WSS/CI Western States Section/Combustion Institute

2024 SPRING TECHNICAL MEETING
WESTERN STATES SECTION OF THE COMBUSTION INSTITUTE
Hosted by University of Utah – Salt Lake City, UT

Monday, 4 March 2024

7:30 – 4:00 Registration - Warnock Engineering Building (WEB) Lower Level
7:30 – 8:00 Breakfast - Warnock Engineering Building (WEB) Lower Level
8:00 - 8:20 Welcome Address -
Welcome Remarks - Alex G. Novoselov, Local Host, *The University of Utah*

8:20 – 9:20 Plenary Lecture: Jacqueline Chen, *Senior Scientist, Sandia National Laboratory*

9:20 – 9:30	**Transition to Morning Sessions**	
	Biomass Combustion and Gasification I **Session Chair:**	**Chemical Kinetics I** **Session Chair:**
9:30 – 9:50	**1A01: 236BCGQ-0028 Combustion kinetics and evolved gas analysis of lignocellulose** *D. Stucker, K. Kumar*	**1B01: 236CKQ-0014 Gasification of coal/plastic mixtures: Fundamental studies in a laminar entrained-flow reactor** *A. Kareem, K.J. Whitty*
9:50 – 10:10	**1A02: 236BCGQ-0052 Development of a reactor network model for entrained flow gasification** *E.C. Monson, B.R. Adams, A. Fry, K. Crapo*	**1B02: 236CKQ-0048 Are carbenes really important in oxymethylene ether decomposition?** *J. Sampathkumar, P. Shah, T. Chatterjee, K. Lockwood, N. Labbe*
10:10 – 10:30	**1A03: 236BCGQ-0027 Demonstrating the feasibility of biomass pyrolysis liquid, coal, plastic oil mixtures for entrained flow gasification** *L. Hughey, D.R. Wagner, K.J. Whitty*	**1B03: 236CKQ-0056 Comparison of the thermal destruction of C1 and C2 fluorine/chlorine homologues in a pilot-scale research furnace: Modeling and experiments** *M. Denison, D. Swensen, M. Cremer, B. Van Otten, J. Wendt, J. Krug, G. Dildine, W. Roberson, E. Shields, J. Mattila, P. Lemieux, W. Linak, P. Burnette, S. McDonald, C. Whitfield*
10:30 – 10:50	**1A04: 236BCGQ-0022 Investigating the carbonation potential of calcined limestone (CaO) in the presence of steam and syngas** *S. Abu Sufyan, K.J. Whitty, M.M. Nigra*	**1B04: OUT-01 Procedure and analysis methods for hydrogen isotopic reactivity analysis** *J. Wilde, L. Whitesides, E. Saxey, A. Clark, M. Argyle, L. Baxter*
10:50 – 11:10	**BREAK -** Warnock Engineering Building (WEB) Lower Level	

