Schedule of Events - Weekend

Cantera Workshop

Sunday: 09:00 – 16:00 CDT

Cantera is an open-source suite of software tools for problems involving kinetics, thermodynamics, and transport. The Cantera Workshop and Forum will cover basic and advanced usage of Cantera and getting started with Cantera development. The Workshop will be hosted by the lead developers of Cantera. For more information please visit https://workshops.cantera.org/.

Schedule of Events – Week

Career Development and Mentoring mixer

Monday 17:15 to 18:45 (CDT) via Zoom

Open to US members from all career levels, this new event is intended to form a matrix of potential mentors and mentees based on their mentoring needs/expertise. The goal is to provide support for members at any point in their career, from students wishing to explore industry options and hone their resumes, to associate professors looking for advice to expand their research program in new directions.

Women in Combustion Lunch Event

Tuesday 11:50 - 12:50 (CDT) via Zoom

This event is a networking luncheon for female-identifying participants. Founded in 2007 with the goal to promote and advance women in the field of combustion, the Women in Combustion (WiC) group is made up of industry professionals, students, professors, and government workers. This event will involve exchanges among female participants from academia, government, and industry on topics determined from a participant survey. Discussions will be facilitated through different break-out rooms and individual conversations. The ultimate goal is to learn from each other and create a sense of community where everyone can share their thoughts and ideas freely.

All times listed are CDT

12th U.S. National Combustion Meeting, Texas A&M University, Virtual

Monday, 24 May 2021

Plenary Room
08:50 – 09:00 **CDT**

Welcome and Opening Comments

Anthony J. Marchese, Chair of the United States Sections of The Combustion Institute
Al Ratner, Program Chair, 12th U.S. National Combustion Meeting
Eric L. Petersen, Local Host, 12th U.S. National Combustion Meeting

Break
9:00 – 9:10 **CDT**

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair: M.P. Burke*	**Fire Research** *Session Chair: X. Zhao*	**I.C. Engines** *Session Chair: B. Windom*	**Turbulent Combustion** *Session Chair: S. Yang*	**Particulates and Multiphase Flows** *Session Chair: D. Jarrahbashi*	**Biomass & Bio-Fuels** *Session Chair: P. Westmoreland*	**Laminar Flames** *Session Chair: T. Sikes*	**Droplets & Spray** *Session Chair: E. Shafirovich*
09:10 – 09:30 **CDT**	1A01: An experimental kinetics study of isopropanol pyrolysis and oxidation behind reflected shock waves *S.P. Cooper, C.M. Grégoire, O. Mathieu, S.A. Alturaifi, E.L. Petersen*	1B01: Analysis of effectiveness of suppression of lithium ion battery fires with a clean agent *A.O. Said, S.I. Stoliarov*	1C01: Implementation of a full oxides of nitrogen formation mechanism in a zero-dimensional model of a natural gas fueled engine *J. Nowlin, T.J. Jacobs*	1D01: Closure modeling for the conditional momentum equation in turbulent premixed jet flames at low and high Karlovitz numbers *J. Lee, M.E. Mueller*	1E01: An in situ adaptive tabulation based approach to multi-component transcritical flow simulation *H. Zhang, S. Yang*	1F01: The role of pyrolysis and gasification in a carbon negative economy *R.C. Brown*	1G01: Planar flame initiation and propagation with variable reaction progress *G. Xiao, H. Ge, P. Zhao*	1H01: Ignition probability of fuels and oils undergoing hot-surface ignition *D.S. Teitge, J.C. Thomas, E.L. Petersen*

All times listed are CDT

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair:* *M.P. Burke*	**Fire Research** *Session Chair:* *X. Zhao*	**I.C. Engines** *Session Chair:* *B. Windom*	**Turbulent Combustion** *Session Chair:* *S. Yang*	**Particulates and Multiphase Flows** *Session Chair:* *D. Jarrahbashi*	**Biomass & Bio-Fuels** *Session Chair:* *P. Westmoreland*	**Laminar Flames** *Session Chair:* *T. Sikes*	**Droplets & Spray** *Session Chair:* *E. Shafirovich*
09:30 – 09:50 **CDT**	1A02: A comparative shock tube and time-resolved investigation of the effectiveness of oxygenated biofuels on suppressing soot formation *R.K. Rahman, E. Ninnemann, A. Laich, S. Vasu*	1B02: Burning characteristics of live spruce needles *A.D. Ahmad, A.M. Abubaker, N. Akafuah, M. Finney, J.M. Forthofer, A. Salaimeha, K. Saito*	1C02: A numerical study of soot formation in Compression-Ignition (CI) of gasoline and diesel fuels *K. Cung, A. Moiz, T. Brigg, D.C. Bitsis Jr.*	1D02: PeleLM-FDF large eddy simulator of turbulent combustion *A. Aitzhan, S. Sammak, P. Givi, A. Nouri*	1E02: Effect of process parameters on silica nanoparticle formation using flame spray pyrolysis *D. Dasgupta, P. Pal, R. Torelli, S. Som, J. Libera*	1F02: Toward elementary chemical mechanisms of pyrolysis biofuel production: pyrolyzing hemicellulose mono-saccharides *A. Jain, A. Bose, P.R. Westmoreland*	1G02: Numerical study of fuel-rich hydrogen-air flames with detailed and one-step reduced chemical-kinetic mechanisms *J. Grana-Otero, J.C. Huertas, A.L. Sanchez, F.A. Williams*	1H02: Impact of preferential vaporization of liquid fuel droplet on flame extinction *S.J. Lim, F.L. Dryer, S.H. Won*
09:50 – 10:10 **CDT**	1A03: A modeling, experiment, and theory approach to low-temperature diethyl ether oxidation *C.R. Mulvihill, S.J. Klippenstein, A.D. Danilack, C.F. Goldsmith, M. Demireva, L. Sheps*	1B03: Confined combustion of polymeric solid materials in microgravity *Y. Li, Y.-T.T. Liao, P.V. Ferkul, M.C. Johnston, C. Bunnell*	1C03: Ignition propensities of toluene reference fuels perturbed by NO addition *A. Robinson, D. Török, D. Carpenter, M. Lackner, F.L. Dryer, S.H. Won*	1D03: Experiment-Based modeling of turbulent flames with inhomogeneous inlets *R. Ranade, T. Echekki, A.R. Masri*	1E03: Characterizing flow properties of various uncured solid composite propellants *A. Hong, C.A.M. Dillier, T.E. Sammet, E.L. Petersen*	1F03: Pore-resolving simulations of char particle combustion and automated image analysis to improve models for reactor-scale codes *D. Liang, S. Singer*	1G03: An experimental and numerical study of the sooting tendency of IBE/surrogate diesel blends in laminar diffusion flames *A. Singh, H. Chandrasekha, N. Tsolas*	1H03: Time resolved tomographic laser induced fluorescence for hydrodynamic measurements *M. Gomez-Gomez, A.M. Braun, M.N. Slipchenko, S. Roy, T.R. Meyer*

