11th US National Combustion Meeting

Hosted by Caltech, USC, and the WSSCI

March 24-27, 2019

Pasadena, CA, USA

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Code of Conduct

The Board of the US Sections of The Combustion Institute (USSCI) approved this Code of Conduct, December 5th, 2018 for the purpose of the 11th US National Combustion Meeting in Pasadena, CA. This document complements the Code of Ethics adopted by the Board of Directors of The Combustion Institute, 23 March 2017.

The Western States Section of The Combustion Institute (WSSCI) is committed to providing a safe environment for all its members free from unlawful harassment. Harassment in any form, based on sex, gender, gender identity and expression, sexual orientation, age, disability, race, ethnicity, religion (or lack thereof), medical condition, pregnancy, or any other protected characteristics recognized by law, is a violation of the Code of Conduct. Everyone should be treated with respect without fear of discrimination, quid pro quo, or condescension whether blatant or via micro-aggressions. This policy applies to all members of The Combustion Institute and covers behavior that takes place at any programs or activities related to the 11th National Combustion Meeting.

Reporting an Incident of Violation of the Code of Conduct

The WSSCI takes all reports of behavior prohibited by the Code of Conduct seriously and encourages any individual who experiences or witnesses such behavior to report, including anonymously, such violations to the Chair or the Vice-Chair of the WSSCI, including by email. The WSSCI encourages the prompt reporting of such matters to ensure a timely and constructive resolution.

The Chair and the Vice-Chair will evaluate each report to determine the most appropriate response, including both informal and formal responses. The desired response of the reporting party will be taken into account but cannot be determinative of the WSSCI's response. In meeting with the reporting party, the Chair and the Vice-Chair will explain that reports will be handled with sensitivity and kept as confidential as possible to respect the privacy of all parties.

Informal and formal responses are initiated to stop the prohibited behavior and prevent its reoccurrence. Possible responses and outcomes include, but are not limited to, issuing a warning to cease the behavior before further sanctions are pursued; separation of the involved persons; exclusion from the remainder of the current and/or future programs and activities; and, revoking membership. The WSSCI will maintain a written record of the report and corresponding response.

Any person who experiences or witnesses prohibited behavior also has reporting options outside of the WSSCI, including filing a report with their home institution or the police.

Retaliation

The WSSCI does not tolerate any kind of retaliation against an individual filing a report or assisting in the resolution of a report of prohibited behavior (even if no responsive action is taken). Retaliation is a violation of the Code of Conduct. The WSSCI takes reports of retaliation very seriously. Anyone who experiences or witnesses retaliation in any form should report it immediately to the Chair and the Vice Chair.

Schedule of Events – Weekend

Combustion Early Career Investigator Workshop

Saturday	08:00 – 17:00	Caltech
Sunday	08:00 – 12:00	

Open to early career faculty member, or national lab researcher in an equivalent position at a US institution working in or around the area of combustion. This workshop will bring together early career investigators to discuss cultural issues facing the community. Support from the National Science Foundation under grant CBET-1901570. https://combustion-community.github.io/workshop-2019/

Cantera Workshop

Sunday	08:30 – 12:00	Room 211
	13:15 – 17:00	

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://cantera.github.io/ncm-2019-workshop/

Exponent Info Session

Sunday	17:00 – 18:00	Room 212/214
Tuesday	12:40 – 13:30	

Exponent will be hosting two information sessions about career opportunities at their firm. Come to hear about exciting careers in engineering consulting! Consultants from Exponent will be on hand to answer questions. Open to all levels, graduate students, post-docs, and faculty too. https://www.exponent.com/

Executive Board Meetings

Sunday	12:00 – 17:00	Room 208 – CSSCI
	14:30 – 17:00	Room 209 – WSSCI
	15:00 – 17:00	Room 210 – ESSCI

Welcome Reception

Sunday	18:00 – 20:00	Atrium (upper and lower floors)

Perfect time to see the Combustion Artworks on display at the main entrance and the Work in Progress Posters located throughout the convention center.

Schedule of Events – Week

Mentoring Mixer

Monday 18:00 – 20:00 Ballroom DE

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 Luncheon

Tuesday 12:25 – 13:40 Room 211

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. Attendees will be invited to discuss topics relevant to women in STEM over lunch.

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Tuesday 12:40 – 13:30

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Banquet

Tuesday 18:30 – 22:00 California Science Center (CSC)

Visitors will enter the California Science Center through the renowned *Ecosystems* display, then enjoy a reception and dinner underneath *Space Shuttle Endeavour*. **Note:** buses will leave the Convention Center at 17:30; the first bus will leave the CSC at 20:30; the last bus will leave at 22:30. Expect a 30min drive to/from the CSC. https://californiasciencecenter.org/exhibits/air-space/space-shuttle-endeavour.

Tour of NASA/JPL

Wednesday 09:30 – 12:00 Jet Propulsion Laboratory (JPL)
13:00 – 15:30

The tour includes a multimedia presentation on JPL entitled "Journey to the Planets and Beyond," which provides an overview of the Laboratory's activities and accomplishments. Guests will visit the von Karman Visitor Center, the Space Flight Operations Facility, and the Spacecraft Assembly Facility. Each tour limited to 80 people. **Note:** government issued ID is required and restrictions apply to Designated Countries. The buses will leave 45min before the tour start time. Expect a 15min drive.

11th U.S. National Combustion Meeting, Pasadena, California

Sunday, 24 March 2019
08:00 – 20:00 Registration Open – Atrium of the Convention Center (Upper Floor)
18:00 – 20:00 Welcome Reception – Atrium of the Convention Center (Upper and Lower Floors)

Monday, 25 March 2019
07:00 – 16:00 Registration Open – Atrium of the Convention Center (Upper Floor)
08:00 – 18:00 Combustion Artwork is displayed at the main entrance on the Upper Floor near the registration desk.
Make sure to stop by, visit and vote. Voting closes Tuesday at 17:30
08:00 – 16:35 Sponsors are displayed in the Atrium Lower Floor

Work in Progress Posters (Display Set up 07:00 – 08:00, Poster Session 08:00 – 18:00) – Upper and Lower Floors of the Atrium

Room 102 - 104
07:45 Welcome: Fletcher J. Miller, *San Diego State University*, WSSCI Chair
07:55 Opening Remarks: Guillaume Blanquart, *The California Institute of Technology*, Local Host

08:00 – 09:00 Plenary Lecture: Dr. Chiping Li, *Air Force Office of Scientific Research – Wright Patterson Air Force Base*
"*Some Recent Progress and Remaining Challenges in Fundamental Combustion Research*"
Session Chair: Michael E. Mueller

Room	Room 106	Room 107	Room 102	Room 212	Room 211	Room 101	Room 208	Room 204	Room 207	Room 210
	Chemical Kinetics I *Session Chair: S.J. Klippenstein*	Chemical Kinetics II *Session Chair: C.F. Goldsmith*	Turbulent Flames *Session Chair: J.H. Chen*	Fire *Session Chair: A. Trouvé*	Engines *Session Chair: Z. Yue*	Laminar Flames *Session Chair: J. Tinajero*	Engines II *Session Chair: J.H. Mack*	Detonations *Session Chair: G. Goodwin*	Soot *Session Chair: J. Camacho*	Coal *Session Chair: E. Beagle*
09:35	1A01: Low-temperature oxidation of tetrahydro-furan *N. Hansen, K. Moshammer, A.W. Jasper*	1B01: Filtering in combustion data assimilation *Y. Tao, Y. Zhang, F. Boso, D.M. Tartakovsky, H. Wang*	1C01: Effect of turbulence on chemistry in single element shear coaxial rocket injector *S. Badillo-Rios, A.R. Karagozian*	1D01: Comparison of emissions from liquid-fueled pool fires and fire whirls *S.B. Hariharan, J. Dowling, H.F. Farahani, M.J. Gollner, E.S. Oran, K. Stone*	1E01: Investigation of the spray and combustion characteristics of four multi-component diesel surrogate fuels relative to their commercial target fuel *K. Yasutomi, C.J. Mueller, L.M. Pickett, S.A. Skeen*	1F01: Effect of octane sensitivity on PAH emissions in low octane naphtha flames *K.C. Kalvakala, S.K. Aggarwal*	1G01: Neural networks applied to predicting diesel fuel spray characteristics *Z.B. Harris, A.K. Agrawal, J.A. Bittle*	1H01: Acceleration of deflagration-to-detonation transition through ozone addition in C_2H_2/O_2 mixtures in microchannels *J. Sepulveda, A.C. Rousso, H. Ha, T. Chen, V. Cheng, W. Kong, Y. Ju*	1J01: PAH formation from jet stirred reactor pyrolysis of gasoline surrogates *C. Shao, G. Kukkadapu, S.W. Wagnon*	1K01: Sub-micron ash aerosol formation in oxy-coal combustion at atmospheric and elevated pressures *X. Li, Y. Wang, J.O.L. Wendt*

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09:55	1A02: Speciation studies during low-to-intermediate temperature oxidation of *n*-heptane in a motored engine *E. Al-Gharibeh, K. Kumar*	1B02: The application of artificial neural network in variational transition state theory *X. Chen, C.F. Goldsmith*	1C02: Retrospective Lagrangian analysis of turbulence-chemistry interactions in highly-turbulent premixed flames *P.E. Hamlington, R. Darragh, C.A.Z. Towery, A.Y. Poludnenko*	1D02: Effect of carbon nanotubes addition on the flame spread rate over a Jet A pool *R. Roncancio, A. Navarkar, V.R. Hasti, V. Goyal, J.P. Gore*	1E02: End-gas autoignition fraction and flame propagation rate in laser-ignited primary reference fuel mixtures at elevated temperature and pressure *A. Zdanowicz, J. Mohr, J. Tryner, K. Gustafson, B. Windom, D. Olsen A.J. Marchese*	1F02: Exploring N_2O emissions from lean premixed hydrogen and natural gas laminar flames stabilized by a flat flame burner *C. Hernandez, M. Yoshioka, V. McDonell*	1G02: Prediction of autoignition and flame properties for multicom-ponent fuels using machine learning techniques *N. Shah, P. Zhao, D. DelVescovo, H. Ge*	1H02: Effect of capacitive discharge ignition on plasma combustion of propane-air mixture *K. Kim, S. Roy, S. Zare, O. Askari*	1J02: Reactive molecular dynamics simulations of the yield sooting indices of amines *H. Kwon, S. Shabnam, M.J. Montgomery, F. Guo, C.S. McEnally, L.D. Pfefferle, A.C.T. van Duin, Y. Xuan*	1K02: Uncertainty quantification and validation of a 15MW oxy-fired coal combustion system *J.C. Parra-Álvarez, S. Smith, B. Isaac, M. Zhou, P. Smith*
10:15	1A03: Functional group chemistry of low-temperature biofuel oxidation *B. Rotavera, C.A. Taatjes*	1B03: LES/PDF of Sandia flame D using a pre-partitioned adaptive chemistry (PPAC) methodology *A.S. Newale, Y. Liang, S.B. Pope, P. Pepiot*	1C03: Assessing the impact of multicomponent transport on the vorticity budget of turbulent premixed flames *A.J. Fillo, K.E. Niemeyer*	1D03: Swirling dynamics in liquid-pool fires:transitions between pool fires, fire whirls, and blue whirls *W. Coenen, E. Kolb, A.L. Sánchez, F.A. Williams*	1E03: Auto-ignition characteristics of hydrotreated vegetable oil and ultra low sulfur diesel and their blends in ignition quality tester *S. Alkhayat, G. Joshi, N. Henein*	1F03: Head-on quenching of laminar methane-air flames on a wall at temperatures below 300 K *T.F. Guiberti, J.S. Damazo, E. Kwon, W.L. Roberts, D.A. Lacoste*	1G03: Chemical explosive mode analysis of lean blowout in a gas turbine combustor *C. Xu, P. Kundu, T. Lu, S. Som*	1H03: Effect of unequal blockage ratio and obstacle spacing on wave speed and overpressure during flame propagation in premixed H_2/O_2 mixtures *C.B. Ahumada, Q. Wang, E.L. Petersen*	1J03: A novel method for spatially-resolved quantitation of large polycyclic aromatic hydrocarbons in laminar sooting flames *K. Gleason, F. Carbone, A.J. Sumner, B.D. Drollette, D.L. Plata, A. Gomez*	1K03: Bayesian parameter estimation for a Large-Eddy Simulation (LES) based coal NO_X model *O. Díaz, J. Thornock, S. Smith, B. Isaac, D. Harris, D. Chen, Z. Li, P. Smith*
	Combustion Artwork is displayed at the main entrance on the upper floor near the registration desk. Voting closes Tuesday at 17:30 Winners will be announced Tuesday night at the Bangquet Sponsors are displayed in the Atrium Lower Floor Work in Progress Posters Session is 08:00 – 18:00 in the Upper and Lower Floors of the Atrium									

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	Chemical Kinetics I *Session Chair: S.J. Klippenstein*	Chemical Kinetics II *Session Chair: C.F. Goldsmith*	Turbulent Flames *Session Chair: J.H. Chen*	Fire *Session Chair: A. Trouvé*	Engines *Session Chair: Z. Yue*	Laminar Flames *Session Chair: J. Tinajero*	Engines II *Session Chair: J.H. Mack*	Detonations *Session Chair: G. Goodwin*	Soot *Session Chair: J. Camacho*	Coal *Session Chair: E. Beagle*
10:35	1A04: Studies of low and high temperature oxidation of n-pentane with nitric oxide and nitrogen dioxide additions in a jet stirred reactor *H. Zhao, A.G. Dana, Z. Zhang, W.H. Green, Y. Ju*	1B04: A unifying analytical framework of using Jacobian matrices with consistent state vectors *P. Sharma, A. Newale, S. Pope, P. Pepiot*	1C04: A non-local analysis of strong fluctuations in non-premixed turbulent jet flames *M. Gauding, D. Denker, Y. Brahami, M. Bode, E. Varea, L. Danaila*	1D04: The influence of an immersed heater on pool fire burning behaviors *X. Pi, L. Chang, A.S. Rangwala*	1E04: Impact of ethanol additions on autoignition characteristics of a full boiling range gasoline and its surrogates at advanced engine conditions *D. Kang, A. Fridyland, S.S. Goldsborough, M. Mehl, S. Wagnon, W.J. Pitz, M.J. McNenly*	1F04: Experiments and modeling of NO_X formation in premixed stagnation flames of a typical jet A *K. Wan, C. Saggese, R. Xu, H. Wang*	1G04: Mapping the dual-fuel combustion modes of a light-duty diesel engine at medium speed and low load *J. Martin, A. Boehman*		1J04: Development of a data-derived sooting index that includes effects of oxygen-containing fuel components *P.C. St. John, S. Kim, R.L. McCormick*	

