

The 3rd Joint Meeting of the U.S Sections of The Combustion Institute
March 16, 17, 18 & 19
2003

Program

SUNDAY EVENING & MONDAY

SUNDAY 15:00-18:00 Registration

March 16 18:00-20:00 Reception

MONDAY 07:30-08:00 Registration

8:00 Welcome

8:10 James E. Peters Lecture Premixed Turbulent Combustion - Current Knowledge and New Challenges
Prof James F. Driscoll, University of Michigan, Ann Arbor, MI

9:10 Invited Speaker I A Historical Perspective of The Trapped Vortex Combustor
Dr. W. Melvin Roquemore, AFRL, Wright-Patterson Air Force Base, OH

10:10 BREAK

Session A1: Kinetics I

10:30 A01 Experimental Study of Fuel Decomposition and Hydrocarbon Growth Processes in Heptane/Methane Flames, McEnally, C.S., Ciuparu, D. M., Pfefferle, L. D.

10:50 A02 Kinetic Studies of UV/Vis-Chemiluminescence in the CH + O₂ Gas Phase Reaction, Vaghjiani, G. L.

11:10 A03 Experimental Study of Propene Oxidation at Low and Intermediate Temperatures, Zheng, L., Kazakov, A., Dryer, F. L.

11:30 A04 High Temperature, High Pressure Oxidation of Toluene, Brezinsky, K., Tranter, R. S., Sivaramakrishnan, R., Durgam, S., Vasudevan, H.

11:50 A05 Multichannel Decomposition of Heptyl Radicals, Tsang, W., Awan, I. A., Manion, J. A.

Session B1: RIC Engines I

10:30 B01 Line-of-Sight Temperature Measurements in Combusting Diesel Spray Systems, Labs, J. E., Parker, T. E.

10:50 B02 Importance of Large-Scale Tumble Motion in a Four-Valve S.I. Engine- A PIV Investigation, Srinivasan, K.K., Joo, S. H., Lee, K. C., Midkiff, K. C.

11:10 B03 Quantitative High-Speed Imaging of Soot Temperature and Relative Concentration in a Spark-Ignited Direct-Injection Engine, Stojkovic, B. D., Fansler, T. D., Drake, M. C.

11:30 B04 Particulate Matter Emissions Monitoring from a Compression-Ignition Engine Fueled with Low Sulfur Diesel, Oxygenate-in-Diesel Blends, and Fischer-Tropsch Diesel, Damm, C. J., Cheng, A. S., Lucas, D., Sawyer, R. F., Dibble, R. W., Koshland, C. P.

11:50 B05 Investigation of HCCI Combustion with combined PLIF Imaging and traditional Combustion Analysis, Reuss, D. L., Sick, V.

Session C1: Laminar Flames I

10:30 C01 Unsteady Non-Premixed CH₄/H₂ Flame Structure: Detailed and Reduced Kinetic Models, Safta, C., Madnia, C. K.

10:50 C02 A Computational Study on the Dynamics of Counterflow Hydrogen-Air Edge Flames, Yoo, C., Im, H. G.

11:10 C03 Evolution of Instabilities in Spherically Expanding Laminar Flames, Haq, M. Z.

11:30 C04 Ignition of Premixed Hydrogen/Air by Heated Counterflow under Reduced and Elevated Pressures, Zheng, X. L., Law, C. K.

11:50 C05 Effects of Dilution and Oxidizer Preheating on Extinction and Structure of CH₄-O₂-Ar Counterflow Diffusion Flames, Yahagi, Y., Nakahara, S., Hamatsu, K., Takeuchi, M.

Session D1: Diagnostics I

10:30 D01 A PLIF Technique to Image Scalar Dissipation Rate in Non-premixed Flames, Sutton, J. A., Driscoll, J. F.

10:50 D02 Measured Influence of Oscillations in Fuel Mixture Fraction on Flame Behavior, Fernandez, V., Ratner, A., Culick, F. E. C.,

11:10 D03 Study of Turbulent Burning Velocity Using Laser Diagnostics in Turbulent Premixed Flames, Filatyev, S. A., Driscoll, J. F., Carter, C. D., Donbar, J. M.

