Fillo, A.J. 1A10, 2B06	Ma, X. 1A05	Sauer, V.M. 1A04, 2B02
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Burali, N. 1A11	Hansen, M.A. 2A02	Mueller, C.J. 1C02	Stuhlman, S. 1A14
Carmignani, L.1B08	Hayashi, J. 2B03	Nalbandyan, A. 2A04	Sung, C.-J. 1C03
Caubel, J.J.2B08	Hecht, E.S. 1B01	Naralasetti, V. 1A04	Sutherland, J.C. 1B05, 2A01, 2A02
Cenker, E.2B04	Hewson, J.C. 1B14	Narayanam, G.N. 1A03	Taie, Z.A. 1C04, 2B05
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Cole, R.1B16	Innerkofler, M. 1A01	Orth, R. 2B03	Vera, M. 1A13
Cuoci, A. 1A01	Jadhav, A. 1A09	Ozogul, H. 1B15	Villaverde, G. 1C04
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