10:55 – 11:20 Break with beverages and light snacks available in the Upper and Lower Floors of the Atrium

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11:20	1A05: Influence of chemically termolecular reactions on species concentrations during RDX combustion *R.E. Cornell, C.E. LaGrotta, M.C. Barbet, M.P. Burke*	1B05: Understanding of the differences of graph-based mechanism reduction methods through a new species block strategy *G. Xiao*	1C05: Do turbulent nonpremixed cool flames require special treatment? *A.G. Novoselov, C.B. Reuter, O.R. Yehia, Y. Ju, M.E. Mueller*	1D05: Effect of initial fuel temperature on flame spread rate of alternative aviation fuels *V. Goyal, R. Roncancio, J. Kim, A. Navarkar, V.R. Hasti, J.P. Gore*	1E05: Examination of predictive flame blow off boundaries for premixed fuel/air reactions at gas turbine premixer conditions *C. Hernandez, V. McDonell*	1F05: Numerical investigation of real gas effects in premixed CH_4 - O_2 flames at cryogenic conditions *A. Gopal, P.S. Volpiani, S. Yellapantula, J. Larsson*	1G05: Application of physics-based machine learning in combustion modeling *A. Takbiri-Borujeni, M. Ayoobi*	1H05: Extension of detonation limits using ozone as an additive *X. Shi, J. Crane, H. Wang*	1J05: Experimental and theoretical study of the soot-forming tendencies of furans as potential biofuels *J. Zhu, H. Kwon, C.S. McEnally, Y. Xuan, P.C. St. John, S. Kim, L.D. Pfefferle*	1K05: Assessment of various tar and soot treatment methods for use in coal combustion simulation *J. McConnell, J.C. Sutherland*

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11:40	1A06: Analysis of RDX mono-propellant combustion wave structure using a model with detailed condensed-phase kinetics *M. Khichar, L. Patidar, S.T. Thynell*	1B06: An automatic rate-based algorithm for building reduced kinetic mechanisms and interaction modules *L. Backer, P. Pepiot*	1C06: Evolution of local flame displacement speeds in turbulence *H.L. Dave, S. Chaudhuri*	1D06: Experimental investigation of hot surface ignition temperatures for aviation fuels *V. Goyal, Y. Tursyn, V.R. Hasti, J.P. Gore*	1E06: Flame stability for a premixed jet in vitiated coflow *T.C. Owens, S.W. Grib, M.W. Renfro*	1F06: Influence of low- and high-temperature chemistries on flame propagation in supercritical fluids *W. Liang, X. Yang, C.K. Law*	1G06: Performance analysis of an implicit, fully-coupled method for simulating reactive flows *N. Deak, F. Bisetti*	1H06: Explosion characteristics measurements of propane-argon-oxygen mixture *A. Farhat, M. Jansons, O. Samimi-Abianeh*	1J06: A numerical study on the sooting tendencies of Co-Optima bio-derived blendstocks *H. Kwon, K. Zhang, S.W. Wagnon, W.J. Pitz, J. Zhu, C.S. McEnally, L.D. Pfefferle, Y. Xuan*	1K06: Predicting smoke emissions using a compositional linear trend *D.R. Weise, T.J. Johnson, J. Palarea-Albaladejo, H. Jung*
12:00	1A07: Thermogravimetric analysis and chemical kinetic study of HMX decomposition in liquid phase *L. Patidar, M. Khichar, S.T. Thynell*	1B07: Re-analysis of methoxy decomposition measurements at high temperature *C. Santana-Ramirez, J. Santner*	1C07: Evolution of turbulent flame speed of premixed flames *H.L. Dave, S. Chaudhuri*	1D07: Design of an experimental apparatus to measure Minimum Hot Surface Ignition Temperature (MHSIT) of aviation fluids *M.S. Ulcay, L.N. Dillard, J.P. Gore, P.C. Sweeney*	1E07: Multimodal instability characteristics of a high pressure, turbulent, premixed jet flame *T. Buschhagen, R. Gejji, L. Tran, C.D. Slabaugh*	1F07: The effect of working fluids on premixed hydrogen combustion in a constant volume combustion chamber *M. Morovatiyan, M. Shahsavan, J. Aguilar, J.H. Mack*	1G07: A direct method for calculating the turning points of perfectly stirred reactors *Y. Wu, T. Lu*	1H07: Quenching limits and dynamics of multidimensional detonation waves confined by an inert layer *S. Taileb, J. Melguizo-Gavilanes, A. Chinnayya*	1J07: Soot characterization of burning wildland porous fuel bed *N. Mofidi, J. Hashempour, M.T. Timko, A. Simeoni*	1K07: Early stage sub-micron particle formation during pulverized coal combustion in a two-stage flat flame burner *D. Khatri, Z. Yang, A. Gopan, R.L. Axelbaum*
12:20	1A08: Heterogeneous catalysis of hydrogen peroxide vapor on platinum *B.L. Rhodes, P.D. Ronney, J.D. DeSain*	1B08: The pyrolysis chemistry of propionic acid and ethyl propionate in a microreactor *C. Rogers, K. Cummins, J. Porterfield, J. Daily, B. Ellison, N. Labbe*	1C08: Turbulent deflagrations of mildly flammable refrigerant-air mixtures *P. Papas, P. Verma, R. Lord, L. Burns*	1D08: Laser induced incandescence measurement of soot in buoyant turbulent diffusion flames under different oxygen indexes *G. Xiong, D. Zeng, P.P. Panda, Y. Wang*	1E08: Chemical kinetic preferential vaporization impacts on lean blow-out behaviors of jet fuels *S.H. Won, N. Rock, S.J. Lim, S. Nates, D. Carpenter, B. Emerson, T. Lieuwen, T. Edwards, F.L. Dryer*	1F08: Binary diffusion coefficients of polycyclic aromatic hydrocarbons: A molecular dynamics study *C. Liu, H. Wang*	1G08: Accelerating laminar flamelet calculations; application to sooting tendencies of co-flow diffusion flames *S. Lapointe, Y. Xuan, R.A. Whitesides, M.J. McNenly*	1H08: Effects of low-temperature chemistry and turbulent transport on knocking formation for stratified dimethyl ether/air mixtures *T. Zhang, W. Sun, L. Wang, Y. Ju*	1J08: Measuring the sooting tendencies of terpenes as potential biofuels *P.A. Cherry, C.S. McEnally, J. Zhu, L.D. Pfefferle*	1K08: Ash aerosol and deposition formation with changing alkali-Cl-S additives during coal combustion *X. Li, Y. Wang, T. Allgurén, K. Andersson, D. Gall, J.O.L. Wendt*

12:40 – 13:55 Section Meetings Lunch

Please report to your Section meeting rooms:
Eastern States Section: Ballroom BC
Central States Section: Ballroom FG
Western States Section: Ballroom DE
All other attendees: Ballroom A

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	Chemical Kinetics I *Session Chair: R.S. Tranter*	Chemical Kinetics II *Session Chair: N.J. Labbe*	Turbulent Flames *Session Chair: M. Rieth*	Fire *Session Chair: E.S. Oran*	Engines *Session Chair: S. Yang*	Laminar Flames *Session Chair: M. Ayoobi*	Heterogeneous Combustion *Session Chair: R. Sui*	Detonations *Session Chair: P. Pal*	Soot *Session Chair: A. Josephson*	Coal *Session Chair: J. Graña-Otero*
13:55	1A09: C14 polycyclic aromatic hydrocarbons are formed by acetylene addition to naphthyl radicals *M.C. Smith, T.-C. Chu, W.H. Green*	1B09: An accurate reaction model for the high-temperature pyrolysis of silane and disilane *K.P. Chatelain, R. Alharbi, R. Mével, E.L. Petersen, D.A. Lacoste*	1C09: Assessing different subfilter mixing models for combustion in large eddy simulations *A. Jain, S.H. Kim*	1D09: A wide band gas radiation model for fire CFD simulations *I. Sikic, O.O. Oluwole, J. Wen, S. Dembele, B. Wu, X. Zhao, K.V. Meredith, Y. Wang*	1E09: Towards improved mesh-designing techniques of spark-ignition engines in the framework of spectral element methods *T. Chatterjee, S.S. Patel, M.M. Ameen*	1F09: Globally oscillating propagation of cellular expanding flames in constant pressure *J. Huo, A. Saha, T. Shu, Z. Ren, C.K. Law*	1G09: Flame as a unique method for the synthesis of hydrophobic C-layers *D. Merchan-Breuer, E. Murphy, B. Berka, A. Abdihamzehkolaei, W. Merchan-Merchan*	1H09: Examination of detailed methane/oxy-gen kinetics in the context of detonation simulations *C.F. Lietz, S.A. Schumaker, V. Sankaran*	1J09: Predicting PAH exciplex fluorescence: A TDDFT study *R.A. Krueger, G. Blanquart*	1K09: Characteristics of pressurized oxy-coal combustion in a 100 kWth, 15 bar combustor *Z. Yang, D. Khatri, T. Li, R.L. Axelbaum*
14:15	1A10: From benzene to naphthalene, direct measurement of ring growth in polycyclic aromatic hydrocarbon formation *T.-C. Chu, M. Smith, A.B. Uwagwu, Z.J. Buras, W.H. Green*	1B10: Ethanol kinetics modeling at low to intermediate temperature *A. Zyada, O.S. Abianeh*	1C10: Dynamically dominant interscale couplings in the nonlinear chemical source terms for species evolution in premixed turbulent combustion with application to LES modeling *P.L.K. Paes, Y.G. Shah, Y. Xuan, J.G. Brasseur*	1D10: Progress towards high fidelity simulations of large-scale fires *C. Lapointe, N.T. Wimer, J.F. Glusman, A.S. Makowiecki, J.W. Daily, G.B. Rieker, P.E. Hamlington*	1E10: Combustion modelling and simulation of dilute syngas fuels in a CFR engine *G. Padhi, A. Balu, D. Olsen, B. Windom*	1F10: An experimental study of cell-induced flame acceleration during the compression stage of confined spherical flame propagation *C. Xiouris, J. Jayachandran, A. Movaghar, R. Lawson, T. Ye, F.N. Egolfopoulos*	1G10: Flame synthesis nanostructures with complex morphologies and hybrid-nature *W.C. Jimenez, W. Merchan-Merchan*	1H10: Effect of a diffuser on conditioning flow field fluctuations at the exit of a methane-fueled rotating detonation combustor *J. Tobias, D. Depperschmidt, R. Miller, M. Uddi, A.K. Agrawal*	1J10: The effects of the interactions between aromatics on soot formation *C. Chu, M.J. Thomson*	1K10: Experimental and numerical modeling of laminar coal flames *L. McLaughlin, R. Mokhtarpoor, E. Beagle, C. Dunn, M. Stoellinger, E. Belmont*

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14:35	1A11: Ring opening of cycloalkanes at high temperatures *T. Sikes, R.S. Tranter*	1B11: RON and MON chemical kinetic modeling study *J.A. Corrubia, J.M. Capece, N.P. Cernansky, D.L. Miller, P.M. Najt, R.P. Durrett*	1C11: Differential diffusion modelling in LES/TPDF simulations of turbulent flames *H. Zhou, T. Yang, W. Xie, Z. Ren*	1D11: Simulation of unsteady radiation effects in laminar diffusion flames *R. Xu, A. Marchand, V.M. Le, T. Rogaume, F. Richard, J. Luche, A. Trouvé*	1E11: 3-D modeling of the CFR engine for the investigation of knock on natural gas *D. Bestel, B. Windom, D. Olsen, S. Bayliff, H. Xu*	1F11: Stratified spherical flame propagation of low molecular weight fuels in the presence of electric fields *C. Scudiere, J.-Y. Chen, X. Shi, N. Lebherz, S. Yu*	1G11: Reaction propagation in a printed Al/CuO composite observed using high-speed microscopy and thermometry *H. Wang, D.J. Kline, M.R. Zachariah*	1H11: Boundary layer ignition modeling *S.A. Coronel, S. Lapointe, J.E. Shepherd*	1J11: On the growth of Polycyclic Aromatic Hydrocarbons (PAHs) in a coflow diffusion flame *T. Mitra, C. Chu, T. Zhang, A.D. Sediako, M.J. Thomson*	1K11: Improvement of computational efficiency for discrete transfer radiation calculations through the use of dimensionally adaptive mesh techniques *T. Williams, B.R. Adams*
14:55	1A12: Kinetic studies of excited singlet oxygen atoms $O(^1D)$ reactions with methanol and ethanol *H. Zhong, C. Yan, C.C. Teng, T. Chen, A.C. Rousso, G. Wysocki, Y. Ju*	1B12: Foundational fuel chemistry model *Y. Zhang, Y. Tao, G. Smith, H. Wang*	1C12: Application of the hierarchical parcel swapping (HiPS) model to turbulent reacting flows *D. Lignell, A. Kerstein, A. Perego, T. Starick, J. Frei, H. Schmidt*	1D12: Simulations of a turbulent line fire with a steady flamelet combustion model and non-gray gas radiation models *V.M. Le, R. Xu, A. Marchand, S. Verma, T. Rogaume, F. Richard, J. Luche, A. Trouvé*	1E12: Large-eddy simulations of an ethanol direct-injection spark-ignition IC engine *S.J. Kazmouz, D.C. Haworth*	1F12: R-152a/air and R-134a/oxygen constant volume spherical flame burning velocity measurements *R.R. Burrell, M.J. Hegetschweiler, D.R. Burgess Jr., J.A. Manion, V.I. Babushok, G.T. Linteris*	1G12: Aluminum particle reactivity as a function of alumina shell structure: Amorphous versus crystalline *R. Walzel, M. Pantoya*	1H12: Premixed ethylene-air combustion in a dual-mode scramjet cavity flameholder *G.B. Goodwin, R.F. Johnson, H.K. Chelliah*	1J12: Isomer-specific combustion chemistry in opposed-flow diffusion flames of allene and propyne *G. Kukkadapu, N. Hansen, S.W. Wagnon, W.J. Pitz*	1K12: Exploring continuous monitoring methods for SO_3 and H_2SO_4 in flue gas conditions *A. Biasioli, D. Dunn-Rankin, Y.-C. Chien*
15:15	1A13: $H\dot{O}_2$ + $H\dot{O}_2$: High level theory and the role of singlet channels *S.J. Klippenstein, R. Sivaramakrishnan, U. Burke, K.P. Somers, H.J. Curran, L. Cai, H. Pitsch, M. Pelucchi, T. Faravelli, P. Glarborg*	1B13: High fidelity thermo-chemistry for kinetic modeling of methyl chloride combustion *D. Farina, Jr., S.K. Sirumalla, D. Sotir, R.H. West*		1D13: Detailed modeling of a small-scale turbulent pool fire *B. Wu, X. Zhao, S. Roy*	1E13: Predicting cycle-to-cycle variations in a spark-ignition engine using multi-cycle large eddy simulation *Y. Su, D. Splitter, S.H. Kim*	1F13: On the laminar burning speed and spherical flame structure of anisole-air premixed mixture *S. Zare, S. Roy, O. Askari*	1G13: Effect of polymer addition on burning rate of Pennsylvania crude *G. Singh, M. Esmaeilpour, A. Ratner*	1H13: Spatial dependence of energy deposition for cavity-based flame holder ignition in a scramjet *T. Ombrello*	1J13: New insights into PAH chemistry from flame-sampling high-resolution tandem mass spectrometry *B.D. Adamson, S.A. Skeen, M. Ahmed, N. Hansen*	1K13: Proposed criteria for MILD coal combustion *H. Zhou, T.A. Ring, J.C. Sutherland*