11:30 D04 Experimental Investigation of Scalar-Scalar-Dissipation Filtered Joint Density Function and its Transport Equation, Tong, C., Bajagopalan, A. G.

11:50 D05 Combined Crossed-Plane Imaging and Stereo-Particle Image Velocimetry, Sattler, S. S., Gouldin, F. C., Boertlein, N. T.

Session E1: Catalytic Combustion

- 10:30 E01 Catalysis within Flames: Selective Reactivities of Fe and Ni, Vander Wal, R. L., Berger, G. M., Hall, L. J., Ticich, T.M.
- 10:50 E02 Application of Quantum Mechanical Density Functional Theory as a Fundamental Basis for Micro-kinetic Modeling of Catalytic Combustion, Mhadeshwar, A. D., Kragten, D.D, Vlachos, D. G.
- 11:10 E03 Catalytic and Non-Catalytic Combustion in Heat-Recirculation Burners, Ahn, J., Eastwood, C., Sitzki, L., Borer, K., Ronney, P.
- 11:30 E04 Plug Flow Combustion of Aqueous Ethanol-Air Mixtures through Catalytic Ignition, Patel, A. J., Williams, J., Beyerlein, S., Steciak, J.
- 11:50 E05 Evaluation of Catalytic Combustion Surface Chemistry with ILDM's, Reihani, S. A., Jackson, G. S.

Session F1: Soot I

- 10:30 F01 Structure and Soot Surface Reaction Properties of Laminar Diffusion Flames at 0.1-1.0 atm, El-Leathy, A.M., Kim, C. H., Xu, F., Faeth, G. M.
- 10:50 F02 Soot Distribution in a Reacting Wall-Impinging Jet, Song, L., Abraham, J.
- 11:10 F03 Modeling of PAH and Soot Formation in a Laminar Premixed Benzene/Oxygen/Argon Low-Pressure Flame, Richter, H., Granata, S., Howard, J. B., Kronholm, D. F.
- 11:30 F04 PAHs in Unsteady Counterflow Diffusion Flames, Xiao, J., Roberts, W. L.
- 11:50 F05 Soot Properties and Species Measurements in a Two-Meter Diameter JP-8 Pool Fire, Murphy, J. J., Shaddix, C. R.

12:10 LUNCH

Session A2: Kinetics II

- 1:10 A06 Rate Constants for the Recombination of Propargyl Radicals, Carstensen, H-H, Dean, A. M.
- 1:30 A07 The Lean Oxidation Of Iso-Butene In The Intermediate Temperature Regime At Elevated Pressure, Chen, J. S., Litzinger, T. A., Curran, H. J.
- 1:50 A08 A Comprehensive and Optimized Kinetic Model of H₂/CO Combustion, Davis, S. G., Joshi, A. V., Wang, H., Egolfopoulos, F. N.
- 2:10 A09 Computational Study of the Dissociation of 1,1,1,3,3,3-Hexafluoropropane, Ritter, E. R., Dawson, J. P.
- 2:30 A10 Rate Constants of Ethanol Thermal Decomposition, Li, J., Kazakov, A., Dryer, F. L.

Session B2: RIC Engines II

- 1:10 B06 The Development and Application of an Ignition and Combustion Model for Direct Injection Spark Ignition Engine Simulations, Tan, Z., Reitz, R. D.
- 1:30 B07 Improvement in Computational Efficiency for HCCI Engine Modeling by Using Reduced Mechanisms and Parallel Computing, Ali, A., Cazzoli, G., Kong, S.-C., Reitz, R., D., Montgomery, C.
- 1:50 B08 Computed Soot Distribution in a Turbulent Transient Jet under Diesel Conditions, Gopalakrishnan, V., Abraham, J.
- 2:10 B09 The Effect of Preignition Reactivity on Flame Stability, UHC and CO Emissions in Homogeneous Charge Engines, Zheng, J., Miller, D. L., Cernansky, N. P.
- 2:30 B10 Unburned Hydrocarbon Emissions from DISI Engines Under Stratified Charge Operation, Hilditch, J. A., Han, Z., Chea, T.