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	Reaction Kinetics *Session Chair:* *M.P. Burke*	**Fire Research** *Session Chair:* *X. Zhao*	**I.C. Engines** *Session Chair:* *B. Windom*	**Turbulent Combustion** *Session Chair:* *S. Yang*	**Particulates and Multiphase Flows** *Session Chair:* *D. Jarrahbashi*	**Biomass & Bio-Fuels** *Session Chair:* *P. Westmoreland*	**Laminar Flames** *Session Chair:* *T. Sikes*	**Droplets & Spray** *Session Chair:* *E. Shafirovich*
10:10 – 10:30 **CDT**	1A04: The low and intermediate temperatures oxidation of dimethyl ether up to 100 atm in a supercritical pressure jet stirred reactor *C. Yan, H. Zhao, Z. Wang, G. Song, Y. Lin, Y. Ju*	1B04: Ignition energies and lower flammability limit testing *T. Atherley, Z. Browne, O. Mathieu, E.L. Petersen*	1C04: Measurements of transient atmospheric discharge to determine thermal power and energy in plasma *J. Shaffer, S. Zare, O. Askari*	1D04: Investigation of principal component methodologies to capture low-temperature chemistry in LES-PDF *N. Kincaid, A. Newale, P. Pepiot*	1E04: Microwave plasma formation of nanographene and graphitic carbon black *R. Vander Wal, R. Kumal, A. Gharpure, V. Viswanathan, A. Mantri, G. Skoptsov*	1F04: Measured and modeled aerosol emission factors from lignocellulosic biomass and major constituent pyrolysis and combustion *L.P. McLaughlin, E.L. Belmont*	1G04: Numerical simulation of the effect of magnetic fields on CO and soot formation *E.E. Chukwuemeka, T.T. Charalampopoulo, I.M. Schoegl*	1H04: Autoignition of liquid hydrocarbon droplets in lean premixed methane/air mixtures at elevated pressure and temperature in a rapid compression machine *S. Bhoite, D. Kalfas, A.J. Marchese*
Break 10:30 – 10:50 **CDT**								
Plenary Room 10:50 – 11:50 **CDT** **U.S. Department of Energy Panel:** *Alicia Lindauer, Bioenergy Technologies Office, U.S. Department of Energy* *Michael Weismiller, Vehicle Technologies Office, U.S. Department of Energy* *Moderator: J. O'Connor*								
Lunch Break 11:50 – 12:50 **CDT**								
Plenary Room **Department of Energy Panel Discussion**								
Break 12:50 – 13:00 **CDT**								

All times listed are CDT

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair:* *C. Saggese*	**Fire Research** *Session Chair:* *S. Adusumilli*	**I.C. Engines** *Session Chair:* *T. Jacobs*	**Turbulent Combustion** *Session Chair:* *P. Pepiot*	**Particulates and Multiphase Flows** *Session Chair:* *S.G. Tuttle*	**Alternative Fuels and Emissions** *Session Chair:* *D. Rothamer*	**Laminar Flames** *Session Chair:* *E.L. Petersen*	**Droplets & Spray** *Session Chair:* *F. Carbone*
13:00 – 13:20 **CDT**	1A05: Styrene high-temperature decomposition *T. Sikes, R.A. Schwind, P.T. Lynch, A. Comandini, R.S. Tranter*	1B05: Downstream heating and flow dynamics of inclined fires *X. Rena, E. Sluder, M.V. Heck, T.P. Grumstrup, M.A. Finney, M.J. Gollner*	1C05: Evaluation of G-equation approach to model flame kernel growth in a diluted methane-air mixture *J. Kim, R. Scarcelli, S. Biswas, I. Ekoto*	1D05: Simulation of turbulent mixing using the Hierarchical Parcel Swapping (HiPS) model *M. Behrang, I. Wheeler, A. Kerestin, T. Starick, H. Schmidt, D. Lignell*	1E05: Detailed study of the formation of soot and PAH intermediates in a highly-controlled toluene-doped counterflow diffusion flame *K. Gleason, A. Gomez*	1F05: Slurry of magnesium hydride and jet fuel: A potential net-zero carbon dioxide emitting aviation fuel *J. Scarponi, Y.J. Wu, A.C. Powell, J. Jayachandran*	1G05: Schlieren-based measurements of propane flame speeds at extreme temperatures *A.J. Susa, L. Zheng, R.K. Hanson*	1H05: Droplet combustion studies of n-butyl acetate synthesized by a new biological process and comparisons with neat n-butyl acetate *Y. Wang, Z. Chen, M. Haefner, S. Guo, N. DiReda, Y. Ma, Y. Wang, C.T. Avedisian*
13:20 – 13:40 **CDT**	1A06: A soot-based global pathway analysis method for reacting kinetic analysis in sooting flames *D. Zhou, S. Yang*	1B06: Concurrent-flow flame spread in a narrow flow duct in microgravity – effects of flow confinement and radiation reflection *Y. Li, Y.-T.T. Liao, P.V. Ferkul, M.C. Johnston*	1C06: Effects of non-thermal termolecular chemistry on detonation development in hydrogen (H_2) / methane (CH_4) - air mixtures *S. Desai, Y. Tao, R. Sivaramakrishnan, Y. Wu, T. Lu, J.H. Chen*	1D06: Data-based reconstruction of joint scalars' probability density functions and implications for turbulent combustion modeling *K.M. Gitushi, R. Ranade, T. Echekki*	1E06: Numerical investigation of heterogeneous dimer-based nucleation model on soot sensitivity to strain rate *E. Quadarella, J. Guo, H.G. Im*	1F06: Overcoming challenges of nitrogen oxide emissions from ammonia combustion *P. Papas, L.L. Smith*	1G06: Two-dimensional simulation of cool and double flame formation induced by the laser ignition under shock-tube conditions *T. Zhang, A.J. Susa, R.K. Hanson, Y. Ju*	1H06: Experimental observations of flame radiance and luminosity during single droplet combustion in microgravity *D.L. Dietrich, T.S. Krause, V. Nayagam, F.A. Williams*

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	Reaction Kinetics *Session Chair:* *C. Saggese*	**Fire Research** *Session Chair:* *S. Adusumilli*	**I.C. Engines** *Session Chair:* *T. Jacobs*	**Turbulent Combustion** *Session Chair:* *P. Pepiot*	**Particulates and Multiphase Flows** *Session Chair:* *S.G. Tuttle*	**Alternative Fuels and Emissions** *Session Chair:* *D. Rothamer*	**Laminar Flames** *Session Chair:* *E.L. Petersen*	**Droplets & Spray** *Session Chair:* *F. Carbone*
13:40 – 14:00 **CDT**	1A07: A ring-additivity method for benzenoid PAH property estimation *C. J. Pope*	1B07: Numerical study of the effects of confinement on large-scale fires in microgravity *W. Cui, Y.-T.T. Liao*	1C07: Combustion heat release transformation in diesel-methane dual fuel combustion: Observations from different engine platforms *K. Partridge, A. Narayanan, N. Anandaraman, D. Hariharan, K.K. Srinivasan, S.R. Krishnan*	1D07: Supersonic combustion simulations via a fully compressible reacting flow solver with detailed transport and chemistry based on OpenFOAM and Cantera *D. Zhou, S. Zou, S. Yang*	1E07: Impact of biofuel blends on black carbon emissions from a gas turbine engine *R. L. Vander Wal, R.R. Kumal, J. Liu, A. Gharpure, J.S. Kinsey, B. Giannelli, J. Stevens, C. Leggett, R. Howard, M. Forde, A. Zelenyuk, K. Suski, G. Payne, J. Manin, W. Bachalo, R. Frazee, T.B. Onasch, A. Freedman, D.B. Kittelson, J.J. Swanson*	1F07: Experimental investigation of multi-component emulsion fuel stability *N. Hentges, A. Ratner*	1G07: Turbulence generated by propagating cellular laminar flamefront *Z. Liu, V.R. Unni, S. Chaudhuri, R. Sui, C.K. Law, A. Saha*	1H07: Combustion of gelled HAN/methanol/ water propellants *R.E. Ferguson, E. Shafirovich*
Break 14:00 – 14:10 **CDT**								