	Biomass Combustion and Gasification II Session Chair:	Chemical Kinetics II Session Chair:
11:10 – 11:30	**1A05: 236BCGQ-0026 Performance of an entrained-flow gasifier using biomass-derived liquid** *D.R. Wagner, L. Hughey, K. Whitty*	**1B05: 236CKQ-0059 Isotopic effects on hydrogen combustion and flame speeds** *E.B. Saxey, J.C. Wilde, A.E. Clark, L.T. Whitesides, M.D. Argyle, L.L. Baxter*
11:30 – 11:50	**1A06: 236BCGQ-0029 Thermogravimetry and evolved gas analysis during the pyrolysis of lignocellulosic biomass** *D. Stucker, K. Kumar*	**1B06: 236CKQ-0057 Aspects of fundamental reaction kinetics and legacy combustion properties in data-assimilated combustion reaction model development** *W. Dong, Y. Zhang, G.P. Smith, H. Wang*
11:50 – 12:10	**1A07: 236BCGQ-0049 Simulation of non-structural carbohydrates in live vegetative fuel** *M.E. Gee, D. Behnoudfar, K.E. Niemeyer, D.L. Blunck*	**1B07: OUT-02 The intricate transport and kinetic structure of hydrogen flames** *J. Wilde, L. Whitesides, E. Saxey, A. Clark, M. Argyle, L. Baxter*
12:10 – 12:30	**1A08: 236BCGQ-0043 Pressurized steam gasification of pine – Inhibition by hydrogen and carbon monoxide** *J. Kim, C. Zhou, K. Engvall, K.J. Whitty*	**1B08: 236LFQ-0041 Comparison of chemical mechanisms for simulation of hydrogen/ammonia combustion** *J.S. Lee, A.G. Novoselov*
12:30 – 2:00	**LUNCH –** On your own **Women in Combustion Lunch –**	
	Environmental Aspects of Combustion Session Chair:	**Fires and Fire Safety Session Chair:**
2:00 – 2:20	**1A09: 236EACQ-0002 Hydrogen blending into residential appliances in the New Mexico field demonstration** *Y. Zhao, M. Bushell, P. Glanville, J. McNelis, A. Serrano de Rivera*	**1B09: 236FSQ-0038 TG-FTIR-GC study of pyrolysis of live foliage** *M.W. Andersen, D.L. Blunck, C.L. Hagen*
2:20 - 2:40	**1A10: 236EACQ-0011 A gradient of gas composition in a wildland fire flame** *D.R. Weise, T.J. Johnson, T.L. Myers, W.M. Hao, S. Baker, T.H. Fletcher, J. Palarea-Albaladejo, M. Alizadeh*	**1B10: 236FSQ-0010 The parametric analysis of a new computer vision algorithm for the prediction of the fire rate of fire spread in laboratory scale** *E. Ameri1, K. Awayan, C. Duran, P. Mendoza Rueda, D. Sepulveda, D.C. Abrenica, J. Cobian-Iniguez*
2:40 - 3:00	**1A11: 236EACQ-0037 Catalytic combustion of hydrogen/methane fuel blends** *Z. Ferman, B. Padak*	**1B11: 236FSQ-0051 Ignition and burning behavior of live and dead thermally thick woody fuels** *N. Gardner, D.L. Blunck*
3:00 – 3:20	**1A12: 236EACQ-0054 CFD study of particle-laden flow: Application to PM sensors** *L. Quarshie, D. Webb, R.S. Lewis, M.R. Jones*	**1B12: 236FSQ-0021 Predicting fire-dependent and dynamic particulate emission factors** *A.J. Josephson*
3:20 – 3:40	**1A13: 236SCSQ-0034 Towards prediction of ash deposition rates from combustion of a wide variety of fossil and biomass solid fuels** *X. Li, J.O.L. Wendt*	**1B13: 236FSQ-0019 The influence of lignin in wildland fuels combustion – An experimental study and TG analysis** *S. Saha, J. Cobian-Iñiguez*
3:40 - 4:00	**BREAK -** Warnock Engineering Building (WEB) Lower Level	

	Soot and Nanomaterials Session Chair:	Laminar and Turbulent Flames Session Chair:
4:00 - 4:20	**1A14: 236SNQ-0040 Formation of soot clusters from hydrocarbons under pyrolysis conditions** *D.K. Eyice, T. Strickland, J. Manin, K. Wan, F.J. Guzman*	**1B14: 236TFQ-0046 Impact of Soret diffusion on the effective species Lewis number model in premixed turbulent flames** *M.X. Yao, A. Baumgart, G. Blanquart*
4:20 - 4:40	**1A15: 236SNQ-0045 Integration of Sootlib into one-dimensional unsteady flames** *J. Berryhill, J. Porter, K. Spinti, D. Lignell*	**1B15: 236LFQ-0042 Effect of oscillating strain rates on premixed counterflow flame** *J.G. Rivera Lizarralde, A. Potnis, A. Saha*
4:40 - 5:00	**1A16: 236SDSQ-0020 Soot distribution and transport in droplet combustion experiments on the International Space Station** *C.L. Vang, B.D. Shaw*	**1B16: 236MNCQ-0024 Experimental evaluation of swirl-venturi rapidly mixed tubular burners for hydrogen combustion** *V.M. Sauer, J. Vasquez, J. Sanchez*
6:00	**Reception –** Alumni House Ballroom	