Session C2: Laminar Flames II

- 1:10 C06 Deviations from Equilibrium in Axisymmetric, Coflow Non-premixed H₂/Air Flames as Revealed by CARS and Spontaneous Raman Scattering, Toro, V., Mokhov, A. V., Levinsky, H. B.
- 1:30 C07 Computational and Experimental Study of Two-dimensional Methane Counterflow Diffusion Flames, Amantini, G., Gomez, A., Smooke, M. D.
- 1:50 C08 The Effect of Product Gas Enrichment on the Chemical Response of Premixed Diluted Methane/Air Flames, Liu, S., Chen, J. H.
- 2:10 C09 Modeling of the Transition from Non-sooting to Sooting, Coflow Ethylene Diffusion Flames, Smooke, M. D., Hall, R. J., Colket, M. B.
- 2:30 C10 The Response of Pulsed, Buoyant Diffusion Flames to Forcing Frequency and Amplitude, Williams, T. C., Shaddix, C. R., Desgroux, P.

Session D2: Diagnostics II

- 1:10 D06 Fan Beam Emission Tomography for Estimating Scalar Properties in Laminar Flames, Sivathanu, Y., Lim, J., Feikema, D.
- 1:30 D07 Wide Range Temperature and H₂O Concentration Measurements Using a Single Diode Laser, Gharavi, M., Buckley, S. G.
- 1:50 D08 Comparison of Nanosecond and Picosecond Excitation for Two-Photon LIF Imaging of Atomic Oxygen in Flames, Frank, J. H., Settersten, T. B.
- 2:10 D09 Laser-Induced Breakdown Spectroscopy for real-Time Engine Equivalence Ratio Measurements, Ferioli, F., Buckley, S. G., Puzinauskas, P. V.
- 2:30 D10 Diode Laser Sensor for H₂O and Temperature Applied to Measurements in an Industrial Combustion Vapor Deposition Torch, Jenkins, T. P., DeBarber, P. A., Oljaca, M.

Session E2: Gas Turbine Combustion

- 1:10 E06 Combustion Performance of Interstage Burners In Turbine Transition Ducts, Ryder, R. C., Brankovic, A., Bulzan, D. L., Marek, C. J.
- 1:30 E07 Development and Evaluation of a JP-8 Surrogate that Models Preignition Behavior in a Pressurized Flow Reactor, Agosta, A., Lenhart, D. B., Miller, D. L., Cernansky, N. P.

- 1:50 E08 PIV Investigation of High-swirl and Low-swirl Injectors for Lean Premixed Gas Turbines, Johnson, M. R., Littlejohn, D., Cheng, R. K., Nazeer, W. A., Smith, K. O.
- 2:10 E09 Investigation of the Impact of Fuel Composition on Soot Emissions, Kahandawala, M.S.P., Graham, J.L., Sidhu, S.S.
- 2:30 E10 Mixing of Wall-Injected Liquid Jets in Swirling Flows, Gong, X., Choi, K.

Session F2: Soot II

- 1:10 F06 Thermophoretic Deposition for the Characterization of Soot Particles in a Non-premixed Turbulent Flame Burning C₂H₂/Air, Hu, B., Koylu, U. O.
- 1:30 F07 Size-Selected Kinetics of Diesel Nanoparticle Oxidation, Higgins, K. J., Jung, H., Kittleson, D. B., Roberts, J. T., Zachariah, M. R.
- 1:50 F08 Size and Charge Distributions of Soot Particles in Premixed Ethylene Flames, Maricq, M. M.
- 2:10 F09 The Effect of Molecular Structure of Oxygenates on Soot Emissions, Westbrook, C. K., Pitz, W. J., Mueller, C. J., Pickett, L. M., Martin, G. C.
- 2:30 F10 Soot Measurements in Nonpremixed and Partially Premixed Flames, Choinski, M., Arana, C., Sen, S., Puri, I. K.