15:35 – 15:55 Break with beverages and light snacks available in the Upper and Lower Floors of the Atrium

Combustion Artwork is displayed at the main entrance on the upper floor near the registration desk.
Voting closes Tuesday at 17:30
Winners will be announced Tuesday night at the Bangquet

Sponsors are displayed in the Atrium Lower Floor

Work in Progress Posters Session is 08:00 – 18:00 in the Upper and Lower Floors of the Atrium

Room	Room 106	Room 107	Room 102	Room 212	Room 211	Room 101	Room 208	Room 204	Room 207	Room 210
	Chemical Kinetics I *Session Chair: P.T. Lynch*	Chemical Kinetics II *Session Chair: D.A. Lacoste*	Turbulent Flames *Session Chair: B.M. Cetegen*	Fire *Session Chair: Y. Wang*	Engines *Session Chair: D. DelVescovo*	Laminar Flames *Session Chair: Y.-C. Chien*	Heterogeneous Combustion *Session Chair: A. Ratner*	Detonations *Session Chair: S.A. Coronel*	Soot *Session Chair: B.M. Kumfer*	Coal *Session Chair: J. Sutherland*
15:55	1A14: A study of shock-tube facility effects over a wide range of conditions using multiple facilities *S.P. Cooper, D. Nativel, M. Fikri, E.L. Petersen, C. Schulz*	1B14: Autoignition of CRC diesel surrogates at low temperature combustion conditions: Rapid compression machine experiments and modeling *M. Wang, G. Kukkadapu, K. Zhang, S.W. Wagnon, M. Mehl, W.J. Pitz, C.K. Westbrook, C.-J. Sung*	1C14: Assessment of the stabilization mechanisms of turbulent lifted jet flames at elevated pressure using 2-D Raman imaging *T.F. Guiberti, W.R. Boyette, Y. Krishna, A.R. Masri, W.L. Roberts, G. Magnotti*	1D14: Effect of free-stream turbulence on wind-driven fires *X. Ren, X. Ju, M. Gollner*	1E14: Improving numerical modeling of DISI cold-start *A.C. Ravindran, S.L. Kokjohn*	1F14: Self-sustaining warm nonpremixed flames in the counterflow *O.R. Yehia, T. Zhang, C.B. Reuter, Y. Ju*	1G14: DNS of n-heptane droplet vaporization and combustion *J. Palmore Jr.*	1H14: Numerical modeling of supersonic combustion in a non-premixed rotating detonation engine *P. Pal, G. Kumar, S.A. Drennan, B.A. Rankin, S. Som*	1J14: Soot formation and radiation heat transfer in a tri-axial methane diffusion flame *P.H. Irace, Z. Yang, A. Gopan, R.L. Axelbaum*	1K14: Pore-resolving simulation to study the effect of morphology on char combustion *S. Jorgensen, S. Singer*
16:15	1A15: Quantitative measurements of CH in a shock tube using laser absorption at 427 nm *C.R. Mulvihill, M.W. Crofton, D.G. Arnold, E.L. Petersen, K.Y. Lam*	1B15: Oxidation of an iso-paraffinic alcohol-to-jet fuel and heptane mixture: An experimental and modelling study *J. Guzman, G. Kukkadapu, K. Brezinsky, C.K. Westbrook*	1C15: Statistical analysis of scalars for ignition via transient hot jet *M.E. Feyz, M.R. Nalim, V.R. Hasti, J.P. Gore*	1D15: A computational study on the fire merging of burning chamise shrubs *M.A. Habib, C. Anand, S. Mahalingam, B. Shotorban*	1E15: Numerical simulation of a controlled trajectory rapid compression and expansion machine *K.C. Bavandla, A. Tripathi, Z. Sun, S. Yang*	1F15: Effects of H_2O and CO_2 fuel dilution on a coflow methane/air diffusion flame *M. Vicariotto, D. Dunn-Rankin*	1G15: An investigation of characteristics of airblast atomization using 3D DNS for altitude relight conditions *A.A. Mukundan, T. Ménard, A. Berlemont, J. César, B. de Motta*	1H15: Simulating multidimensional reacting flow with the discontinuous Galerkin method *R.F. Johnson, A. Kercher, A. Corrigan, D. Kessler, D. Schwer, G. Goodwin*	1J15: Soot concentration, temperature, and radiant emission measurements in a turbulent ethylene jet flame *C.R. Shaddix, J. Zhang, T.C. Williams*	1K15: Kinetic Monte-Carlo study of pitting dynamics in high-temperature graphene gasification *S. Schmitt, J. Graña-Otero*

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16:35	1A16: A revisit of constant temperature approximation in chemical kinetics study using single pulse shock tubes with speciation *X. Han, J.M. Mehta, K. Brezinsky*	1B16: An experimental and modelling study of 2,4,4 trimethyl-1-pentene *N. Lokachari, K. Zhang, W.J. Pitz, H.J. Curran*	1C16: Understanding the effect of nanosecond pulsed discharge on ignition and flame stability of methane jet flames *S. Zare, H.W. Lo, A. El Maadi, S. Roy, K. Kim, O. Askari, F.G. del Campo*	1D16: A study of intermittent convective heating effects on fine fuel ignition *L. Benny, N. Chui, N. Warner, M.J. Gollner*	1E16: Numerical study on direct injection of hydrogen-methane blends into a constant volume combustion chamber *M. Shahsavan, M. Morovatiyan, J.H. Mack*	1F16: Rate-ratio asymptotic analysis of the influence of addition of carbon monoxide on the structure and mechanisms of extinction of nonpremixed methane flames *K. Seshadri, X.-S. Bai*	1G16: Numerical investigation of *n*-dodecane spray ignition *C. Zheng, B. Akih-Kumgeh*	1H16: An analysis of irregular detonation phenomena using machine learning and numerical simulation *K. Grogan, M. Ihme, Y. Lv*	1J16: Predicting soot formation and emission in wildland fires with FIRETEC *A.J. Josephson, R.R. Linn, E. Koo*	1K16: A continuum model for graphene oxidation *J. Graña-Otero, S. Schmitt*
16:55	1A17: Multi-species time history measurements during ethanol pyrolysis behind reflected shock waves *R. Choudhary, Y. Peng, J. Shao, D.F. Davidson, R.K. Hanson*	1B17: Validated model for burning velocities of R-32/O_2/N_2 mixtures over a wide range of conditions *D.R. Burgess, Jr., J.A. Manion, R.R. Burrell, V.I. Babushok, M.J. Hegetschweiler, G.T. Linteris*	1C17: Ignition and flame kernel development in lean premixed H_2/air flowing gases *S. Jo, J. Kim, J.P. Gore*	1D17: Effects of fuel characteristics on spread rate and surface temperatures of smoldering duff *D.A. Cowan, D.L. Blunck*	1E17: Influence of the real-gas equation-of-state binary interaction coefficients on the turbulent mixing at diesel-engine high-pressure conditions *D.T. Banuti, J. Bellan*	1F17: The influence of ammonia on soot formation and flame characteristics in laminar ammonia/methane diffusion flames *M.J. Montgomery, H. Kwon, Y. Xuan, C.S. McEnally, L.D. Pfefferle*	1G17: Predicting drop impact on heated walls using multiphase SPH with adaptive resolution *X. Yang, S.-C. Kong, C.-B.M. Kweon*	1H17: Study on analog system of detonation with two step chemical reaction model *Y. Sun*	1J17: Soot volume fraction measurements in piloted turbulent nonpremixed flames at elevated pressures *W.R. Boyette, A. Bennett, T.F. Guiberti, W.L. Roberts*	1K17: Modulated thermogravimetric experiments on Argonne premium coal samples with combustion gas analysis *S. Stuhlman, K. Kumar*
17:15	1A18: The experimental pursuit of elementary reaction rates for iso-propanol pyrolysis using multi-species constraint *A. Mansfield, M. Burnett, S.W. Wagnon, C. Thomas, M.S. Wooldridge*	1B18: Sensitivity of HyChem model accuracy to species measurement uncertainties of fuel pyrolysis *R. Xu, H. Wang*	1C18: Lift-off behavior of turbulent cool flames stabilized by autoignition *C.B. Reuter, Y. Ju*	1D18: Influence of lignin on smoldering propagation *B.D. Smucker, W.J. Jayasuriya, K.E. Niemeyer, D.L. Blunck*	1E18: Evaluation of combustion models for CFD simulation of pre-chamber ignition in a natural gas engine *J. Kim, R. Scarcelli, S. Som, A. Shah, M.S. Biruduganti, D.E. Longman*	1F18: Double blue zones in inverse and normal laminar jet diffusion flames *Z. Wang, P.B. Sunderland, R.L. Axelbaum*	1G18: Numerical study of drop impact on heated wall using SPH simulation *Y. Pan, X. Yang, S.-C. Kong*	1H18: Effect of boundary conditions on detonation simulations: A geometric model study *J. Crane, X. Shi, H. Wang*		1K18: The ozonolysis of isoprene in a cryogenic buffer gas cooling cell: A new method for branching ratios analysis *J.P. Porterfield, S. Eibenberger, D. Patterson, M.C. McCarthy*

	18:00 – 20:00 Mentoring Mixer in Ballroom DE Tomorrow, during breaks and transitions make sure to visit: Combustion Artwork is displayed at the main entrance on the upper floor near the registration desk. Voting closes Tuesday at 17:30 Winners will be announced Tuesday night at the Banquet Sponsors are displayed in the Atrium Lower Floor Work in Progress Posters Session is 08:00 – 18:00 in the Upper and Lower Floors of the Atrium

TUESDAY, 26 March 2019

07:00 – 16:00 Registration Open – Atrium of the Convention Center (Upper and Lower Floors)
08:00 – 18:00 Combustion Artwork is displayed at the main entrance on the upper floor near the registration desk.
Make sure to visit and vote before voting closes at 17:30
08:00 – 16:35 Sponsors are displayed in the Atrium Lower Floor

Work in Progress Posters (Display Set up 07:00 – 08:00, Poster Session 08:00 – 18:00) – Upper and Lower Floors of the Atrium

Room 102 - 104
07:55 Announcements: Guillaume Blanquart, *The California Institute of Technology*, Local Host
08:00 – 09:00 Plenary Lecture Hope Michelsen, Combustion Research Facility, Sandia National Laboratories
"Soot Formation, Growth, and Global Impact: The Life Story of a Mass Murderer"
Session Chair: Joaquin Camacho