All times listed are CDT

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair:* *O. Mathieu*	**Fire Research** *Session Chair:* *P.B. Sunderland*	**Industrial & Applied Combustion** *Session Chair:* *M. Baumgardner*	**Combustion Theory and Modeling** *Session Chair:* *B. Perry*	**Novel Combustion Techniques** *Session Chair:* *V. McDonnell*	**Alternative Fuels and Emissions** *Session Chair:* *G. Kukkadapu*	**Diagnostics** *Session Chair:* *G. Rieker*	**Detonations** *Session Chair:* *J. Jayachandran*
14:10 – 14:30 **CDT**	1A08: Shock-tube study of ammonia pyrolysis using NH_3 laser absorption for assessment of modern kinetics mechanisms *S.A. Alturaifi, O. Mathieu, E.L. Petersen*	1B08: Towards Explosion Vent Analyzer (EVA) computational model predicting explosion parameters of fuel blends *S. Ogunfuye, H. Sezer, V. Akkerman*	1C08: Spinning and standing waves in annular geometries with periodically spaced injectors *V. Acharya, T. Lieuwen*	1D08: A parametric study of MILD oxy-coal combustion in a plug flow reactor *H. Zhou, T.A. Ring, J.C. Sutherland*	1E08: Laser plasma emission and kernel temperature distribution *S. Jo, J. Kim, J.P. Gore*	1F08: Morphology, composition and optical properties of jet enginelike soot made by flame spray pyrolysis *M.R. Kholghy*	1G08: Demonstration and prediction of precise temperature measurements over a wide range using the Pr:YAG phosphor *D. Witkowsk, D.A. Rothamer*	1H08: The Kolmogorov number in large eddy simulations of calorically perfect gas detonations: Tuning parameter or a constant? *B. Maxwell, W.H. Wang*
14:30 – 14:50 **CDT**	1A09: Theoretical kinetics predictions for $NH_2 + HO_2$ *S.J. Klippenstein, P. Glarborg*	1B09: A computational scenario based assessment of hydrogen isotope (^3H) fire safety *A.L. Brown, R.C. Shurtz, L.K. Takahashi, M.R. Kesterson, J.E. Laurinat*	1C09: Optimization for complex fire phenomena using adaptive mesh refinement *C. Lapointe, S. Simons-Wellin, P.E. Hamlington*	1D09: Asymptotic analysis of premixed n-alkane cool flame propagation *V. Nayagam, F.A. Williams, D.L. Dietrich*	1E09: 2D modeling of the non-equilibrium excitation effects on $H_2/O_2/N_2$ ignition in a nanosecond plasma discharge *X. Mao, H. Zhong, Y. Ju*	1F09: Effect of fuel composition and octane sensitivity on PAH and soot emissions of gasoline-butanol blend surrogates *K. Kalvakala, P. Pal, G. Kukkadapu, M. McNenly, S. Aggarwal*	1G09: Effect of DMMP doping on emission spectra of methane-air flames *M.A. Turner, P. Parajuli, W.D. Kulatilaka, E.L. Petersen*	1H09: Effects of grid resolution and boundary conditions on 2D simulations of single-headed hydrogen detonations *P. Meagher, S.S. Dammati, X. Zhao, A.Y. Poludnenko, X. Shi, J. Crane, H. Wang*
14:50 – 15:10 **CDT**	1A10: Evaluating the performance of bath gas mix-ture rules for General imple-mentation in chemically re-acting flow codes: Tests for multi-well, multi-channel reactions *L. Lei, M.P. Burke*	1B10: A sensitivity investigation of leaf-scale fire modeling to pyrolysis gas composition and reaction kinetics *P.R. Borujerdi, B. Shotorban, S. Mahalingam, D.R. Weise*	1C10: Stabilizing nickel-rich cathode materials by calcium doped gradient structure in high temperature aerosol synthesis *C. Yan, Y. Lin, Z. Wang, Y. Ju*	1D10: On using a simple 4-step combustion model to recover the universal $\mathcal{X}$ parameter and Zel'dovich number in reactive hydr-ocarbon mixtures *M. Peswani, B.McN. Maxwell*	1E10: Analysis of discharge mode transition in a concentric nanosecond discharge *S. Zare, O. Askari, J. Shaffer*	1F10: A numerical study on the effect of n-butanol addition to gasoline surrogate components on PAH emissions *A. Hardikar, K. Kalvakala, S. Aggarwal*	1G10: OH concentration and temperature measurements using femtosecond ultraviolet laser absorption spectroscopy *N. Liu, T.Y. Chen, Z. Wang, Y. Ju*	1H10: Simulating detonations by solving the spatially-filtered Euler equations *A. Baumgart, G. Beardsell, G. Blanquart*

All times listed are CDT

Break
15:10 – 15:30 **CDT**

Plenary Room
15:30 – 16:00 **CDT**

National Science Foundation Panel

John W. Daily, Ying Sun, and William Olbricht - Program Directors
Division of Chemical, Bioengineering, Environmental, and Transport Systems, National Science Foundation
Moderator: W. Kulatilaka

Break
16:00 – 16:05 **CDT**

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair: O. Owoyele*	**Fire Research** *Session Chair: B. Shotorban*	**Industrial & Applied Combustion** *Session Chair: I. Schoegl*	**Combustion Theory and Modeling** *Session Chair: A. Saha*	**Novel Combustion Techniques** *Session Chair: O. Mathieu*	**Alternative Fuels and Emissions** *Session Chair: S. Deng*	**Diagnostics** *Session Chair: R. Falkenstein-Smith*	**Detonations** *Session Chair: S. Jackson*
16:05 – 16:25 **CDT**	1A11: Combining genetic optimization and machine learning for chemical kinetic mechanism generation, as applied to hydrogen combustion *A. Mansfield, M. Yaw, J. Yuan*	1B11: Flame spread in the UL-94V test: Experimental measurement and modeling *C.G. McCoy, S.I. Stoliarov*	1C11: Pyrolysis of motor oil in contact with high-temperature surfaces leading to solid deposit formation *R. Juarez, N. Gutierrez, E.L. Petersen*	1D11: Frhodo: simulate and optimize chemical kinetic measurements *T. Sikes, R.S. Tranter*	1E11: Non-Equilibrium Plasma Coupled Flow Reactor Studies of plasma-assisted kinetics of Iso-octane *H. Chandrasekhar, N. Tsolas*	1F11: Mid-infrared laser absorption spectroscopy and ignition delay time measurements inside a shock tube during advanced renewable fuels ignition at high pressure *E. Ninnemann, A. Laich, S.S. Vasu*	1G11: Laser-induced fluorescence and infrared absorption diagnostics of potential PO_2 precursors *P. Parajuli, C.R. Mulvihill, Y. Wang, E.L. Petersen, W.D. Kulatilaka*	1H11: Sensitivity of deflagration-to-detonation transition to the ignition propensity of the mixture *N. Dexter-Brown, N. DiReda, A. Hollander, J. Jayachandran*