WSS/CI Western States Section/Combustion Institute

Tuesday, 5 October 2024

7:30 – 12:00 Registration: Warnock Engineering Building (WEB) Lower Level
7:30 – 8:00 Breakfast: Warnock Engineering Building (WEB) Lower Level
8:00 - 8:05 Opening Remarks and Announcement:
8:05 – 9:05 Plenary Lecture: Bret Windom, *Associate Professor, Colorado State University*
Title:
Session Chair:

9:05 – 9:15	**Transition to Morning Sessions**	
	Internal Combustion, Gas Turbines, and Rocket Engines **Session Chair:**	**Numerical Methods and Machine Learning Techniques Applied to Combustion** **Session Chair:**
9:15 – 9:35	**2A01: 236IGRQ-0039 Numerical investigation of mixture formation at different start of injection timings for a direct injection LPG engine** *R. Churchill, B. Windom*	**2B01: 236NUMQ-0044 Ensuring $\Sigma sYs = 1$ in transport of species mass fractions** *A. Baumgart, G. Blanquart*
9:35 - 9:55	**2A02: 236IGRQ-0031 Direct injection optimization of a heavy-duty propane engine using computational and experimental methods** *T. Fosudo, J. Felipe Rodriguez, D. Olsen*	**2B02: 236NUMQ-0023 Physics-informed neural network simulations of premixed flames in counterflow, Bunsen, and Hele-Shaw configurations** *B.L. Cohen, Z. Zhou, P.D. Ronney*
9:55 - 10:15	**2A03: 236IGRQ-0009 The performance of a range of alcohols blended with military jet fuel in a diesel engine** *J. Cowart, D.L. Prak*	**2B03: 236NUMQ-0055 Machine learning model development based on real-time data and its application to control fire-side corrosion at a cycling PC power plant** *H.-S. Shim, Z. Zhan, A. Chiodo, J. Tuttle*
10:15 - 10:35	**2A04: 236IGRQ-0058 Heat transfer analysis of regeneratively cooled bi-propellant rocket engines and test stand development** *B. Windom, D. Cornett, J. Roberts*	**2B04: 236NUMQ-0030 Challenges of reduced-order modeling with reconstruction aware neural networks** *D. Littlewood, J.C. Sutherland*
10:35 - 10:55	**2A05: 236IGRQ-0018 An assessment of the NOx emissions performance of hydrogen Lean Direct Injected (LDI) nozzles in comparison to a fully pre-mixed system** *M. Overbaugh, V. McDonell*	**2B05: 236FSQ-0050 Modeling ember behavior and accumulation patterns during a wildfire** *K. Gellerman, T. Banerjee, Y.-C. Chien*
10:55 – 11:15	**BREAK -** Warnock Engineering Building (WEB) Lower Level	

	Diagnostics / Detonations, Explosions, and Supersonic Combustion Session Chair:
11:15 – 11:35	**2A06: 236DIAQ-0047 Experimental observation of the SO_3/H_2SO_4 equilibrium in flue gas conditions with continuous monitoring methods for SO_3** *A. Biasioli, J. Kriesel, I. Dunayevskiy, R. Himes, L. Muzio, J. Santamaria, D. Dunn-Rankin, Y.-C. Chien*
11:35 – 11:55	**2A07: 236DESQ-0017 Imaging pyrometry to estimate LOX-LNG impact explosion temperatures** *J. Stock, B. Lambert, R. Reveles, M. Bangham*
11:55 – 12:15	**2A08: 236DESQ-0013 Analysis on analog system of detonation with two step chemical reaction model** *Y. Sun*
12:15	**Adjourn** **Industrial Combustion and Gasification Research Facility Tour – 1:30** And mark your calendars now for the: **14th United States National Combustion Meeting** **16 to 19 March 2025** **Boston, Massachusetts**