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	Chemical Kinetics I *Session Chair: T. Sikes*	Chemical Kinetics II *Session Chair: C. Yan*	Turbulent Flames *Session Chair: A. Konduri*	Fire *Session Chair: S.N. Scott*	Engines *Session Chair: J.S. Heyne*	Laminar Flames *Session Chair: A.R. Karagozian*	Heterogeneous Combustion *Session Chair: X. Yang*	Diagnostics *Session Chair: W.D. Kulatilaka*	Soot *Session Chair: C.R. Shaddix*	Other *Session Chair: P. Pepiot*
09:20	2A01: Role of ozone addition in the explosion limits of hydrogen-oxygen mixtures: Multiplicity and catalyticity *W. Liang, Y. Wang, C.K. Law*	2B01: The effects of roaming radical reactions on global combustion properties of transportation fuels *C.F. Goldsmith, R.H. West*	2C01: Flame structure analysis of the Hi-Pilot stratified premixed jet flames using large eddy simulations *O.B. Shende, M. Ihme*	2D01: A numerical and theoretical study of the effects of wind on the structure of a turbulent line fire *S. Verma, A. Trouvé*	2E01: Numerical studies on flame-wall interaction in a closed chamber *H. Li*	2F01: Studies of high pressure 1,3-butadiene flame speeds and high temperature kinetics using hydrogen and oxygen sensitization *H. Zhao, Z. Zhang, Y. Rezgui, N. Zhao, Y. Ju*	2G01: Subgrid flamelet-generated manifold using multi-scale modeling for spray combustion *A. Panchal, R. Ranjan, S. Menon*	2H01: High-resolution velocimetry in turbulent premixed flames using a wavelet-based optical flow technique *B.E. Schmidt, A.W. Skiba, J.F. Driscoll, S.D. Hammack, C.D. Carter, J.A. Sutton*	2J01: Sooting tendencies of ethylene in a shock tube *S. Barak, S. Neupane, E. Ninnemann, R. Rahman, A. Laich, S. Vasu*	2K01: A review of evidence-based best practices for developing research software in combustion *K.E. Niemeyer, R.L. Speth, B.W. Weber, R.H. West*
09:40	2A02: Investigation of ethylene ozonolysis reaction in a flow reactor by VUV-photo-ionization mass spectrometry *B. Wu, X. Wu, J. Yang, F. Zhang, W. Sun*	2B02: Development of a new chemical mechanism for ethanol-air mixture in a wide range of temperature and pressure *S. Roy, S. Zare, O. Askari*	2C02: Getting the full picture: Extension of NGA to fully compressible reacting flows *G. Beardsell, S. Lapointe, G. Blanquart*	2D02: Numerical investigation of gypsum thermo-chemistry under fire exposure *S.P. Kozhumal, W.D. Hicks, H. Sezer*	2E02: Quantifying facility effects for the interpretation of optical engine data *M.A. Groendyk, D.A. Rothamer, J.E. Temme, C.-b.M. Kweon*	2F02: Laminar flame propagation in mixtures with non-zero reaction progress *H. Lin, P. Zhao*	2G02: The influence of droplet injection models on Reynolds averaged Navier-Stokes simulations of high-speed heptane/ethane spray flames *D.A. Kessler, B.T. Fisher, A.D. Tuesta, S.G. Tuttle, C.J. Pfützner*	2H02: Multi-isotope spectroscopy of CO for shock tube oxidation studies of fuel blends *D.I. Pineda, F.A. Bendana, K.K. Schwarm, R.M. Spearrin*	2J02: Evolution of sp^2 carbon bonding on nanoparticles formed in premixed stagnation flames at elevated temperature and equivalence ratio *S. Dasappa, J. Camacho*	2K02: Open source CFD for reacting flow simulation: An upgraded OpenFOAM platform *Q. Yang, P. Zhao, H. Ge*

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10:00	2A03: Insights into the reactions of hydroxyl radical with diolefins *F. Khaled, B.R. Giri, D. Liu, E. Assaf, C. Fittschen, A. Farooq*	2B03: Towards a high-accuracy kinetic database informed by theoretical and experimental data *C.E. LaGrotta, M.C. Barbet, L. Lei, M.P. Burke*	2C03: Time-efficient methods for real fluid property evaluation in numerical simulation of chemically reacting flows *P.J. Milan, Y. Li, X. Wang, S. Yang, W. Sun, V. Yang*	2D03: Numerical modeling of soot-radiation in optically-thin, buoyant diffusion flames of varying oxygen index *P. Chatterjee, K.V. Meredith, Y. Wang*	2E03: Analysis of transient thermoacoustic oscillations in a liquid fueled gas turbine combustor at elevated pressures *T.M. Wabel, S. Yang, M. Passarelli, J.D.M. Cirtwill, P. Saini, K. Venkatesan, A.M. Steinberg*	2F03: Experimental investigations of laminar flame propagation of C_1-C_4/O_2/inert mixtures at engine-relevant conditions *A. Movaghar, R. Lawson, F.N. Egolfopoulos*	2G03: Modeling disruptive burning in multicompo-nent droplets *T. Yau, M. Ihme*	2H03: Hyperspectral absorption tomography with a lineshape prior *S.J. Grauer, J. Emmert, A.M. Steinberg, S. Wagner, K.J. Daun*	2J03: Soot precursor formation from oxygenated aromatics: How oxygen functionality alters organic reaction pathways *S. Kim, G.M. Fioroni, B.D. Etz, P.C. St. John, M. Nimlos, T. Foust, C.S. McEnally, L.D. Pfefferle, Y. Xuan, R.S. Paton, R.L. McCormick*	2K03: Molecular level combustion simulations using the DSMC method *S. Trivedi, R.S. Cant, J.K. Harvey*
10:20	2A04: Low temperature oxidation of ethylene by ozone in a jet-stirred reactor *A.C. Rousso, N. Hansen, A.W. Jasper, Y. Ju*	2B04: A chemical functionality approach towards the formulation of a high-fidelity surrogate fuel for FACE gasoline F *A.D. Ure, S. Dooley, D. Kang, S.S. Goldsborough*	2C04: An overview of multi-physics modeling considerations for turbulent jet flames with inhomogeneous inlets *B.A. Perry, M.E. Mueller*	2D04: Numerical study of fire behavior between two inclined panels *Q. Li, Y.-T.T. Liao*	2E04: Flame-wall fuel film interaction under engine thermodynamic conditions *M. Tao, P. Zhao*	2F04: Effects of radiation on laminar flame propagation in H_2/O_2/N_2 mixtures at elevated pressures *S. Zheng, W. Liang, Z. Chen*		2H04: X-ray excitation of thermographic phosphors *E.R. Westphal, S.F. Son, E. Quintana, K.N.G. Hoffmeister*	2J04: In situ imaging studies of combustor pressure effects on soot oxidation *A.D. Sediako, A. Bennett, W.L. Roberts, M.J. Thomson*	2K04: A numerical investigation of quenched laser-ignited CH_4 and biogas mixtures near the lean flammability limit *D. Coombs, N. Peters, B. Akih-Kumgeh*

10:40 – 11:05 Break with beverages and light snacks available in the Upper and Lower Floors of the Atrium

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11:05	2A05: An experimental and modeling study of autoignition for cyclopentane and dimethyl ether binary blends *S.W. Wagnon, N. Lokachari, G. Kukkadapu, H.J. Curran, W.J. Pitz*	2B05: A population dynamics model for expanding turbulent flames *V.R. Unni, A. Saha*	2C05: A comparative study of hydrodynamic effects in turbulent premixed jet flames *L. Paxton, C. Wei, D.I. Pineda, S. Luna, R.M. Spearrin, F. Egolfopoulos*	2D05: Laboratory scale testing of Nomex fabric as a protective flame barrier in enriched oxygen atmospheres *W. Shang, M.C. Johnston, J. Capetillo, J.S. T'ien*	2E05: Flame position-shear layer offset effects on reacting jet in cross-flow dynamics *V. Nair, O. Klempay, V. Acharya, T. Lieuwen*	2F05: Studies of multi-channel spark ignition characteristics of n-pentane/air mixture under fuel lean conditions in a spherical bomb *H. Zhao, N. Zhao, T. Zhang, G. Ma, C. Yan, H. Zhong, Y. Ju*	2G05: Investigating the role of atomization on flame stability of liquid fuels in spray burner *R.A. Alsulami, B. Windell, S. Nates, W. Wang, S.H. Won, B. Windom*	2H05: Dual-pump coherent anti-Stokes Raman scattering spectroscopy in a turbulent heptane/ethane spray flame *A.D. Tuesta, B.T. Fisher, S.G. Tuttle, D.A. Kessler*	2J05: Effect of equivalence ratio and temperature on soot formation in partially premixed counterflow flames *K. Gleason, F. Carbone, A. Gomez*	2K05: Experimental and theoretical study of cyclopentanone as a catalyst for low temperature alkene oxidation *E.D. Christensen, S. Kim, G. Fioroni, R.S. Paton, R.L. McCormick*
11:25	2A06: Understanding siloxane combustion chemistry: Computational and experimental studies of hexamethyldisiloxane *R.A. Schwind, M.S. Wooldridge, R. Sivaramakrishnan*	2B06: Machine learning based models for joint PDF shapes for multi-scalar mixing in turbulent flows *S. Yellapantula, B.A. Perry, M.T.H. de Frahan, M.E. Mueller, R. Grout*	2C06: Unique identification of turbulent reacting system dynamics with time-lag phase portraits *T.P. Gallagher, R. Martin, V. Sankaran*	2D06: Simultaneous measurement of fuel transport and foam degradation for firefighting foams to improve understanding of fire suppressing mechanisms *K. Hinnant, A. Snow, S. Giles, J. Fleming, J.H. Miller, R. Ananth*	2E06: Jet development and penetration of a multihole diesel injector in a constant volume, low temperature chamber *A. Loper, E. Bogdanowicz, J. Bittle, A.K. Agrawal*	2F06: Application and refinement of scaling analyses for mild ignition *J. Santner, S.S. Goldsborough*	2G06: Investigating the role of preferential vaporization during submillimeter sized multi-component jet fuel surrogate droplet combustion *T. Farouk, S.H. Won, F. Dryer*	2H06: High-speed OH* and CH* chemi-luminescence imaging diagnostics in spherically expanding laminar and turbulent flames *P. Parajuli, T.T. Paschal, M.A. Turner, E.L. Petersen, W.D. Kulatilaka*	2J06: An investigation of soot evolution in high-pressure spray combustion *K.M. Mukut, S. Roy*	2K06: Combustion assisted fabrication of paper-templated metal structures *M. Morovatiyan, A. Mohapatra, M. Shahsavan, A. Kazi, D.C. Christodouleas, J.H. Mack*
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	Chemical Kinetics I *Session Chair: C.-J. Sung*	Turbulent Flames I *Session Chair: D. Dasgupta*	Turbulent Flames II *Session Chair: K.P. Grogan*	Fire *Session Chair: M. Thomsen*	Engines *Session Chair: S. Biswas*	Laminar Flames *Session Chair: X. Shi*	Heterogeneous Combustion *Session Chair: B.D. Shaw*	Diagnostics *Session Chair: B.E. Schmidt*	Soot *Session Chair: Y. Xuan*	Other *Session Chair: K. Whitty*
11:45	2A07: Performance comparison of chemical kinetic models for toluene autoignition *M.A. Mayer, K.E. Niemeyer*	2B07: A neural network-based flamelet model for a liquid propellant rocket engine with partially-premixed flame *Z. Shadram, T.M. Nguyen, A. Sideris, W.A. Sirignano*	2C07: Analysis on turbulent flow dynamics of a practical direct-injection swirler for gaseous fuel *M. Ghulam, Y. Shen, R.V. Gomez, E. Gutmark, C. Duwig*	2D07: Fuel effects on pool fire extinction by aqueous foams *R. Ananth, S. Giles, K. Hinnant, A. Snow, J. Fleming, J. Farley*	2E07: Effect of fuel properties on spray and combustion characteristics under compression ignition engine conditions *L. Zhao, M.M. Ameen, Y. Pei, Y. Zhang, M.L. Traver, J.M. García-Oliver, W. Vera-Tudela*	2F07: Influence of diluent gas on ignition in premixed methane-air-diluent mixtures *V.R. Katta, J.M. Bonebrake, D.L. Blunck, T.M. Ombrello*	2G07: Modifying continuous thermo-dynamics droplet vaporization models to predict functional group fluxes *S. Singer*	2H07: Diluent effect on combustion within a rapid compression machine *O. Samimi-Abianeh, J.A. Piehl, A. Zyada, M. Al-Sadoon, L. Bravo*	2J07: Soot formation models for non-premixed flames with variable stoichiometric mixture fraction and strain *P.R. Johnson, R.K. Chakrabarty, B.M. Kumfer*	2K07: Fabrication of binary manganese oxide - carbon films by flame assisted deposition with tuned metal oxidation and carbon sp^2 bonding *A. Aleshin, W. Wood, S. Dasappa, J. Camacho*
12:05	2A08: High-pressure ignition delay measurements of methane under highly diluted carbon dioxide and argon conditions *M. Karimi, B. Ochs, D. Ranjan, W. Sun*	2B08: Validation of a low Mach fire environment model with vertical porous burner experiments *A.J. Kurzawski, S.N. Scott, J.C. Hewson*	2C08: Local statistics of expanding turbulent flames: Effect of Darrieus-Landau instability *Z. Liu, A. Saha, S. Chaudhuri, C.K. Law*	2D08: Performance characterization of biomass-fueled camp stoves *J. Endara, W. Stone, H, Sezer*		2F08: Using confined spherically expanding flames to study autoignition of reacting mixtures *V. Gururajan, R. Lawson, A. Movaghar, F.N. Egolfopoulos*	2G08: High-speed imaging of spray near-field behavior in a turbulent heptane/ethane spray flame *B.T. Fisher, S.G. Tuttle, A.D. Tuesta, R.J. Jacob, D.A. Kessler, C.J. Pfützner*	2H08: Single-shot, OH Planar Laser-Induced Fluorescence (PLIF) studies of spherically expanding laminar flames *T.T. Paschal, M.A. Turner, P. Parajuli, Y. Wang, E.L. Petersen, W.D. Kulatilaka*	2J08: A physics-based approach to modeling soot formation from real jet fuel combustion *C. Saggese, R. Xu, H. Wang*	2K08: Formation mechanisms of Ni-rich $LiNi_{1-x-y}Mn_xCo_yO_2$ battery cathode materials in flame aerosol synthesis *C. Abram, J. Shan, X. Yang, C. Yan, D. Steingart, Y. Ju*
	12:25 – 13:40 Lunch on your own. Explore The Paseo and take advantage of the restaurants and open-air shopping just outside the Pasadena Convention Center 12:25 – 13:40 Women in Combustion Luncheon: Room 211 12:40 – 13:40 Learn about career opportunities at the Exponent Info Session in Room 212/214 12:25 – 13:40 USSCI Board Meeting in Room 205									