2:50 Break

3:10 Business Meeting LOCATION

Session A3: Kinetics III

- 3:30 A11 Kinetics of CuCl₂ Formation, Cosic, B., Belyung, D. P., Hranisavljevic, J., Fontijn, A.,
- 3:50 A12 A Single Pulse Shock Tube Study of the C₂Cl₆- Decomposition: Are the Kinetics Consistent with the Proposed Thermochemistry of C₂Cl₆, CCl₃ and C₂Cl₅?, Manion, J. A., Awan, I. A., Tsang, W.
- 4:10 A13 Thermal Decomposition of Dichloroketene, Shestov., A. A., Kostina, S. A., Knyazev, V. D.
- 4:30 A14 Reaction Mechanism and Modeling of SiCl₄ Combustion, Brady, B., Martin, L. R., and Moore, T.
- 4:50 A15 ab initio Study of the Cl₂O₃ Isomers and Their Role in the ClO + OClO Reaction, Zhu, R. S., Lin, M. C.
- 5:10 A16 Absolute Rate Measurements of OH Attack on Chlorinated Dioxin Substrates, Taylor, P. H., Neuforth, A., Yamada, T.

Session B3: RIC Engines III

- 3:30 B11 Development of High Performance Chemical Equilibrium Methods for Engine System Simulations and Model-based Controllers, Ali, M., Foster, D. E., Moskwa, J. J.
- 3:50 B12 How Small Can a Micro-HCCI Free-Piston Engine Be? Insights Gained from Experiments and Detailed Chemical Kinetic Modeling, Aichlmayr, H. T., Kittelson, D. B., Zachariah, M. R.
- 4:10 B13 Adaptive dynamic Control of Cyclic Dispersion in a Lean Spark-Ignition Combustion Model, Edwards, K. D., Wagner, R. M., Green, J. B., Daw, C. S.
- 4:30 B14 Quantifying The Contribution Of Lubrication Oil to Particulate Emissions From A Diesel Engine, Cheng, A. S., Rich, D., Dibble, R. W., Buchholz, B. A.
- 4:50 B15 Convection Path for Soot and Hydrocarbon Emissions from the Piston Bowl of a Stratified Charge Direct Injection Engine, Wooldridge, S. T., Lavoie, G. A.
- 5:10 B16 The Oxidation of an ISF Surrogate and its Components in the Negative Temperature Coefficient Region, Lenhart, D. B., Khan, A.R., Cernansky, N. P., Miler, D. L., Owens, K. G.

Session C3: Laminar Flames III

- 3:30 C11 Extinction of Near-Stoichiometric Premixed Flames in a Strained Flow Field, Bechtold, J., Antoniou, E., Matalon, M.
- 3:50 C12 On the Formation of Cellular Instabilities in Non-Premixed Jet Flames, Lo Jacono, D., Papas, P., Monkewitz, P. A.
- 4:10 C13 Acoustic-Flame Interaction in the Counterflow Field, Zambon, A. C., Chelliah, H. K.
- 4:30 C14 A Computational Simulation of the Dynamics of Cell Evolution in Flame Propagation, Yuan, J., Ju, Y., Law, C. K.
- 4:50 C15 The Combined and Separate Effects of Strain and Curvature on Premixed Laminar Flames, Groot, G. R. A., van Oijen, J. A., de Goey, L. P. H., Seshadri, K., Peters, N.
- 5:10 C16 Nonlinear Kinematic Response of Premixed Flames to Harmonic Velocity Disturbances, Liewen, T., Bellows, B.