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	Reaction Kinetics *Session Chair:* *O. Owoyele*	**Fire Research** *Session Chair:* *B. Shotorban*	**Industrial & Applied Combustion** *Session Chair:* *I. Schoegl*	**Combustion Theory and Modeling** *Session Chair:* *A. Saha*	**Novel Combustion Techniques** *Session Chair:* *O. Mathieu*	**Alternative Fuels and Emissions** *Session Chair:* *S. Deng*	**Diagnostics** *Session Chair:* *R. Falkenstein-Smith*	**Detonations** *Session Chair:* *S. Jackson*
16:25 – 16:45 **CDT**	1A12: Prediction of pollutant formation in Sandia Flame D using LES/PDF with additive PPAC *P. Sharma, P. Pepiot*	1B12: A suite of thermodynamic and transport properties for computational simulations with hydrogen isotopes *R.C. Shurtz, A.L. Brown, L.K. Takahashi, M.R. Kesterson, J.E. Laurinat*	1C12: Probing the reaction mechanisms of chemical looping-oxidative dehydrogenation of ethane using MBMS and TGA *Y. Tian, C.J. Montevecchi, F. Li, P.R. Westmoreland*	1D12: A technique for characterizing feature size and manifold quality of low-dimensional parameterizations *E. Armstrong, J.C. Sutherland*	1E12: Numerical modeling of plasma assisted ignition of ammonia in a dielectric barrier discharge reactor *T.S. Taneja, S. Yang*	1F12: Decarbonized combustion performance of a radiant mesh burner operating on pipeline natural gas mixed with hydrogen *Y. Zhao, S. Srivastava, V. Smirnov, V. McDonell*	1G12: Comparison of temperature adaptive calibration methods for laser induced fluorescence based fuel-in-oil instrument *S. Neupane, V.B. Colomer, D. Splitter, G.S. Jatana, W.P. Partridge*	1H12: Dynamics of gas-phase detonations in ethylene-air mixtures *S.S. Dammati, P. Meagher, A. Poludnenko, X. Zhao, X. Shi, J. Crane, R. Xu, H. Wang*
16:45 – 17:05 **CDT**	1A13: TChem - an open source computational chemistry software library for heterogenous computing platforms *O. Diaz-Ibarra, K. Kim, H.N. Najm, C. Safta*	1B13: Examining the effect of fire retardant on the combustion of wood via X-ray computed tomography *E. Boigné, N.R. Bennett, A. Wang, M. Ihme*		1D13: A chemical explosive mode anaysis aided global pathway analysis method *D. Zhou, H. Zhang, S. Yang*	1E13: Plasma assisted ammonia/air combustion in swirling flow conditions *J. Choe, W. Sun*	1F13: Effect of injection timing on cyclic variability in a dual fuel low temperature combustion engine. *A. Narayanan, K. Partridge, N. Anandaraman, D. Hariharan, S.R. Krishnan, K.K. Srinivasan*	1G13: Flame-drift velocimetry and flame morphology measurements with dual-perspective imaging in a shock tube *A.J. Susa, R.K. Hanson*	
Break 17:05 – 17:15 **CDT**								
Breakout Rooms 17:15 – 18:45 **CDT** **Career Development and Mentoring mixer**								
End of Day								

All times listed are CDT

Tuesday, 25 May 2021

Plenary Room
08:50 – 09:00 **CDT**

Announcements
Al Ratner, Program Chair, 12th U.S. National Combustion Meeting
Eric Petersen, Local Host, 12th U.S. National Combustion Meeting

Break
9:00 – 9:10

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair:* *C. Yan*	**Fire Research I** *Session Chair:* *W. Ji*	**I.C. Engines** *Session Chair:* *A.J. Marchese*	**Turbulent Combustion** *Session Chair:* *P. Pal*	**Combustion Theory and Modeling** *Session Chair:* *V. Acharya*	**Particulates and Multiphase Flows** *Session Chair:* *P. Papas*	**Diagnostics** *Session Chair:* *S. Neupane*	**Fire Research II** *Session Chair:* *R. Linn*
09:10 – 09:30 **CDT**	2A01: Understanding the effects of boundary layers on ignition of fuels with complex temperature dependence *M.A. Burnett, C. Daniels, L. Wei, M.S. Wooldridge, Z. Wang*	2B01: Flame spread over poly (methyl methacrylate) in a corner: Experiments and modelling *D.M. Chaudhari, G.J. Fiola, S.I. Stoliarov*	2C01: The effects of cyclic variability on zero-dimensional cycle simulations of NO_x emissions from integral compressor engines *K. Wallace, M. Patterson, T. Jacobs*	2D01: Large eddy simulations of turbulent flames with multiple and/or inhomogeneous inlets using in-situ adaptive manifolds *C.E. Lacey, M.E. Mueller*	2E01: Entropy wave generation by harmonically forced, convectively non-compact flames *T. John, V. Acharya, T. Lieuwen*	2F01: Binding energies and electronic structure of PAH ions and radicals *J. Giaccai, J.H. Miller*	2G01: Numerical investigation of the accuracy of particle image velocimetry technique in high-speed turbulent flows *S.S. Dammati, Y. Kozak, C. Rising, J. Reyes, K. Ahmed, A. Poludnenko*	2H01: Experimental quantification of firebrand generation from WUI fuels *M. Hajilou, S. Hu, T. Roche, P. Garg, M.J. Gollner*

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	Reaction Kinetics *Session Chair:* *C. Yan*	**Fire Research I** *Session Chair:* *W. Ji*	**I.C. Engines** *Session Chair:* *A.J. Marchese*	**Turbulent Combustion** *Session Chair:* *P. Pal*	**Combustion Theory and Modeling** *Session Chair:* *V. Acharya*	**Particulates and Multiphase Flows** *Session Chair:* *P. Papas*	**Diagnostics** *Session Chair:* *S. Neupane*	**Fire Research II** *Session Chair:* *R. Linn*
09:30 – 09:50 **CDT**	2A02: Chemical mode analysis of plasma thermal-chemical instability *H. Zhong, X. Mao, M.N. Shneider, Y. Ju*	2B02: Experimental investigation of fire spread across a vegetative fuel bed incorporating the effect of wind velocity *R.M. Ziazi, A. Singh, A.O. Said, W. Gong, B.E. Schardong, M. Patterson, N.S. Skowronski, A. Simeoni*	2C02: Combustion, knock and emissions in a port-fueled spark-ignition hydrogen engine: A CFD study *H. Ge, B. Lee, S. Parameswaran, P. Zhao*	2D02: Representativity of differential molecular diffusion by laminar flamelet for turbulent non-premixed combustion modeling *T. Xie, H. Wang*	2E02: Entropy source terms from exothermic chemical reactions: Implications for indirect, premixed combustion noise *P. Patki, V. Acharya, T. Lieuwen*	2F02: Surface growth, coagulation and oxidation of soot by a monodisperse population balance model *M.R. Kholghy, G.A. Kelesidis*	2G02: Comparison of automatic calibration algorithms for digital focusing color Schlieren systems *R. Frazee, I. Schoegl*	2H02: The combustion of noble-fir trees in the presence of an applied wind field *S.L. Manzello, S. Suzuki*
09:50 – 10:10 **CDT**	2A03: Extensive high-accuracy thermochemistry and group additivity values for automated generation of halocarbon combustion models *D. Farina Jr., S.K. Sirumalla, R.H. West*	2B03: Influence of enclosure dimensions on fire whirl geometry and burning rate *J.L. Dowling, S.B. Hariharan, M.J. Gollner, E.S. Oran*	2C03: Effects of stratification and charge cooling on combustion in Gasoline Direct-Injection Compression Ignition (GDCI) engine *H. Ge, P. Zhao*	2D03: Soot formation and evolution in pressurized sooting turbulent jet flames *D. Zhou, A. Vaage, W.R. Boyette, T.F. Guiberti, W.L. Roberts, S. Yang*	2E03: Response of aluminum-skinned carbon-fiber-epoxy to heating by an adjacent fire *A.W. Murphy, E.T. Zepper, E.M.C. Jones, E.C. Quintana, M.M. Montoya, A.A. Cruz-Cabrera, S.N. Scott, B.C. Houchens*	2F03: Metallic additives for solid-fuel propulsion applications *J.C. Thomas, F.A. Rodriguez, E.L. Petersen*	2G03: NOx sensors for studying nitro chemistry kinetics in shock tubes *C.A. Almodovar, E. Hermosillo-Guzman, R. Schwind, C.F. Goldsmith*	2H03: Investigating firebrand deposition processes in large outdoor fires *S. Suzuki, S.L. Manzello,*