Room	Room 106	Room 107	Room 102	Room 212	Room 211	Room 101	Room 208	Room 204	Room 207	Room 210	Room 105
	Chemical Kinetics I *Session Chair: S.S. Goldsborough*	Chemical Kinetics II *Session Chair: M.S. Wooldridge*	Turbulent Flames *Session Chair: D. Lignell*	Fire *Session Chair: S. McAllister*	Engines *Session Chair: C. Hagen*	Laminar Flames *Session Chair: O. Askari*	Hetero-geneous Combustion *Session Chair: A.R. Demko*	Diagnostics *Session Chair: J.A. Sutton*	Stationary Combustion Systems *Session Chair: B. Windom*	Coal *Session Chair: Z. Yang*	Lam Memorial Session *Session Chair: C.K. Law*
13:40	2A09: Shock tube ignition study of prenol – a "hyperboosting" fuel relevant to the co-optima initiative *A.R. Laich, E. Ninnemann, S. Neupane, K. Thurmond, S. Wagnon, W.J. Pitz, S.S. Vasu*	2B09: Dynamic evaluation of multi-component pressure dependence in multi-channel reactions: A case study of CH_3+OH system *L. Lei, M.P. Burke*	2C09: Direct numerical simulation of an auto-ignitive turbulent flame in a stratified dimethyl-ether (DME)/air mixture *S. Desai, R. Sankaran, H.G. Im*	2D09: Downward burning of PMMA cylinders in spacecraft environments *M. Thomsen, C. Fernandez-Pello, X. Huang, S.L. Olson, P.V. Ferkul*	2E09: Analysis of ignition and stabilization modes in diesel spray flames using large eddy simulations and chemical explosive mode analysis *C. Xu, M. Ameen, P. Kundu, T. Lu, S. Som*	2F09: Temperature, species, and laminar flame speed measurements in high-temperature, premixed ethane-air flames *A.M. Ferris, J.J. Girard, A.J. Susa, D.F. Davidson, R.K. Hanson*	2G09: Very-high-pressure burning rates of aluminized and non-aluminized AP/HTPB-composite propellants *C.A.M. Dillier, T. Sammet, F.A. Rodriguez, E.D. Petersen, J.C. Thomas, E.L. Petersen*	2H09: Characterization of dust particle flow field in minimum ignition energy testing apparatus using high-speed digital in-line holography *C. Schweizer, A. Saini, D. Guildenbecher, C. Mashuga, W. Kulatilaka*	2J09: Incorporation of coal kinetics into a dual circulating fluidized bed reactor burning coal by chemical looping with oxygen uncoupling *Z. Reinking, H.-S. Shim, K. Whitty, J. Lighty*	2K09: Comparison of flame temperature, water mole fraction and mass flux for wildland fire fuels *A.S. Makowiecki, J.E. Steinbrenner, N.T. Wimer, C.B. Lapointe, J.F. Glusman, J.W. Daily, P.E. Hamlington, G.B. Rieker*	LAM1: CSP and local sensitivity analysis *E.-A. Tingas, D.A. Goussis*
14:00	2A10: Intermediate species measurements during sarin simulants combustion inside a shock tube *S. Neupane, R. Rahman, S. Barak, E. Ninnemann, A.E. Masunov, S.S. Vasu*	2B10: Pressure dependent kinetics of the reaction between CH_3O_2 and OH: Triox formation *C. Yan, L.N. Krasnoperov*	2C10: DNS analysis of flame propagation at different turbulence length scales *S. Trivedi, G.V. Nivarti, R.S. Cant*	2D10: Opposed flame spread over thick PMMA fuel samples in the narrow channel apparatus (simulated microgravity) *S. Hossain, I.S. Wichman, S.L. Olson, F.J. Miller*	2E10: Fuel vlend ratio effects on ignition and early Stage soot formation *J.E. Temme, S. Busch, V.D. Coburn, C.-b.M. Kweon*	2F10: Laminar vurning speed of isobutane/air/carbon dioxide mixtures at various pressures and temperatures *S.C. Yelishala, Z. Wang, Z. Lu, H. Metghalchi, Y.A. Levendis*	2G10: Burning rate characterization of guanidine nitrate and basic copper nitrate propellants with metal oxide additives *A.J. Tykol, F.A. Rodriguez, J.C. Thomas, E.L. Petersen*	2H10: Assessment of imaging diagnostics for measurement of lift-off length in diesel flames. *B. Yraguen, F. Poursadegh, C.L. Genzale*	2J10: A numerical study of confined turbulent jets for high-temperature homogeneous combustion with oxygen enrichment for industrial applications *K. Aanjaneya, W. Cao, C. Borgnakke, A. Atreya*	2K10: The role of chemical structure in the thermal decomposition of xylan *A.D. Ure, K. Dussan, A. O'Brien, S. Dooley*	LAM2: Using global pathway analysis to understand complex chemical kinetics *W. Sun*

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	Chemical Kinetics I *Session Chair: S.S. Goldsborough*	Chemical Kinetics II *Session Chair: M.S. Wooldridge*	Turbulent Flames *Session Chair: D. Lignell*	Fire *Session Chair: S. McAllister*	Engines *Session Chair: C. Hagen*	Laminar Flames *Session Chair: O. Askari*	Hetero-geneous Combustion *Session Chair: A.R. Demko*	Diagnostics *Session Chair: J.A. Sutton*	Stationary Combustion Systems *Session Chair: B. Windom*	Coal *Session Chair: Z. Yang*	Lam Memorial Session *Session Chair: C.K. Law*
14:20	2A11: Optimization of shock tube performance in the reaction region at high temperatures and pressures *J.M. Mehta, K. Brezinsky*	2B11: Reaction kinetics of chemically termolecular reactions: Pressure dependence *L. Lei, M.P. Burke*	2C11: DNS of multi-injection mixing and combustion at compression ignition engine conditions *M. Rieth, M. Day, C.-B. Kweon, J.B. Bell, J.H. Chen*	2D11: Radiation measurements of turbulent wall fire – Apparatus design and preliminary results *D. Zeng, G. Xiong, G. Agarwal, Y. Wang*	2E11: Effect of CO_2 dilution on the ignition and development of CH_4/air ignition kernels *J.M. Bonebrake, T.M. Ombrello, D.L. Blunck*	2F11: An experimental and modeling study of laminar flame speeds for isopropyl-nitrate. *C.F. Goldsmith, M.E. Fuller, N. Chaumeix*	2G11: Synchrotron based measurement of the temperature dependent thermal expansion coefficient of ammonium perchlorate *R. Kellogg, S. Lapidus, T. Hedman, J. Kalman*	2H11: Quantifying the influence of camera sensor and optics on multispectral image-based thin-filament pyrometry *V.M. Sauer, S.N.R. Isfahani, I. Schoegl*	2J11: Combustion performance of storage water heaters operated on mixtures of natural and renewable gas *S. Choudhury, Y. Zhao, V.G. McDonell*	2K11: Connecting burning rate and flame spread rate in opposed-flow flame spread over flat fuel beds *L. Carmignani, O. Kaskir, E. Tagger, S. Bhattacharjee*	LAM3: Toward Computational Singular Perturbation (CSP) without eigen-decomposition *P. Zhao, S.H. Lam*
14:40	2A12: A diaphragmless, fire-by-wire shock tube for high-temperature and low-pressure kinetics *M.E. Fuller, M. Skowron, R.S. Tranter, C.F. Goldsmith*	2B12: Screening for structural uncertainties from third-body collision efficiencies *M.C. Barbet, M.P. Burke*	2C12: DNS of a turbulent premixed flame stabilized over a backward facing step *K. Aditya, H. Kolla, J.H. Chen*	2D12: Structure and stability of an inclined laminar flame *R.S.P. Hakes, W. Coenen, A.L. Sánchez, M.J. Gollner, F.A. Williams*	2E12: Transient plasma ignition of lean and dilute propane/air mixtures *S. Biswas, I. Ekoto, R. Scarcelli*	2F12: R-152a/air and R-134a/oxygen constant volume spherical flame burning velocity measurements *R.R. Burrell, M.J. Hegetschweiler, D.R. Burgess Jr., J.A. Manion, V.I. Babushok, G.T. Linteris*	2G12: Low temperature decomposition of ammonium perchlorate in the presence of catalyst *E. Tolmachoff, T. Hedman, J. Essel, S. Kalman, J. Kalman*	2H12: 2-kHz laser absorption imaging of ethane in unsteady partially premixed flames *K.K. Schwarm, C. Wei, D.I. Pineda, R.M. Spearrin*	2J12: Evaluation of a low cost, real-time gaseous fuel composition sensor *A.K. Li, V. McDonell*	2K12: On the oxidative torrefaction of corn straw *E. Rokni, R. Yang, X. Ren, Y.A. Levendis*	LAM4: Theory of combustion of normal-alkane droplets supported by cool-flame chemistry *F.A. Williams, V. Nayagam*

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	Chemical Kinetics I *Session Chair: S.S. Goldsborough*	Chemical Kinetics II *Session Chair: M.S. Wooldridge*	Turbulent Flames *Session Chair: D. Lignell*	Fire *Session Chair: S. McAllister*	Engines *Session Chair: C. Hagen*	Laminar Flames *Session Chair: O. Askari*	Hetero-geneous Combustion *Session Chair: A.R. Demko*	Diagnostics *Session Chair: J.A. Sutton*	Stationary Combustion Systems *Session Chair: B. Windom*	Coal *Session Chair: Z. Yang*	Lam Memorial Session *Session Chair: C.K. Law*
15:00	2A13: A shock tube kinetic study on the reaction of OH + cyclopentanone and OH + cyclohexanone *D. Liu, B.R. Giri, A. Farooq*	2B13: The role of mixture rules in experimental interpretations of third-body efficiencies *M.P. Burke, L. Lei*	2C13: DNS of premixed flames under different turbulent conditions *C. Dhandapani, G. Blanquart*	2D13: Comprehensive analysis of dynamics and hazards associated with cascading failure in lithium ion cell arrays *A.O. Said, C. Lee, S.I. Stoliarov*	2E13: Investigation of fuel property effects on knock propensity in a Direct-Injection Spark-Ignition (DISI) engine *Z. Yue, S. Som*	2F13: Laminar flame speed measurements from OH* chemiluminescence of spherically expanding CH_4-O_2-CO_2 flames *M.A. Turner, T. Paschal, W.D. Kulatilaka, E.L. Petersen*	2G13: Microscopic imaging of 3D printed nano-aluminum PVDF composite propellants *R.J. Jacob, H. Wang, M.R. Zachariah*	2H13: Identification of phase boundaries in diesel-like fuel sprays by rainbow Schlieren deflectometry *C.T. Wanstall, J. Bittle, A.K. Agrawal*	2J13: Experimental assessment of the combustion performance of an oven burner operated on pipeline natural gas mixed with hydrogen *Y. Zhao, V. McDonell, S. Samuelsen*	2K13: Oxy-combustion vehavior of torrefied biomass particles *A. Panahi, N. Toole, Y. Yang, X. Wang, M. Schiemann, Y.A. Levendis*	LAM5: Propagation speeds and kinetic analysis of premixed heptane/air cool and warm flames at large ignition Damköhler numbers *T. Zhang, Y. Ju*
15:20	2A14: Time-resolved speciation of iso-octane first-stage ignition products at elevated effective pressures in a shock tube *A.J. Susa, S. Wang, D.F. Davidson, RK. Hanson*	2B14: Are termolecular reactions facile in radical recombinations? *A.W. Jasper, R. Sivaramakrishnan, S.J. Klippenstein*	2C14: Required transition zone size in hybrid LES-DNS for the study of premixed turbulence-chemistry interactions *C.A.Z. Towery, X. Gao, S.M. Guzik, S. Walters, P.E. Hamlington*	2D14: Analytical study of a burning accident in an obstructed coalmining passage *F. Kodakoglu, V. Akkerman*	2E14: Pre-ignition and knock limits on utilization of ethanol in octane–on–demand concept *E. Singh, K. Morganti, R. Dibble*	2F14: Laminar burning velocities of prenol – a "hyperboosting" fuel relevant to the Co-Optima initiative *G. Kim, S. Park, A.C. Terracciano, B. Almansour, S. Wagnon, W.J. Pitz, S. Vasu*	2G14: Burning rate and flame structure of cocrystals of CL-20 and a polycrystalline composite crystal of HMX/AP *M.D. Ruesch, M.S. Powell, A. Satija, R.P. Lucht, S.F. Son*	2H14: Mid-infrared laser-absorption imaging of temperature and CO in laminar flames *R.J. Tancin, R.M. Spearrin, C.S. Goldenstein*	2J14: An emission-free closed-loop carbon dioxide power cycle *S.M. Sarathy, S.Y. Mohamed, E. Singh, V.S.B. Shankar*	2K14: Pyrolysis and combustion of raw and torrefied biomass *A. Panahi, Y. Yang, M. Schiemann, Y.A. Levendis*	LAM6: Tangential stretching rate: Theory and application in the diagnostics of turbulent flames *W. Song, E.-A. Tingas, H.G. Im, P.P. Ciottoli, R.M. Galassi, M. Valorani*

15:40 – 16:00 Break with beverages and light snacks available in the Upper and Lower Floors of the Atrium

During breaks and transitions make sure to visit:

Combustion Artwork is displayed at the main entrance on the upper floor near the registration desk.
Voting closes today at 17:30
Winners will be announced Tuesday night at the Banquet

Sponsors are displayed in the Atrium Lower Floor

Work in Progress Posters Session is 08:00 – 18:00 in the Upper and Lower Floors of the Atrium