Session D3: Diagnostics III

- 3:30 D11 Spectroscopic, Calibration and RET Issues for Laser-induced Fluorescence Measurements of Nitric Oxide in High-Pressure Diffusion Flames, Naik, S. V., Laurendeau, N. M.
- 3:50 D12 Hydroxyl Time-Series Measurements in Turbulent Counter-flow Nonpremixed H₂/CH₄/Air Flames, Venkatesan, K. K., King, G. B., Laurendeau, N. M., Renfro, M. W.
- 4:10 D13 Simultaneous PIV-OH PLIF Measurements In a Lean Premixed Swirl Stabilized Burner Operated on H₂/CH₄/Air, Wicksall, D. M., Schefer R. W., Agrawal, A. K., Keller, J. O.
- 4:30 D14 Two Laser UV Photofragmentation of Soot Particles, Stipe, C. B., Koshland, C. P., Sawyer, R. F., Lucas, D.
- 4:50 D15 Cavity Ring-Down Measurements of NO in Atmospheric-Pressure H₂/Air Flames, Sepman, A. V., van Essen, V. M., Mokhov, A. V., Levinsky, H. B.
- 5:10 D16 Electronic-Resonance-Enhanced (ERE) Coherent Anti-Stokes Raman Scattering (CARS) Spectroscopy of Nitric Oxide, Hanna, S. F., Kulatilaka, W.D., Arp, Z., Opartny, T., Scully, M. O., Lucht, R. P.

Session E3: Droplets and Sprays

- 3:30 E11 A Priori Study of Models for Large Eddy Simulations of Drop-Laden Flows, Okong'o N. A., Bellan, J.
- 3:50 E12 A Kinetic Approach to Model Dispersed Phase of Evaporating Droplets in Turbulent Flow, Pandya, R. V. R., Mashayek, F.

- 4:10 E13 The Statistical Modeling of Multicomponent-Fuel Drop Evaporation for Fuels Containing a Multitude of Species, Harstad, K. G., Le Clercq, P. C., Bellan, J.
- 4:30 E14 Droplet Combustion in Slow Convective Flow, Ackerman, M., Nayagam, V., Williams, F. A.
- 4:50 E15 Combustion of Moving Droplets and of Droplets Suspended within a Convective Environment: Transient Numerical Results, Pope, D. N., Lu, K., Gogos, G.
- 5:10 E16 Linearized Analysis of Liquid-Film Combustor, Sirignano, W. A., Stanchi, S.

Session F3: Soot III

- 3:30 F11 Experimental Study of Soot Distributions in Turbulent Jet Diffusion Flame Using Laser Induced Incandescence, Biswas, K., Xin, Y., Gore, J. P.
- 3:50 F12 Detailed Soot Field in an Ethylene/Air Non-premixed Turbulent Jet Flame from Laser Scattering and Extinction Experiments, Yang, B., Koylu, U. O.
- 4:10 F13 Modeling the Coagulation of Charged Particles, Jiang, P., Lighty, J. S., Sarofim, A., Eddings, E.
- 4:30 F14 Soot Inception in a Well Stirred Reactor, Blevins, L. G., Jensen, K. A., Ristau, R. A., Yang, N. Y. C., Frayne, C. W., Streibeck, R. C., DeWitt, M. J., Stouffer, S. D., Lee, E. J., Fletcher, R. A., Oran, J. M., Conny, J. M., Mulholland, G. W.
- 4:50 F15 Soot in Diesel Fuel Jets: Effects of Ambient Temperature, Ambient Density, and Injection Pressure, Pickett, L. M., Siebers, D. L.
- 5:10 F16 Massively Parallel Combined Monte Carlo and Molecular Dynamics Methods To Study The Long-Time-Scale Evolution of Particulate Matter and Molecular Structures Under Reactive Flow Conditions, Kubota, A., Harris, L., Mundy, C. J., Pitz, W. J., Melius, C., Westbrook, C. K., Caturla, M. J.