All times listed are CDT

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair:* *C. Yan*	**Fire Research I** *Session Chair:* *W. Ji*	**I.C. Engines** *Session Chair:* *A.J. Marchese*	**Turbulent Combustion** *Session Chair:* *P. Pal*	**Combustion Theory and Modeling** *Session Chair:* *V. Acharya*	**Particulates and Multiphase Flows** *Session Chair:* *P. Papas*	**Diagnostics** *Session Chair:* *S. Neupane*	**Fire Research II** *Session Chair:* *R. Linn*
10:10 – 10:30 **CDT**	2A04: Detailed chemical kinetic investigations in a Controlled Trajectory - Rapid Compression and Expansion Machine (CT-RCEM) *K.C. Bavandla, D. Zhou, A. Tripathi, Z. Sun, S. Yang*	2B04: Size distribution and species dependence of firebrands produced during tree-scale burns *S. Adusumilli, D.L. Blunck*	2C04: Modeling transition to thermoacoustic instability using synchronization framework *Y. Weng, V.R. Unni, R.I. Sujith, A. Saha*	2D04: A feasibility study on the use of low-dimensional simulations for database generation in adaptive chemistry approaches *A.S. Newale, S.B. Pope, P. Pepiot*	2E04: Radiative property modeling for CFD *V.B. Stephens, S. Jensen, I. Wheeler, D.O. Lignell*	2F04: Thermo-analytical studies on the oxidation kinetics of magnesium particles in oxygen *S. Cordova, K. Estala-Rodriguez, E. Shafirovich*	2G04: A second-generation phi meter for global equivalence ratio and gas species concentration measurements *R. Falkenstein-Smith, T. Cleary*	2H04: Firebrand deposition in an area with cubic blocks in a tandem arrangement *A. Mankame, B. Shotorban*
Break 10:30 – 10:50 **CDT**								
Plenary Room 10:50 – 11:50 **CDT** **From Heart to Hearth to Heavens: People, Combustion Products and Climate** *Tami Bond, Scott Presidential Chair in Energy, Environment and Health, Colorado State University* *Session Chair: A.J. Marchese*								
Lunch Break 11:50 – 12:50 **CDT**								
Plenary Room **Women in Combustion Lunch event**								
Break 12:50 – 13:00 **CDT**								

All times listed are CDT

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair:* *A. Laich*	**Fire Research** *Session Chair:* *S.B. Hariharan*	**I.C. Engines** *Session Chair:* *H. Ge*	**Turbulent Combustion** *Session Chair:* *A. Nouri*	**Combustion Theory and Modeling** *Session Chair:* *X. Zhao*	**Novel Combustion Techniques** *Session Chair:* *J.C. Thomas*	**Diagnostics** *Session Chair:* *A. Poludnenko*	**Droplets & Spray** *Session Chair:* *T.R. Meyer*
13:00 – 13:20 **CDT**	2A05: ChemNODE: A neural ordinary differential equations approach for chemical kinetics solvers *O. Owoyele, P. Pal*	2B05: The structure of medium-scale propane pool fires *R. Falkenstein-Smith, K. Sung, A. Hamins*	2C05: Effect of spray collapse on mixture preparation and combustion characteristics of a spark-ignition heavy-duty diesel optical engine fueled with direct-injected Liquefied Petroleum Gas (LPG) *R. Rajasegar, A. Srna*	2D05: Modeling subgrid-scale stresses in transcritical combustion with interpretable machine learning *W.T. Chung, A.A. Mishra, M. Ihme*	2E05: Unsupervised clustering: A mixture of experts framework to represent flamelet tables *R Mishra, S. Mayilvahanan, D. Jarrahbashi*	2F05: Flame spray synthesis of $Li(Ni_{0.8}Co_{0.1}Mn_{0.1})O_2$ cathode materials with additives for morphology control and performance optimization *J. Zhang, V.L. Muldoon, S. Deng*	2G05: Femtosecond two-photon LIF imaging of atomic hydrogen in high-pressure premixed methane-air flat flames *P. Parajuli, Y. Wang, M. Hay, W.D. Kulatilaka*	2H05: A gravity update scheme using PID controller for droplet traveling at terminal velocity in air flow *Y. Lin, J. Palmore*
13:20 – 13:40 **CDT**	2A06: Optimization and uncertainty minimization of reaction models using a neural-network-based approach *Y. Zhang, G. Smith, H. Wang*	2B06: Burning rate emulations aboard the International Space Station *P. Dehghani, A. Wright, J.L. deRis, P.B. Sunderland*	2C06: A binary soot model for engine combustion *H. Ge, R. He, P. Zhao*	2D06: Two-dimensional manifold equations for multi-modal turbulent combustion: Defining the generalized progress variable and modeling the scalar dissipation rates *A.G. Novoselov, B.A. Perry, M.E. Mueller*	2E06: Arrhenius.jl: A differentiable combustion simulation package *W. Ji, S. Deng*	2F06: Combustion performance characterization in additively manufactured porous media burners *G. D'Orazio, M. Yasgur, S.Sobhani*	2G06: 3D particle diagnostics and flow velocimetry prior to ignition during dust explosion studies *C. Schweizer, Y. Wang, C.V. Mashuga, W.D. Kulatilaka*	2H06: Investigation of lean direct injection under thermoacoustic instability *Y. Aradhey, J. Meadows*

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	Reaction Kinetics *Session Chair:* *A. Laich*	**Fire Research** *Session Chair:* *S.B. Hariharan*	**I.C. Engines** *Session Chair:* *H. Ge*	**Turbulent Combustion** *Session Chair:* *A. Nouri*	**Combustion Theory and Modeling** *Session Chair:* *X. Zhao*	**Novel Combustion Techniques** *Session Chair:* *J.C. Thomas*	**Diagnostics** *Session Chair:* *A. Poludnenko*	**Droplets & Spray** *Session Chair:* *T.R. Meyer*
13:40 – 14:00 **CDT**	2A07: A machine learning based algorithm for rate coefficient estimation *M.S. Johnson, W.H. Green*	2B07: Effect of fuel bed composition on flaming ignition probability *D. Bean, D.L. Blunck*	2C07: Development of multiple injection strategy for gasoline compression ignition high performance and low emissions in a light duty engine *A. Zyada, S. Zhu, P. Zoldak*	2D07: A posteriori validation of a data-driven mixture of experts approach for tabulation of combustion manifolds *O. Owoyele, A.C. Nunno, P. Pal, P. Kundu*	2E07: A robust reacting flow solver with detailed transport, chemistry, well-balanced splitting schemes, and computational diagnostics based on OpenFOAM and Cantera *D. Zhou, H. Zhang, S. Yang*	2F07: Effect of pressure and dilution level on the flame dynamics of CH4/Air/N2 mixture in a heated microchannel *D. Akinpelu, I. Schoegl*	2G07: OH PLIF and two-color OH thermometry in high-pressure disc-stabilized flat flames *W. Swain, Y. Wang, P. Parajuli, M. Hay, W. Kulatilaka*	2H07: Experimental investigation of the changes in combustion behavior of Jet-A fuel droplets due to the addition of Carbon Dots (CDs) *A.S.M.S. Parveg, C. Oztan, Y. Zhou, V. Coverstone, R.M Leblanc, A. Ratner*
Break 14:00 – 14:10 **CDT**								
Plenary Room 14:10 – 15:10 **CDT** **Wildland fire: Addressing our current predicament** *Sara McAllister, Forest Service, U.S. Department of Agriculture* *Session Chair: D.L. Blunck*								
Break 15:10 – 15:30 **CDT**								
Plenary Room 15:30 – 16:00 **CDT** **Government Combustion Program Manager's Panel** *Richard Dennis, U.S. Department of Energy's Office of Fossil Energy* *Chiping Li, Air Force Office of Scientific Research/RTA* *Moderator: A. Ratner*								
Break 16:00 – 16:05 **CDT**								