Room	Room 106	Room 107	Room 102	Room 212	Room 211	Room 101	Room 208	Room 204	Room 207	Room 210
	Chemical Kinetics I *Session Chair: M.P. Burke*	Turbulent Flames I *Session Chair: D.I. Pineda*	Turbulent Flames II *Session Chair: R. Sankaran*	Fire *Session Chair: M.J. Gollner*	Engines *Session Chair: J. Kim*	Laminar Flames *Session Chair: R.L. Axelbaum*	Heterogeneous Combustion *Session Chair: J. Kalman*	Diagnostics *Session Chair: S.J. Grauer*	Micro-Combustion/ New Concepts *Session Chair: M.E. Baumgardner*	
16:00	2A15: Autoignition of CRC diesel surrogates at low temperature combustion conditions: Rapid compression machine experiments and modeling *M. Wang, G. Kukkadapu, K. Zhang, S.W. Wagnon, M. Mehl, W.J. Pitz, C.K. Westbrook, C.-J. Sung*	2B15: Dynamics of scalar isosurfaces in isotropic turbulence *T. John, V. Acharya, T. Lieuwen*	2C15: Ignition and flame propagation in a supersonic cavity *E. Hassan, T. Ombrello, D.M. Peterson*	2D15: Forced convection fire spread along wooden dowel array *G. Di Cristina, S. Kozhumal, A. Simeoni, N. Skowronski, A. Rangwala, S.-k. Im*	2E15: Emissions formation in a heavy-duty compression-ignited engine converted to natural gas spark-ignited operation *J. Liu, C.E. Dumitrescu*	2F15: Experimental and numerical investigation of n-heptane cool flame structures and propagation speeds at sub-atmospheric pressures *M. Hajilou, M.Q. Brown, M.C. Brown, E. Belmont*	2G15: Aging effects on the pyrolysis rate of polymeric binders and fuels *A.R. Demko, T.D. Hedman, C.N. Dennis*	2H15: Evolution of the OH relative concentration during flame quenching in a rectangular cross section channel *A.M. Mahuthannan, P. Liu, J. Damazo, E. Kwon, D.A. Lacoste, W.L. Roberts*	2J15: Numerical investigation of ignition characteristics of selected fuel blends in a micro reactor *D. Akinpelu, I. Schoegl*	
16:20	2A16: A chemical pathway description of low-temperature propane ignition kinetics *S. Bai, R. Sivaramakrishnan, M.J. Davis, R.T. Skodje*	2B16: Topologically conditioned chemical flame structure for turbulent lean premixed flames *D. Dasgupta*	2C16: Investigating pulse combustion effects on the anode baking furnace energy consumption and emissions characteristics *A.R. Tajik, T. Shamim, A. Ghoniem, R.K.A. Al-Rub*	2D16: An experimental study on the effects of ullage on flame spread through wooden matchstick arrays *S.K. Lakkundi, V.M. Kimmerly, A.S. Rangwala*	2E16: Comprehensive emissions from a spark-ignited gasoline engine under transient load profiles *D. Wilson, D. Lehmier, C. Allen*	2F16: Numerical simulations of laminar nonpremixed CH_4-air jet flames influenced by varying electric fields *C-F. Lopez-Camara, M. Belhi, H.G. Im, D. Dunn-Rankin*	2G16: Direct writing of 90-weight percent nanothermite loading ink with a hybrid polymer *H. Wang, J. Shen, D.J. Kline, N. Eckman, N.R. Agrawal, T. Wu, P. Wang, M.R. Zachariah*	2H16: Exploiting line mixing effects for laser absorption spectroscopy at extreme combustion conditions *D.D. Lee, F.A. Bendana, R.M. Spearrin*	2J16: Low temperature soot regime of propane in a micro flow reactor with controlled temperature profile *A.H. Khalid, R.J. Milcarek, H. Nakamura, K. Maruta, J. Ahn*	

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	Chemical Kinetics I *Session Chair: M.P. Burke*	Turbulent Flames I *Session Chair: D.I. Pineda*	Turbulent Flames II *Session Chair: R. Sankaran*	Fire *Session Chair: M.J. Gollner*	Engines *Session Chair: J. Kim*	Laminar Flames *Session Chair: R.L. Axelbaum*	Heterogeneous Combustion *Session Chair: J. Kalman*	Diagnostics *Session Chair: S.J. Grauer*	Micro-Combustion/ New Concepts *Session Chair: M.E. Baumgardner*	
16:40	2A17: An analysis of a new thermal-chemical mechanism for plasma combustion instability in plasma assisted ignition *H. Zhong, M. Shneider, S. Wu, Y. Ju*	2B17: Correlation between integral length scale and unburned pocket formation in CH4/air premixed turbulent flames *J. Kim, R. Roncancio, A. Satija, R.P. Lucht, J.P. Gore*	2C17: Direct numerical simulation of high-pressure mixing in turbulent jets *N. Sharan, J. Bellan*	2D17: Upward flame spread over discrete thin fuels *W. Cui, Y.-T.T. Liao*	2E17: Effect of Mach number and low residence time on the NO_X emissions produced by a staged gas turbine model combustor *N.S. Rodrigues, T. Busari, W.C.B. Senior, Y.T. Chen, A.J. North, W.R. Laster, S.E. Meyer, R.P. Lucht*	2F17: Experimental study on the influence of gravity on highly diluted and sooting coflow flames *J. Tinajero, D. Giassi, D. Stocker, M. Long*	2G17: Analysis of the combustion behavior of 3D-printed aluminum/PVDF gased energetic laminates *M.C. Rehwoldt, H. Wang, D. Kline, N.R. Agrawal, M.R. Zachariah*	2H17: Modeling a micro-reactor with transonic regions *J.F. Glusman, C. Rogers, C.B. Lapointe, N. Labbe, G.B. Ellison, P. Hamlington, J.W. Daily*	2J17: Thermo-dynamic analysis of combustible systems for power generation in deep space missions *S. Cordova, S.C. Jones, J.-P. Fleurial, E.J. Brandon, E. Shafirovich*	
17:00	2A18: Kinetics study of ethanol oxidation behind reflected shock waves: Ignition delay times, H_2O measurements, and detailed kinetics model comparisons *T.M. Atherley, L.T. Pinzón, O. Mathieu, C.R. Mulvihill, I. Schoegl, E.L. Petersen*	2B18: On the role of scale separation in the enhancement of burning rates in turbulent premixed flames *T. Kulkarni, R. Buttay, M.H. Kasbaoui, A. Attili, F. Bisetti*		2D18: Effect of flow velocity on flame spread along insulated electrical wires *L. Gagnon, J.L. Urban, Y. Lu, C. Fernandez-Pello, V.P. Carey, Y. Konno, O. Fujita*	2E18: Novel automotive emission reduction and power generation through solid oxide fuel cells *T.S. Welles, J. Ahn*	2F18: Ion current and flame changes with electric fields in microgravity *Y.-C. Chien, J. Tinajero, D. Stocker, U. Hegde, D. Dunn-Rankin*	2G18: Experimental assessment of HTPB/Paraffin fuel blends for hybrid rocket applications *J.C. Thomas, J.M. Stahl, A.J. Tykol, F.A. Rodriguez, E.L. Petersen*	2H18: Examination of the suitability of thermal boundary layer analysis for boundary layer growth in a miniature shock tube *R.A. Shaik, A.L. Kastengren, P.T. Lynch*	2J18: Flame propagation of dual-pulse laser-induced breakdown in a premixed methane-air flow *L. Wermer, J.K. Lefkowitz, T. Ombrello, S. Im*	
	18:30 – 22:30 Banquet under the Space Shuttle Endeavour at the California Science Center First bus will leave the Pasadena Convention Center for the California Science Center by 17:45 Buses will depart from the Green Street entrance Buses will begin to return from the California Science Center to the Pasadena Convention Center starting at 21:00 and the last will depart at 22:45									

WEDNESDAY, 27 March 2019

08:00 – 12:00 Sponsors are displayed in the Atrium Lower Floor

Room 102 - 104
07:55 Announcements: Guillaume Blanquart, *The California Institute of Technology*, Local Host

08:00 – 09:00 Plenary Lecture Dr. Greg Rieker, University of Colorado Boulder
Session Chair: Anthony Marchese

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	Chemical Kinetics I *Session Chair:*	Turbulent Flames I *Session Chair: A. Saha*	Turbulent Flames II *Session Chair: F. Bisetti*	Fire *Session Chair: D. Zeng*	Engines *Session Chair: D.A. Rothamer*	Laminar Flames *Session Chair: E.L. Belmont*	Heterogeneous Combustion *Session Chair: H. Wang*	Diagnostics *Session Chair: R.M. Spearrin*	Micro-Combustion/ New Concepts *Session Chair: R.J. Milcarek*	Other *Session Chair: T. Holland*
09:20	3A01: Effects of pulsating flow field on NO and radially-inhomo-geneous NO_2 distribution in a multi-dimensional numerical investigation of McKenna-driven flow tube configuration *S.F. Ahmed, A. Charchi, F.L. Dryer, T.I. Farouk*	3B01: Application of the Damköhler In-Situ Targeted Adaptive Numerical Thermochemistry (DISTANT) finite-rate chemistry model to combusting and dissociating hypersonic flows *Z.A. LaBry, K.P. Grogan*	3C01: Experimental assessment of the stability and structure of turbulent premixed bluff-body stabilized flames at elevated pressures *A.W. Skiba, T.F. Guiberti, W.R. Boyette, W.L. Roberts, E. Mastorakos*	3D01: Flame propagation in mixtures of moist O_2/N_2 Oxidizer with fluorinated propene refrigerants (CF_3CFCH_2, CF_3CHCHF, and CF_3CHCH_2) *V.I. Babushok, M.J. Hegetschweiler, G.T. Linteris*	3E01: Detailed soot modeling of mixing controlled compression ignition engines *T. Strickland, S.L. Kokjohn*	3F01: Propagation and extinction of premixed H_2-O_2-N_2 edge-flames in a counter-flow burner *Z. Zhou, G.N. Narayanam, J.T. Weiss, P.D. Ronney*	3G01: Experiments and analysis of n-heptane/iso-butanol mixture droplet combustion *A. Dalili, M. Turello, F. Pizzetti, J.D. Brunson, C.T. Avedisian, K. Seshadri, S. Guo, A. Cuoci, P. Dou, F.A. Williams, A. Frassoldati, M.C. Hicks*	3H01: Rayleigh scattering mixing rate diagnostic technique for enclosed burners *J.W. Dayton, B. Poettgen, B.M. Cetegen*	3J01: Enabling tailored porous media burners via additive manufacturing *S. Sobhani, P. Muhunthan, D. Mohaddes, E. Boigne, Z. Cheng, M. Ihme*	3K01: Low temperature oxidation of methylpropyl ether *M.R. Nimlos, L. Bu, M.S. Johnson, D. Kang, G.M. Fioroni, R.L. McCormick, S. Kim, T.D. Foust, S.S. Goldsborough, W.H. Green*

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	Chemical Kinetics I *Session Chair:*	Turbulent Flames I *Session Chair: A. Saha*	Turbulent Flames II *Session Chair: F. Bisetti*	Fire *Session Chair: D. Zeng*	Engines *Session Chair: D.A. Rothamer*	Laminar Flames *Session Chair: E.L. Belmont*	Heterogeneous Combustion *Session Chair: H. Wang*	Diagnostics *Session Chair: R.M. Spearrin*	Micro-Combustion/ New Concepts *Session Chair: R.J. Milcarek*	Other *Session Chair: T. Holland*
09:40	3A02: Experimental measurements and kinetic modeling of NO_x formation for synthetic natural gas combustion under gas turbine relevant conditions *S.F. Ahmed, F.E. Alam, F.L. Dryer, T.I. Farouk*	3B02: Assessment of conditional source-term estimation for high pressure turbulent combustion modeling *C. Devaud, W.K. Bushe, J. Bellan*	3C02: Flame stabilization behavior of a heated reacting premixed jet in a hot vitiated crossflow *J.W. Dayton, B. Poettgen, B.M. Cetegen*	3D02: A comparative study of moisture evaporation models in the drying and pyrolysis of moist solid fuels *P.R. Borujerdi, B. Shotorban, S. Mahalingam, D.R. Weise*	3E02: Modeling pre-spark heat release and low temperature chemistry of iso-octane in a boosted spark-ignition engine *D. DelVescovo, D. Splitter, J. Szybist*	3F02: Numerical study of unsteady negative edge flames in a periodic flow *S.W. Grib, M.W. Renfro*	3G02: Evaluation of free-floating droplet acceleration in ISS droplet combustion experiments *C.L. Vang, B.D. Shaw*	3H02: Filtered Rayleigh scattering of cellular flames in tubular burner *C.D. Carpenter, R.W. Pitz*	3J02: Effects of dilution and pressure on combustion characteristics within externally heated microchannels *S.N.R. Isfahani, V.M. Sauer, I.M. Schoegl*	3K02: Investigation of combustion behavior of a hot air balloon burner *C. Hernandez, F. Albalawi, C. Vuong, M. Tanaka, Y.-C. Chien, D. Dunn-Rankin*
10:00	3A03: Branching ratio of $N_2O + O \rightarrow$ Products determined from flow reactor experiments at intermediate temperatures *F.M. Haas, F.E. Alam, J.S. Santner, T.I. Farouk, F.L. Dryer*	3B03: Assessment of enthalpy-based conditional moment closure models in predicting ignition of lean and stoichiometric PRF-air mixtures with temperature inhomogeneity *W. Wang, S.H. Kim*	3C03: Analysis of blow-out mechanisms of turbulent swirl-stabilized non-premixed flames *D. Li, T. Jaravel, M. Ihme*	3D03: Modeling flame merging behavior of two buoyant flames as a function of horizontal and vertical separation distance *F. Cannon, T.H. Fletcher, C. Shen*	3E03: NMR spectroscopy for the analysis of real fuels: A case study of FACE gasoline F *A.D. Ure, J.E. O'Brien, S. Dooley*	3F03: Impact of the Lewis number on flame acceleration at the early stage of burning in pipes *O. Abidakun, M. Alkhabbaz, D. Valiev, V. Akkerman*	3G03: Theory of combustion of normal-alkane droplets supported by cool-flame chemistry *F.A. Williams, V. Nayagam*	3H03: Filtered Rayleigh scattering thermometry in highly turbulent premixed flames *I.T. Monje, J.A. Sutton*	3J03: Ignition and self-sustained catalytic combustion of methane oxygen mixtures in a platinum microtube *S. Stuhlman, E. Al-Gharibeh, S. Beyerlein, K. Kumar*	3K03: Flame characteristics of cryogenic hydrogen releases from high-aspect ratio nozzles *B.R. Chowdhury, E.S. Hecht*