All times listed are CDT

Room #	A	B	C	D	E	F	G	H
	Reaction Kinetics *Session Chair:* *C.F. Goldsmith*	**Fire Research** *Session Chair:* *J.W. Daily*	**I.C. Engines** *Session Chair:* *W.F. Northrop*	**Turbulent Combustion** *Session Chair:* *P. Allison*	**Combustion Theory and Modeling** *Session Chair:* *D.L. Blunck*	**Laminar Flames** *Session Chair:* *D. Dasgupta*	**Diagnostics** *Session Chair:* *R.A. Schwind*	**Droplets & Spray** *Session Chair:* *J. Palmore*
16:05 – 16:25 **CDT**	2A08: An experimental study of OH during auto-ignition of syngas with trace trimethylsilanol *J.H. Kim, A.B. Mansfield, M.A. Burnett, M.S. Wooldridge*	2B08: A study of the importance of droplet ejection and burning during ignition and burning of groups of thermally thin live fuels *N. Gardner, D.L. Blunck*	2C08: Kernel growth in air spark ignition: An experimental and theoretical study *J. Shaffer, S. Zare, O. Askari*	2D08: Characterizing local reaction zones in a piloted inhomogeneous jet flame series *S. Hartl, C. Hasse, H.C. Cutcher, A.R. Masri, D. Geyer, R.S. Barlow*	2E08: Implementing a steady-state solver for zero dimensional reactors in Cantera *P. Blum, B. Weber, R. Speth*	2F08: Numerical simulation of water-vapor addition into a methane diffusion flame at high pressures *B. Esquivias, D. Dunn-Rankin, Y.-C. Chien*	2G08: Investigation of flame structure, dynamics, and flammability limits of disc-stabilized methane/air flames at elevated pressures *M. Hay, P. Parajuli, Y. Wang, W.D. Kulatilaka*	2H08: The role of chemical mechanism in simulations of high-pressure n-dodecane spray pyrolysis *N.J. Killingsworth, T.M. Nguyen, C. Brown, G. Kukkadapu, J. Manin*
16:25 – 16:45 **CDT**	2A09: Kinetic modeling of NO and NO_2 promotion/inhibition interactions with gasoline surrogate components *C. Saggese, R. Fang, S.W. Wagnon, C.-J. Sung, W.J. Pitz*	2B09: Milligram-scale flame calorimetry: Novel design of a pyrolyzer system used to emulate the burning behavior exhibited by cone calorimetry samples *J.A. De Beer, F. Raffan-Montoya, S.I. Stoliarov*	2C09: Fuel properties effects on wall-wetting and fuel-in-lube dilution under stochastic pre ignition prone conditions *D. Splitter, V. Boronat-Colomer, S. Neupane, W. Partridge*	2D09: Minimum laser ignition energy for turbulent premixed hydrogen/air jets *S. Jo, J. Kim, J.P. Gore*	2E09: ChemCheck: A Cantera tool for debugging chemical and syntax errors in combustion models *C. Xu, R.H. West*	2F09: Microgravity spherical diffusion flames: The critical point for radiative extinction and the dynamics to reach it *P.H. Irace, K. Waddell, D. Constales, P.B. Sunderland, R.L. Axelbaum*	2G09: Aerosol synthesis and characterisation of Ce^{3+}-doped YPO_4 and $GdPO_4$ thermographic phosphor particles for temperature sensing in gas flows *W.A. Aliyu, U. Betke, C. Abram*	2H09: Evaluation of a nonequilibrium evaporation model for blended diesel/alcohol droplets *P. Yi, H. Zhang, S. Yang*

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	Reaction Kinetics *Session Chair:* *C.F. Goldsmith*	**Fire Research** *Session Chair:* *J.W. Daily*	**I.C. Engines** *Session Chair:* *W.F. Northrop*	**Turbulent Combustion** *Session Chair:* *P. Allison*	**Combustion Theory and Modeling** *Session Chair:* *D.L. Blunck*	**Laminar Flames** *Session Chair:* *D. Dasgupta*	**Diagnostics** *Session Chair:* *R.A. Schwind*	**Droplets & Spray** *Session Chair:* *J. Palmore*
16:45 – 17:05 **CDT**	2A10: Towards resolution of lingering discrepancies in the H_2O_2 decomposition system: HO_2 + HO_2 *C.E. LaGrotta, L. Lei, M.C. Barbet, Z. Hong, D.F. Davidson, R.K. Hanson, M.P. Burke*	2B10: Burning characteristics of small firebrands in wildland-urban-interface fires *B. Kwon, Y.-T.T.Liao*	2C10: Investigation of premixed methane concentration on diesel pilot ignition *D. Tyrewala, D. Rothamer, J. Ghandhi*	2D10: Generalized joint probability density function formulation in turbulent combustion using DeepONet *R. Ranade, K. Gitushi, T. Echekki*	2E10: A characterization of tradeoffs in memory, accuracy, and speed for chemistry tabulation techniques *E. Armstrong, J.C. Sutherland*	2F10: Flame and burner temperature measurements and predictions in spherical diffusion flames *K. Waddell, P.B. Sunderland, S. Medvedev, S. Frolov, P.H. Irace, R.L. Axelbaum*	2G10: LIF Measurements of species structures in ammonia micro flames *Y. Fan, Z. Wang, Y. Wang, M. Lee, W.D. Kulatilaka, Y. Suzuki*	2H10: Investigation of the evaporation and fuel property effect on liquid jets in supersonic crossflow *S. Zou, D. Zhou, S. Yang*
End of Day								

All times listed are CDT

Wednesday, 26 May 2021

Plenary Room
08:50 – 09:50 **CDT**

Announcements
Al Ratner, Program Chair, 12th U.S. National Combustion Meeting
Eric Petersen, Local Host, 12th U.S. National Combustion Meeting

Break
09:00 – 09:10 **CDT**

Room #	A	B	C	D	E	F
	Reaction Kinetics *Session Chair:* *P. Zhao*	**Fire Research** *Session Chair:* *L. Carmignani*	**Particulates and Multiphase Flows** *Session Chair:* *P. Anderson*	**Turbulent Combustion** *Session Chair:* *M. Rieth*	**Laminar Flames** *Session Chair:* *R. Axelbaum*	**Diagnostics** *Session Chair:* *Y.C. Mazumdar*
09:10 – 09:30 **CDT**	3A01: Enhancing reactivity of low-temperature oxidation mechanisms via inclusion of diastereomers *A.D. Danilack, C.R. Mulvihill, S.J. Klippenstein, C.F. Goldsmith*	3B01: Autonomous kinetic modeling of biomass pyrolysis using chemical reaction neural networks *W. Ji, F. Richter, M.J. Gollner, S. Deng*	3C01: An experimental study on the filtration combustion of magnesium powder *S. Cordova, K. Estala-Rodriguez, E. Shafirovich*	3D01: Competing effects of deterministic and stochastic forcing and their impact on turbulent flame dynamics *A. Karmarkar, J. O'Connor*	3E01: Dynamics of multi-port jet diffusion flames under acoustic forcing *A. Vargas, S. Kiani, A.R. Karagozian*	3F01: Kilohertz-rate femtosecond OH-PLIF imaging in high-pressure flames *Y. Wang, P. Parajuli, W. Swain, W.D. Kulatilaka*
09:30 – 09:50 **CDT**	3A02: Influence of NOx chemistry on the prediction of natural gas end-gas autoignition *D. Bestel, D. Olsen, A. Marchese, B. Windom*	3B02: Effect of equivalence ratio on Minimum Hot Surface Ignition Temperature (MHSIT) in a hot crossflow *L. Dillard, J.P. Gore*	3C02: Evaluation of current AP/HTPB-composite propellant exponent break theories *C.A.M. Dillier, E.L. Petersen*	3D02: Relationship between minimum ignition energy, turbulence intensity, and kernel propagation speed *S. Jo, J.P. Gore*	3E02: Measurements of thermal radiation from laminar diffusion flames with central oxygen enrichment in a triple port burner *P.H. Irace, D. Khatri, A. Gopan, R.L. Axelbaum*	3F02: 100-kHz burst-mode Laser-Induced Breakdown Spectroscopy (LIBS) for detecting airborne metals during propellant combustion *A. Shoyinka, Y. Wang, G. Lukasik, C.A.M. Dillier, E.L. Petersen, W.D. Kulatilaka*

All times listed are CDT

Room #	A	B	C	D	E	F
	Reaction Kinetics *Session Chair:* *P. Zhao*	**Fire Research** *Session Chair:* *L. Carmignani*	**Particulates and Multiphase Flows** *Session Chair:* *P. Anderson*	**Turbulent Combustion** *Session Chair:* *M. Rieth*	**Laminar Flames** *Session Chair:* *R. Axelbaum*	**Diagnostics** *Session Chair:* *Y.C. Mazumdar*
09:50 – 10:10 **CDT**	3A03: Quantifying the relevance of prompt dissociations of resonance stabilized free radicals in flames *R. Sivaramakrishnan, Y. Tao, Y. Georgievskii, S.J. Klippenstein, J.A. Miller*	3B03: Experimental and numerical investigation of gypsum calcination under fire exposure *E.A. Fowlie, T. Borth, G.E. Gorbett, H. Sezer, S.P. Kozhumal*	3C03: Burning rate characterization of ammonium perchlorate pellets containing micro- and nano-catalytic additives *F.A. Rodriguez, J.C. Thomas, T.E. Sammet, D.S. Teitge, E.L. Petersen*	3D03: New perspectives of turbulent flame structure via CH PLIF in prevaporized liquid fuels *A. Gandomkar, S. Gkantonas, A. Svoboda, T.A. McManus, C. Carter, P.M. Allison*	3E03: Understanding combustion in the blue whirl using optical diagnostics *S.B. Hariharan, P. Anderson, Y. Wang, M. Gollner, W. Kulatilaka, E. Oran*	3F03: Measuring temperature nonuniformity through a diffusion flame with single-beam absorption spectroscopy *N.A. Malarich, S.C. Coburn, G.B. Rieker*
10:10 – 10:30 **CDT**	3A04: An experimental investigation of NH_3 oxidation via N_2O in a jet-stirred reactor *R.E. Cornell, M.C. Barbet, M.P. Burke*	3B04: Modeling the response of blended PVC/PET fabrics to fire environments *S. Li, S.S. Aphale, K. Budzinski, P.E. DesJardin*	3C04: Flash and laser ignition of Al/PVDF films and additively manufactured igniters for solid propellant *D. N. Collard, K. Uhlenhake, J.F. Rhoads, S.F. Son*	3D04: Analysis of the effect of turbulence intensity on forced ignition of Jet-A/air mixtures *K.I. Teope, D.L. Blunck*	3E04: Experimental investigation of methane-air swirl-vane-induced rapidly mixed tubular flames *V.M. Sauer, M. Heness, P. Maglaris*	3F04: Digital camera simulations of thin filaments in non-premixed coflow flames *V. Sauer, F. Pelayo, E. Chukwuemeka, I. Schoegl*
Break 10:30 – 10:50 **CDT**						
Plenary Room 10:50 – 11:50 **CDT** **Early Career Investigator Plenary –** **You Can Have Your Cake and Eat It Too: Breaking the Fundamental Trade-Off between Cost and Generality in Turbulent Combustion Modeling** *Michael E. Mueller, Department of Mechanical and Aerospace Engineering, Princeton University* *Session Chair: T. Jacobs*						
Lunch Break 11:50 – 12:30 **CDT** **Section Meetings**						
Break 12:30 – 12:40 **CDT**						

All times listed are CDT

Room #	A	B	C	D	E	F
	Reaction Kinetics *Session Chair:* *B. Rotavera*	**Fire Research I** *Session Chair:* *S. McAllister*	**Novel Combustion Techniques** *Session Chair: J. Kalman*	**Turbulent Combustion** *Session Chair:* *A. Karmarkar*	**Laminar Flames** *Session Chair:* *C.R. Mulvihill*	**Fire Research II** *Session Chair:* *P. Papas*
12:40 – 13:00 **CDT**	3A05: Shock-tube spectroscopic CO and H_2O measurements during 2-methyl-1-butene combustion and chemical kinetics modeling *C.M. Grégoire, C.K. Westbrook, G. Kukkadapu, S.P. Cooper, S.A. Alturaifi, O. Mathieu, E.L. Petersen*	3B05: Potentials of using Integral Heat Balance Method (IHBM) on estimating wood crib ignition *J. Hashempour, H. Sezer, S. Kozhumal, A. Ritenour*	3C05: Optical ignition of nano-aluminum PVDF films using photoflash and laser energy *K.E. Uhlenhake, D. Olsen, M. Gomez-Gomez, M. Örnek, M. Zhou, S.F. Son*	3D05: Soot temperature distributions in turbulent non-premixed ethylene and JP-8 surrogate jet flames *C.R. Shaddix, J. Zhang, T.C. Williams*	3E05: The radical index and the effects of oxygen concentration on diffusion cool flame extinction limits of oxygenated fuels *Z. Wang, M. Zhou, Y. Lin, N. Liu, C. Yan, Y. Ju*	3F05: Analyzing and predicting concurrent flame spread over electrical wires in reduced ambient pressures *L. Gagnon J.L. Urban, C. Fernandez-Pello, V.P. Carey, Y. Konno, O. Fujita*
13:00 – 13:20 **CDT**	3A06: Foundational fuel chemistry model 2 *Y. Zhang, G. Smith, H. Wang*	3B06: The influence of heat transfer and oxygen availability in Influencing smoldering behavior through a porous fuel *A.H. Ross, D.L. Blunck*	3C06: Use of high-speed polarized cinematography on laminate propellants to observe dynamic melt layer properties *A.R. Demko, M. Karimi*	3D06: Direct numerical simulations of blended ammonia/hydrogen/nitrogen-air premixed turbulent flames at atmospheric and elevated pressure conditions *M. Rieth, A. Gruber, T. Lu, J.H. Chen*	3E06: Structure and nitric oxide formation in ammonia-hydrogen and air non-premixed counterflow flames *D.E. Thomas, W.F. Northrop*	3F06: Laminar flame speed measurements of a gasoline surrogate and its mixtures with ethanol *Y.M. Almarzooq, I. Schoegl, E.L. Petersen*
13:20 – 13:40 **CDT**	3A07: Pyrolysis of propyl and butyl radicals in shock tube photoionization mass spectrometry experiments *C. Banyon, T. Sikes, R.S. Tranter*	3B07: The influence of wind speed on smoldering behavior of cellulose *A. Ross, H.M. Boriyo, C. Flaherty, M. Hilliker, D.L. Blunck*	3C07: Synchrotron-based measurement of aluminum interaction with melt layer of solid propellants at motoring conditions *A.R. Demko, K. Hill, E. Ismael, A. Kastengren*	3D07: Co-optimized machine-learned manifold models for large eddy simulation of turbulent combustion *B.A. Perry, M.T.H. de Frahan, S. Yellapantula*	3E07: Dilution limits of coflow laminar methane and ethylene flames in microgravity versus normal gravity *J. Tinajero, M. Long*	3F07: Thermal analysis of boron carbide and metal oxide mixtures *A. Huynh, K. Horiuchi, J. Kalman*
13:40 – 14:00 **CDT**	3A08: Autoignition of premixed liquefied petroleum gas in a rapid compression machine: Experimental results and chemical kinetic mechanism reduction *C. Slunecka, A. Zdanowicz, S. Bhoite, S. Vaughan, B. Windom, D. Olsen, A.J. Marchese*	3B08: The efficacy of surrogates to estimate smoldering behavior of natural fuels *B.D. Smucker, D.L. Blunck*	3C08: Altering the impact-driven sensitivity and ignition of PVDF-TrFE/nAl composite films with piezoelectricity *D. Messer, M. Örnek, T. Hafner, S.F. Son*	3D08: Skeletal model reduction with forced optimally time dependent modes *A.G. Nouri, H. Babaee, P. Givi, H.K. Chelliah, D. Livescu*	3E08: Thermoacoustic response of counterflow diffusion flames *M.X. Yao, G. Blanquart*	3F08: Analysis of effectiveness of suppression of lithium ion battery fires with a clean agent *A.O. Said, S.I. Stoliarov*