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	Chemical Kinetics I *Session Chair:*	Turbulent Flames I *Session Chair: A. Saha*	Turbulent Flames II *Session Chair: F. Bisetti*	Fire *Session Chair: D. Zeng*	Engines *Session Chair: D.A. Rothamer*	Laminar Flames *Session Chair: E.L. Belmont*	Heterogeneous Combustion *Session Chair: H. Wang*	Diagnostics *Session Chair: R.M. Spearrin*	Micro-Combustion/ New Concepts *Session Chair: R.J. Milcarek*	Other *Session Chair: T. Holland*
10:20	3A04: Impact of vinylic radicals + NO on the formation of cyanide-based species *A.D. Danilack, C.F. Goldsmith*	3B04: A comprehensive reduced-order manifold for non-adiabatic multi-modal turbulent combustion *A.C. Nunno, M.E. Mueller*	3C04: Experimental investigation of the blowoff characteristics of bluff-body stabilized 2D, V-shaped turbulent premixed propane-air flames *R. Roy, B.M. Cetegen*	3D04: Validation and uncertainty estimation of carbon fiber epoxy composite model *S.N. Scott, A.J. Kurzawski, V.E. Brunini, J.C. Hewson, J.P. Hidalgo, R.M. Hadden, S. Welch*	3E04: Exploring the distributed reaction regime for modeling noncatalytic partial oxidation of renewable fuels at elevated pressures *D. Jaimes, V. McDonell, S. Samuelsen*	3F04: The sensitivity of chemical kinetic models on flame transfer functions in acoustic fluctuation environments *A. Girdhar, V. Acharya, W. Sun*	3G04: Effect of aluminum nanoparticle additives on sooting hydrocarbon fuel droplet combustion *A. Vargas, H.S. Sim, M. Plascencia, A.R. Karagozian*	3H04: Simultaneous velocity and temperature measurements in turbulent nonpremixed flames using particle image velocimetry and filtered Rayleigh scattering thermometry *T.A. McManus, J.A. Sutton*	3J04: Hydrocarbon ignition on high surface area pt-electroplated wires *Y. Shi, J.J. Whalen III, P.D. Ronney*	3K04: Oxygen transport membranes for oxy-fuel combustion and carbon capture purposes *R. Falkenstein-Smith, V. DeBiase, J. Ahn*
10:40 – 11:05 Break with beverages and light snacks available in the Upper and Lower Floors of the Atrium										
Room	Room 106	Room 107	Room 102	Room 212	Room 211	Room 101	Room 208	Room 204	Room 207	Room 210
	Chemical Kinetics I *Session Chair: H.J. Curran*	Environmental *Session Chair: Y.-T. Liao*	Turbulent Flames *Session Chair: G. Magnotti*	Fire I *Session Chair: T.H. Fletcher*	Engines *Session Chair: R.P. Lucht*	Laminar Flames *Session Chair: J. Jayachandran*	Heterogeneous Combustion *Session Chair:*	Diagnostics *Session Chair: V.M. Sauer*	Micro-Combustion/ New Concepts *Session Chair: I. Schoegl*	Fire II *Session Chair:*
11:05	3A05: Autoignition experiments and kinetic modeling of selected highly-branched C_8–C_{16} *iso*-alkanes for surrogate fuel applications *R. Fang, G. Kukkadapu, M. Wang, S.W. Wagnon, K. Zhang, M. Mehl, C.K. Westbrook, W.J. Pitz, C.-J. Sung*	3B05: Numerical investigation on hydrothermal flame of supercritical methanol combustion *S. Saha, S.F. Ahmed, T. Farouk*	3C05: The effects of resolution on the fidelity of two-dimensional flame surface density measurements in premixed flame subjected to extreme levels of turbulence *A.W. Skiba, C.D. Carter, S.D. Hammack, J.F. Driscoll*	3D05: Identifying processes controlling ignition of fuel beds by firebrands *D. Bean, D.L. Blunck*	3E05: Numerical investigation of petroleum and ice interaction based on the Lattice Boltzmann method *H. Sezer, S.P. Kozhumal, A. Simeoni*	3F05: Computational simulations of non-equidiffusive premixed combustion in obstructed channels with open extremes *O. Abidakun, A. Adebiyi, D. Valiev, V. Akkerman*	3G05: Ignition of solid fuels: A new approach to study the time delay *R. Clay, K. Keivens, L. Carmignani, S. Bhattacharjee*	3H05: Capturing spatial temperature distributions with broadband single-beam absorption spectroscopy *N.A. Malarich, T.R.S. Hayden, G.B. Rieker*	3J05: Hydrocarbon-fueled portable power generator with no moving parts *J. Wongwiwat, P. Bhuripanyo, T.S. Welles, V.P. DeBiase, J. Ahn, P.D. Ronney*	3K05: Flame spread across materials commonly used on spacecraft at varied oxygen and pressure levels along the normoxic curve in simulated microgravity *P. Spang, F.J. Miller, S.L. Olson, I.S. Wichman*

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	Chemical Kinetics I *Session Chair: H.J. Curran*	Environmental *Session Chair: Y.-T. Liao*	Turbulent Flames *Session Chair: G. Magnotti*	Fire I *Session Chair: T.H. Fletcher*	Engines *Session Chair: R.P. Lucht*	Laminar Flames *Session Chair: J. Jayachandran*	Heterogeneous Combustion *Session Chair:*	Diagnostics *Session Chair: V.M. Sauer*	Micro-Combustion/ New Concepts *Session Chair: I. Schoegl*	Fire II *Session Chair:*
11:25	3A06: Ignition delay times of gas-to-liquid jet fuels behind reflected shock waves *S.A. Alturaifi, B. Guo, E.L. Petersen*	3B06: Advanced quality methods for thermal oxidizer operation *R.J. Martin*	3C06: Experimental assessment of the state-space structure of CH_2O, CH, and OH within premixed flames subjected to extreme turbulence *A.W. Skiba, C.D. Carter, S.D. Hammack, J.F. Driscoll*	3D06: Critical conditions for ignition of structural materials by piles of smoldering firebrands *H. Salehizadeh, J.C. Oey, M. Scott, M.J. Gollner*	3E06: The effect of chemical and physical fuel properties on the approval and evaluation of alternative jet fuels *J.S. Heyne, K.C. Opacich, E. Peiffer, M. Colket*	3F06: The role of wall conditions in finger flame acceleration in channels: A computational study *F. Kodakoglu, M. Alkhabbaz, D. Valiev, V. Akkerman*	3G06: Understanding the physical interpretation of proper orthogonal decomposition and dynamic mode decomposition for liquid injection *S.B. Leask, V.G. McDonell, S. Samuelsen*	3H06: Simultaneous temperature and concentration measurements using AOM-coupled laser absorption spectroscopy *Z.E. Loparo, E. Ninnemann, K. Thurmond, A. Laich, A. Azim, A. Lyakh, S.S. Vasu*	3J06: Rich-burn, Flame-assisted fuel cell, Quick-mix, Lean-burn (RFQL) furnace *R.J. Milcarek, V.P. DeBiase, J. Ahn*	3K06: Effect of char oxidation on near-limit flames in microgravity *P.B. Kumar, K. Naresh, A. Kumar*
11:45	3A07: Experimental and modeling study of the autoignition behavior of a standard oxygenated gasoline fuel *M. Mehl, D. Kang, S.S. Goldsborough, G. Kukkadapu, K. Zhang, S. Wagnon, W.J. Pitz, C.K. Westbrook*	3B07: Radiation modeling for gas turbine relevant conditions *S. Zhang, A. Johnson, X. Zhao*	3C07: Distributed turbulent combustion studies using PLIF diagnostics *N. Diskerud, A.W. Skiba, J.F. Driscoll*	3D07: Effects of fuel morphology on ember generation characteristics at the tree-scale *T.R. Hudson, R.B. Bray, D.L. Blunck*	3E07: Nonlinear dynamics of closely spaced thermoacoustic modes in the presence of noise *T. John, G. Ghirardo, V. Acharya, M. Bothien, T. Lieuwen*	3F07: Propagation and morphology of supercritical CO_2-diluted oxy-methane flames in obstructed channels *A. Adebiyi, G. Udochukwu, V. Akkerman*	3G07: H_2 and CO kinetic coupling during catalytic combustion of syngas/air over Palladium oxide *R. Sui, W. Liang, L. Zhang, J. Mantzaras, C.K. Law*	3H07: A novel two-color pyrometry system for high spatial resolution temperature measurements in flames *S.A. Reggeti, A.K. Agrawal, J.A. Bittle*	3J07: Meso/micro-scale combustion of natural gas for fuel cell applications *B.B. Skabelund, R.J. Milcarek, H. Nakamura, K. Maruta, J. Ahn*	3K07: Low-gravity near-blowoff opposed and concurrent flame behavior of burning cotton in parabolic aircraft testing and microgravity drop tower testing *S. Olson, H. Torikai, K. Hokari, M. Fukuda*

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	Chemical Kinetics I *Session Chair: H.J. Curran*	Environmental *Session Chair: Y.-T. Liao*	Turbulent Flames *Session Chair: G. Magnotti*	Fire I *Session Chair: T.H. Fletcher*	Engines *Session Chair: R.P. Lucht*	Laminar Flames *Session Chair: J. Jayachandran*	Heterogeneous Combustion *Session Chair:*	Diagnostics *Session Chair: V.M. Sauer*	Micro-Combustion/ New Concepts *Session Chair: I. Schoegl*	Fire II *Session Chair:*
12:05	3A08: Autoignition behavior of iso-olefins *S.S. Goldsborough, D. Kang, B. Wagner, K. Zhang, W.J. Pitz*	3B08: Firetec reconstructive simulations of the Fort McMurray wildfire (Alberta, Canada 2016) *T. Holland, G. Marshall, D. Thompson, R. Linn*	3C08: Multi-scalar measurements of premixed flames in extreme turbulence using Raman/Rayleigh diagnostics *T.M. Wabel, A.M. Steinberg, R.S. Barlow*	3D08: Fire ember pyrometry using a color camera *D.K. Kim, P.B. Sunderland*	3E08: Light-round ignition sequences of premixed annular gas turbine combustors *P.M. Allison, P.M. de Oliveira, R. Ciadiello, A. Skiba, E. Mastorakos*	3F08: Modeling of supercritical CO_2-diluted oxy-methane burning in Mchannels *A. Adebiyi, V. Akkerman*	3G08: Partial oxidation of methane within an opposed flow reactor with an embedded catalyst mesh *Y. Lin, G. Kogekar, C. Karakaya, H. Zhu, R.J. Kee, W.F. Northrop*	3H08: Temperature calculation of non-burning & burning materials exposed to a flame using a multispectral infrared camera *S.-O.-A. Gnessougou, A. Huot, M. Larivière-Bastien, M.-A. Langevin, B. Saute, A. De Champlain, X. Maldague*	3J08: Microreactor combustion of simple hydrocarbons *M.E. Baumgardner*	3K08: Temperature and motion tracking of metal spark sprays *J.L. Urban, Y. Liu, C. Fernandez-Pello, C. Xu*
12:25	3A09: Universal ignition delay times of gasoline *F. Khaled, A. Farooq*	3B09: Structural analysis of soot generated in a coflow diffusion flame formed using biodiesel, diesel, and diesel-biodiesel blends *A. Abdihamzehkolaei, W. Merchan-Merchan*	3C09: Flow visualization of fire propagation in mixed vegetative fuel beds *A.H. Aminfar, D.R. Weise, M. Princevac*	3D09: Interaction of moisture content, fuel bed structure, and ventilation on the burning rate *S. McAllister*		3F09: Characteristics of flames in quasi-2D channels: Propagation rates and scaling parameters *S. Shen, J. Wongwiwat, P. Ronney*	3G09: Plasma assisted chemical looping CH_4 reforming with water splitting using Ru/CeO_2 nano-rods *R.V. Ranganathan, Z. Liu, S.M. Fondriest, R. Wang, M. Uddi*	3H09: High-precision aerosol phosphor thermometry with Ce^{3+} and Pr^{3+} co-doped into lutetium aluminum garnet *D. Witkowski, J. Herzog, D.A. Rothamer*	3J09: Micro-reactor design optimization and manufacturing for studying high temperature unimolecular decomposition of large molecules *J. Sampathkumar, T. Fan, J. Daily, B. Ellison, N.J. Labbe*	3K09: Effects of ullage on combustion efficiency and plume entrainment of pit fires *V. Kimmerly, A.S. Rangwala*
	13:00 – 15:30 NASA/JPL Lab Tour Bus leaves at 12:30 Buses from the Green Street entrance of the Pasadena Convention Center Safe travels home and we hope to see you at the 12th U.S. National Combustion Meeting hosted by the Central States Section of the Combustion Institute									

11th United States National Combustion Meeting Work in Progress Posters

P01 Qiosk: Chemical kinetic model construction using high performance machine learning
Ramanan Sankaran

P02 A detailed chemical kinetic model for the supercritical water oxidation of methylamine: The importance of imine formation
Mohammad Ashraful Alam, Gabriel Da Sliva

P03 Understanding the effects of boundary layers on ignition of fuels with complex temperature dependence
Miles Burnett, Charles Daniels, Margaret Wooldridge

P04 Understanding the blending octane behavior of 2-methylfuran
Vijai Shankar Bhavani Shankar, S. Sarathy, Eshan Singh, Samah Mohamed

P05 Shock-tube measurements of OH* chemiluminescence in mixtures of H_2-NO_2 and H_2-N_2O
Clayton Mulvihill, Eric Petersen

P06 Investigation of non-ideal shock-tube behavior and its facility dependence
Sean Cooper, Eric Petersen, Damien Nativel, Mustapha Fikri, Christof Schulz

P07 Atmospheric flow reactor facility for study of N_2O under incipient reaction conditions
Francis (Mac) Haas, Haseeb Bukhari, Meagan Schweiger, Ryan Sweeney, Jeremy Rainey, Gianna Oldt, Rory Cronogue

P08 2-Line temperature measurement in miniature shock tube
Patrick Lynch, Rizwan Shaik, Ashish Sutar, Tushar Sharma, Peng Zhao

P09 Computational design of staged pressurized oxy-coal combustion
Gideon Udochukwu, Vyacheslav Akkerman, Abdulafeez Akinola Adebiyi

P10 Effects of non-uniform blockage ratio and obstacle spacing on wave speed and overpressure during flame propagation in premixed H_2/Air and H_2/O_2 mixtures
Cassio Brunoro Ahumada, Qingsheng Wang, Eric Petersen

P11 High pressure, high flow rate flow mixing apparatus
Patrick Lynch, Anandvinod Dalmiya, Jai Mehta, Andrew Laich

P12 High-speed OH* and CH* chemiluminescence imaging and OH-PLIF diagnostics in spherically expanding flames
Pradeep Parajuli, Tyler T. Paschal, Yejun Wang, Mattias A. Turner, Eric L. Petersen, Waruna D. Kulatilaka

P13 Spatially-resolved temperature and species in a hybrid rocket reaction layer based on laser absorption tomography
Fabio Bendana, Josue Castillo, China Hagström, Raymond Spearrin

P14 Tabletop line-tunable vacuum-UV light source for identifying radicals, isomers, and fragmenting ions
Nicole Labbe, David Couch, Cory Rogers, Jatinder Sampathkumar, Dan Hickstein, Sterling Backus, Margaret Murnane, Henry Kapteyn, Barney Ellison

P15 Flame merging patterns in two dimensions observed with three flames
Thomas H. Fletcher, Connor Last, Colton Van Wagoner, Trevor Black, Chen Shen

P16 Upward flame spread over a thin sample in a confined tunnel—effects of flow confinement and radiative interactions
Ya-Ting Liao, Yanjun Li

P17 Vertical fuel distribution effects on flame length in wildfires
Torben Grumstrup

P18 Ignition and combustion behavior of piezoelectric $BiFeO_3$ and Bi_2WO_6 in nanothermite formulations
Feiyu Xu, Haiyang Wang, Michael Zachariah

P19 Tuning combustion performance of Al/PVDF energetic films through direct-write additive manufacturing
Miles Rehwoldt, Haiyang Wang, Dylan Kline, Michael Zachariah, Noah Eckman, Niti Agrawal

P20 Investigation of the effect of varying H/D ratios on the near-field spray characteristics of a swirl burst injector
Lulin Jiang, Md Nayer Nasim, Imtiaz Qavi, Oladapo Akinyemi

P21 Burning rate characterization of ammonium perchlorate pellets with energetic and metal oxide additives
Felix Rodriguez, Erica Petersen, James Thomas, Catherine Dillier, Eric Petersen

P22 The burning rate characteristics of Polyoxymethylene (POM) in the opposed flow burner
Gerardo Talamantes, Richard Yetter, Eric Boyer

P23 Small-volume, high-throughput techniques for fuel physical property measurements
Wanjun Dang, Shyam Menon, Manas Gartia, Nishir Mehta

P24 Experimental investigation and modeling of oxidizer size and concentration effects on composite AP/HTPB propellant burning rates
James Thomas, Gordon Morrow, Catherine Dillier, Eric Petersen

P25 Performance enhancement of HTPB fuels burning in gaseous oxygen by metallic additives
James Thomas, Felix Rodriguez, Andrew Tykol, Eric Petersen

P26 Observing microscale combustion dynamics of a printed Al/CuO composite through high-speed videography and thermometry
Dylan Kline, Haiyang Wang, Michael Zachariah

P27 Effects of nano-assembly aluminum on the burning rates of AP/HTPB-based composite propellants
Catherine Dillier, Eric Petersen, Sudipta Seal, Kevin Grossman

P28 Simulations and experimental measurements of solid-phase temperatures in a dust-flame burner
David Kessler, Brian T. Fisher, Ryan Johnson, Rohit Jacob

P29 Ink formulation strategy of high loading nanothermite for 3D printing
Haiyang Wang, Jinpeng Shen, Dylan Kline, Noah Eckman, Michael Zachariah

P30 Numerical simulation of cool flame combustion for an n-heptane droplet in microgravity conditions
Matthew Q. Brown, Erica L. Belmont

P31 Numerical simulation of premixed combustion in a two-stroke polygon engine
Kevin Anderson, Christian Mendez

P32 Head-on quenching of laminar methane-air flames on a plate at temperatures below 300 K
Thibault Guiberti, Jason Damazo, Eddie Kwon, William Roberts, Deanna Lacoste

P33 Evaluation of cool flame ignition temperature on heated walls
Minhyeok Lee, Yong Fan, Yuji Suzuki

P34 Combustion for zero-emission power generation: Stability and species Investigation of laminar oxy-fuel flames in CO_2 environments at high temperatures and pressures
Fares Maimani, Gaetano Magnotti, Robert Dibble

P35 Uncertainty analysis for laminar flame speed measurements of low vapor pressure liquid fuels
Charles Keesee, Eric Petersen

P36 Dilution and pressure effects on ignition and extinction behavior of n-heptane-air mixtures in nonadiabatic perfectly stirred reactors
Vinicius Maron Sauer, Ingmar Schoegl

P37 The effect of droplets on laminar flame propagation for an acetone/air strained premixed flame
Dante McGrath, Luming Fan, Cheng Tung Chong, Simone Hochgreb

P38 Experimental characterization of freely propagating n-decane cool flames at sub-atmospheric pressures
Marcus C. Brown, Erica L. Belmont

P39 A non-thermal plasma fuel reformer for the production of hydrogen-rich syngas
Howard Pearlman

P40 Capacitance sensor for combustion
Jackson Pleis, Robert Geiger, Donald Kendrick

P41 Plasma-assisted catalysis of CO_2 and CH_4
Howard Pearlman

P42 Effect of the electrode material on ignition of stoichiometric methane – Air mixture
Abdeldjalil Reguig, Jason Damazo, Eddie Kwon, Deanna Lacoste

P43 A new shock tube facility for studying aerosolized mixtures of hydrocarbon liquids
Joshua Hargis, Eric Petersen, Sean Cooper, Olivier Mathieu

P44 Understanding the burning rates of nitromethane
Gregory Derk, Grant Risha, Eric Boyer, Nicholas Finch, Richard Yetter, Richard Dobbins, Mitchell Smooke

P45 Preliminary design and testing of thermite fueled power plant for Martian colonies
Jake Sugden, Jacob Cato, Wyatt Albert, Jeremy Cheng, Tyler Hutchison, Mark Killian, Mahdi Yoozbashizadeh, Joseph Kalman

P46 The role of free radicals in soot formation
Hope Michelsen, Olof Johansson, Paul Schrader, Martin Head-Gordon, Josie Hendrix, Diptarka Hait, Kevin Wilson

P47 The effect of soot in oxy-coal combustion systems
Kamron Brinkerhoff, Alex Josephson, Benjamin Isaac, Jeremy Thornock, David Lignell

P48 Investigation of combustion pathways for nitrogen-containing fuels: Isomeric analysis of $C_6H_{15}N$
Brian Etz, Hyunguk Kwon, Matthew Montgomery, Peter St. John, Charles McEnally, Lisa Pfefferle, Robert McCormick, Shubham Vyas, Seonah Kim

P49 A polynuclear aromatic hydrocarbon properties database
Jennifer Giaccai, Erin Adkins, Rachelle Jacobson, Erin Rae Russell, Houston Miller

P50 Cooling of intake air with liquid nitrogen to improve engine efficiency
Sufyan Jan, Robert Dibble, Jean-Baptiste Masurier

P51 Numerical simulation of non-premixed combustion in an array of actively forced jets
Kevin Anderson, Daniel Trejo

P52 Prediction of the autoignition of a fuel jet in a confined turbulent hot coflow using machine learning methods
Suhui Li, Wenkai Qian, Haoyang Liu, Min Zhu, Christos Markides

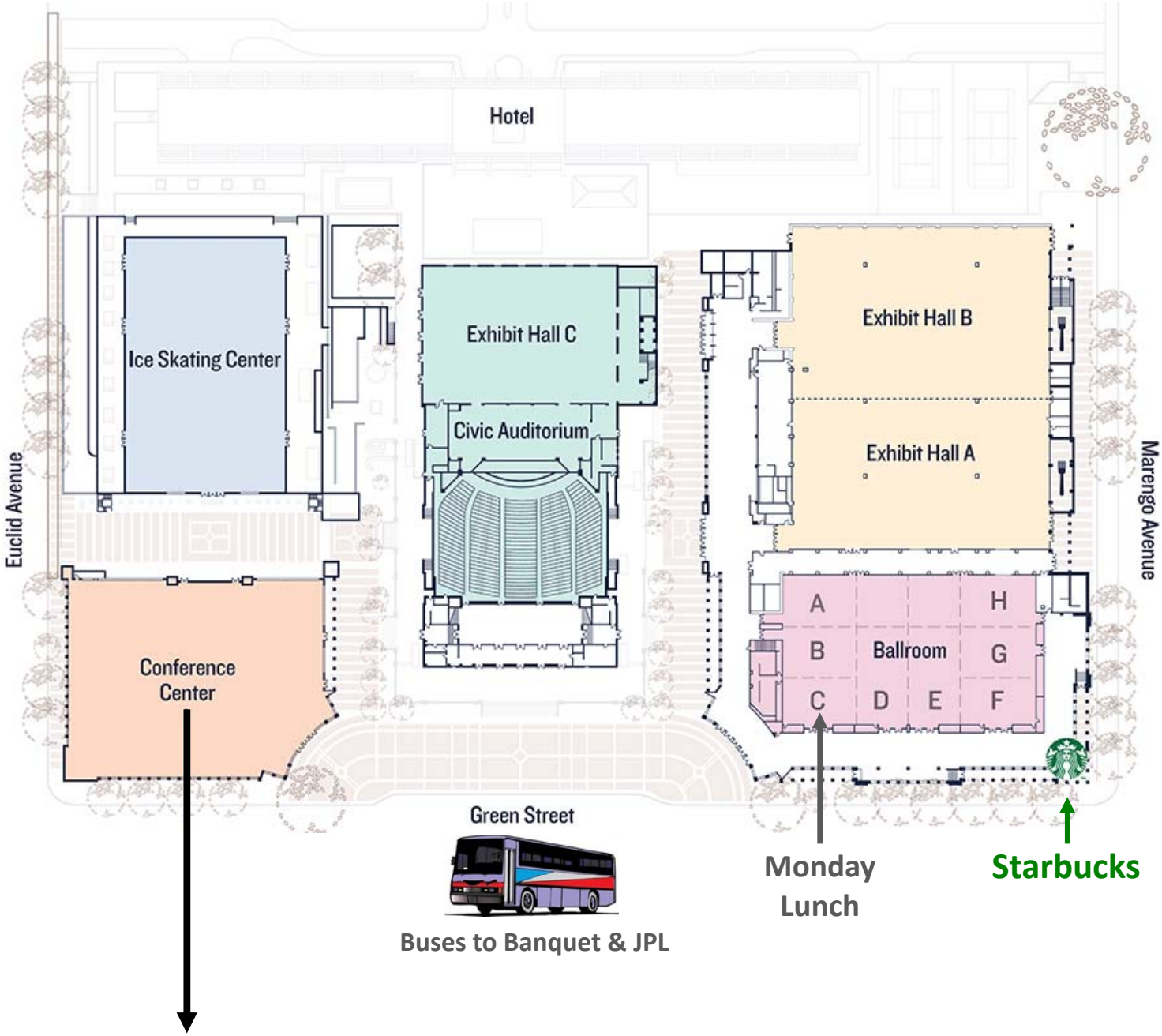
P53 Heat release effects on the Reynolds stress budgets in turbulent premixed flames
Jinyoung Lee, Michael Mueller

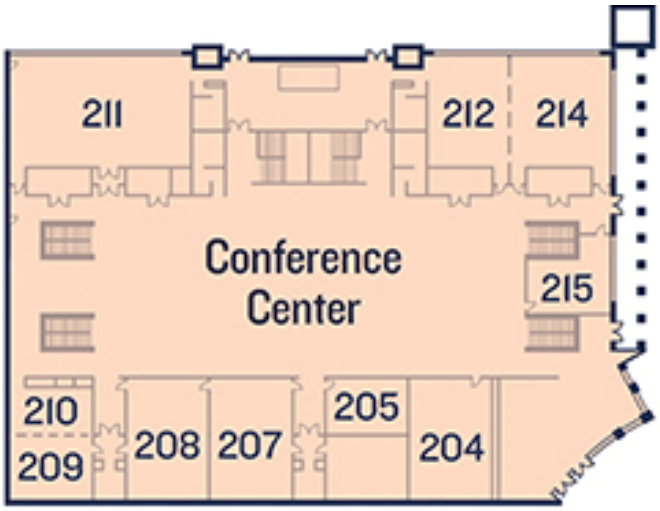
P54 Molecule-informed simulation method in non-equilibrium combustion
Myoungkyu Lee, Jacqueline Chen, Michail Gallis

P55 On the transition of autoignitive jet flames to MILD combustion
Aravind Ramachandran, Arjun Chauhan, Venkat Narayanaswamy, Kevin Lyons

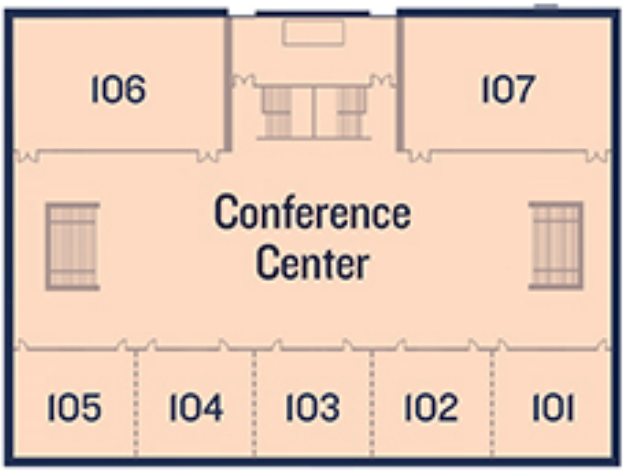
11th U.S. National Combustion Meeting Author Listing

Posters Author List





Conference Center Upper Level



Conference Center Lower Level