All times listed are CDT

Break
14:00 – 14:15 **CDT**

Plenary Room
14:15 – 15:15 **CDT**

Achieving Sustainable Aviation

Michael Winter, Pratt & Whitney, Raytheon Technologies Corporation
Session Chair: P. Papas

Break
15:15 – 15:30 **CDT**

Plenary Room
15:30 – 16:00 **CDT**

NASA Microgravity Decadal Review and How the Combustion Community can Participate.

David Urban and Daniel Dietrich, NASA Glenn Research Center

Room #	A	B	C	D	E	F
	Reaction Kinetics *Session Chair:* *B. Windom*	**Fire Research** *Session Chair:* *A. Simeoni*	**Novel Combustion Techniques** *Session Chair:* *A.R. Demko*	**I.C. Engines** *Session Chair:* *S.R. Krishnan*	**Combustion Theory and Modeling** *Session Chair:* *S. Aggarwal*	
16:10 – 16:30 **CDT**	3A09: Comparison of flame ignition temperature of liquid nitromethane in inert and air environments *R.A. Schwind, C.C. Fuller, J.B. Sinurd, M.S. Klassen, C.F. Goldsmith, R.A. Walker*	3B09: A two-dimensional mathematical model for fire induced tree-stem injury *J. Tang, H. Sezer, J. Hashempour, S. Kozhumal, A. Ritenour*	3C09: Combustion characteristics of PRFs within a pressurized externally heated micro-channel *S.N.R. Isfahani, V. Sauer, I. Schoegl*	3D09: Optimization of pre-chamber geometry using CFD, machine learning, Bayesian updating, and genetic algorithm *H. Ge, A.H. Bakir, S. Parameswaran, P. Zhao*	3E09: Consideration of reversibilities in simplified soot formation models *P.R. Johnson, R.K. Chakrabarty, B.M. Kumfer*	
16:30 – 16:50 **CDT**	3A10: A comprehensive experimental investigation of nitromethane oxidation kinetics using a wide array of techniques *O. Mathieu, H. Nakamura, C.L. Keesee, Y. Yamamoto, T. Tezuka, C.R. Mulvihill, E.L. Petersen*	3B10: On the role of soot and radiative heat flux for flame spread along solid fuels *S.S. Aphale, P.E. DesJardin*	3C10: Gas-solid heat transfer in heat recirculating counterflow reactors: Experimental study with additive manufacturing *P. Radyjowski, J. Ellzey*	3D10: Hydrogen Enrichment in premixed spark ignition engine using fuel blend *M. Arshad, J. Rodriguez, M. Delgado*	3E10: A Closer look into the formation of soot particles: A molecular dynamics study *K.M. Mukut, A. Sharma, E. Goudeli, S. Roy*	

All times listed are CDT

Room #	A	B	C	D	E	F
	Reaction Kinetics *Session Chair:* *B. Windom*	**Fire Research** *Session Chair:* *A. Simeoni*	**Novel Combustion Techniques** *Session Chair:* *A.R. Demko*	**I.C. Engines** *Session Chair:* *S.R. Krishnan*	**Combustion Theory and Modeling** *Session Chair:* *S. Aggarwal*	
16:50 – 17:10 **CDT**	3A11: Water time histories during combustion of H_2S-N_2O mixtures in a shock tube *O. Mathieu, L.T. Pinzón, C.R. Mulvihill, P. Marshall, P. Glarborg, E.L. Petersen*	3B11: Computationally efficient simulations of Douglas Fir pyrolysis and combustion *J.F. Glusman, C.B. Lapointe, A.S. Makowiecki, S. Simons-Wellin, G.B. Rieker, J.W. Daily, P.E. Hamlington*		3D11: Modeling spark channel elongation at different flow magnitudes and pressure conditions *S.J. Kazmouz, R. Scarcelli, M. Bresler, E. Blash, X. Su, K. Hardman*	3E11: Identifying influence of droplet ejection and burning on ignition and burning of live fuels *H. Fazeli, N. Gardner, D.L Blunck*	
End of Day						

All times listed are CDT

12th U.S. National Combustion Meeting Work in Progress Posters

PP-01 Development of Promoters for Hypergolic Reactions
A.K. Chinnam, N. Petrutik, K. Wang, A. Shlomovich, O. Shamis, D. Shem-Tov, M. Sućeska, Q.-L. Yan, R. Dobrovetsky, M. Gozin (P)

PP-02 Absolute Temperature and Emissivity Determination of Heated Materials Using Multispectral IR Imaging and N-Color TES Image Processing
B. Saute (P), T. Pelzmann, J.-P. Gagnon, F. Dupont, E. Robert

PP-03 Stroboscopic in-line Holography for Microdroplet Characterization
W. Ard (P), W. Dang, S. Menon, I. Schoegl

PP-04 Measurement of Solid Hybrid Rocket Fuel Regression Rate Using Machine Learning
G. Surina (P), P.E. DesJardin

PP-05 Using A Burning Rate Emulator to Analyze Flame Extinction Time on the International Space Station
A. Wright (P), P. Dehghani, P.B. Sunderland, J.L. deRis

PP-06 Advanced Combustion via Microgravity Experiments on the International Space Station
D. Stocker (P)

PP-07 Theoretical study about the hydrogen abstraction reactions of methyl acetate
L. da Silva Pereira, L. Baptista (P)

PP-08 Distributed Turbulent Premixed Combustion: Qualitative Differences in Radical Species Behavior
K. VanderKam (P), M.E. Mueller

PP-09 Burning Emulations Aboard the International Space Station
P. Dehghani (P), A. Wright, J.G. Quintiere, J.L deRis

All times listed are CDT