5:30 Break

6:00 Banquet

TUESDAY

March 18, 2003

Session A4: μ g Combustion I

8:00 Meeting Announcements

- 8:10 A17 Modeling Candle Flames Behavior in Variable Gravity, Alsairafi, A., Lee, S.-T., T'ien J. S.
- 8:30 A18 Simulation of Cup-Burner Flames in Microgravity, Katta, V. R., Takahashi, F., Linteris, G. T
- 8:50 A19 Partially Premixed Flames and Their Characteristics Under Microgravity, Lock, A. J., Choi, C. W., Ganguly, R., Puri, I. K., Aggarwal, S. K., Hegde, U.
- 9:10 A20 Sooting Limits of Normal and Inverse Microgravity Spherical Diffusion Flames, Sunderland, P. B., Urban, D. L., Chao, B. H., Sun, Z., Stocker, D. P., Axelbaum, R. L.
- 9:30 A21 Characteristics of Turbulent Nonpremixed Jet Flames in Different Gravity Levels, Idicheria, C. A., Boxx, I. G., Clemens, N. T.
- 9:50 A22 Simplified Numerical Modeling of Microgravity Single Droplet Combustion – Comparison with Experiments, Dietrich, D. L., Struk, P. M., Ikegami M., Xu, G.

Session B4: Radiation

8:00 Meeting Announcements

- 8:10 B17 Thermal Radiation and Diffusion Flames Irreversibilities, Gupta, A., Baker, J.
- 8:30 B18 Dilution Limits of n-Butane/Air Mixtures at Conditions Relevant to HCCI Combustion, Huang, Y., Sung, C. J., Eng, J. A.
- 8:50 B19 Measurements and Calculations of Spectral Radiation Intensities in Buoyant Turbulent Flames, Xin, Y., Gore, J. P.
- 9:10 B20 On Diffusional-Thermal Instability of Radiative Diffusion Flames: Initial Profile Dependence, Nanduri, J. R., Sung, C. J., T'ien, J. S.
- 9:30 B21 Analysis of Radiation Induced Instability of Stretched Premixed Flames, Minaev, S., Ju, Y., Law, C. K.
- 9:50 B22 A Computational Study of Heat Recirculation in Porous Burners, Barra, A. J., Elzety, J. L., Henneke, M. R.

Session C4: Laminar Burning Velocities

8:00 Meeting Announcements

- 8:10 C17 A Spectral Method for Uncertainty Quantification in Reacting Flow Simulations, Reagan, M. T., Najm, H. N., Knio, O. M., Ghanem, R. G.
- 8:30 C18 Direct Measurement of Acoustic Velocities Associated with Pyroacoustic Instability, Aldredge, R. C., Killingsworth, N. J.
- 8:50 C19 Burning Speed Measurement of Mixtures of Methane/Ethane/Propane/Butane with Air, Kahraman, S., Parsinejad, F., Metghalchi, H., Fiveland, S.
- 9:10 C20 Oscillations in Microburners: Premixed Methane/Air Mixtures, Norton, D. G., Vlachos, D. G.
- 9:30 C21 Laminar Flame Speeds of Primary Reference Fuels and Reformer Gas Mixtures, Huang, Y., Sung, C. J.
- 9:50 C22 Effects of Hydrogen Addition on the Flammability Limit of Stretched Methane/Air Premixed Flames, Sankaran, R., Im, H. G.

Session D4: Micro Scale Combustion

8:00 Meeting Announcements

- 8:10 D17 Combustion Efficiency of a Miniature Fuel Film Combustor, Pham, T. K., Stanchi, S., Dunn-Rankin, D., Sirignano, W. A.
- 8:30 D18 Observation of Flame Dynamics in Mesoscaled Channel, Choi, C. W., Ju, Y.
- 8:50 D19 Imaging of the Fuel-Air Mixing in a Mesoscale Combustor, Kaiser, S. A., Kyritsis, D. C., Gomez, A., Long, M. B.
- 9:10 D20 Analysis of Flame Dynamics Using Opposite Propagating Flames in Dual Mesoscale Channels, Ju, Y., Choi, C. W.
- 9:30 D21 Modeling and Simulation of the Microcombustion Between Two Parallel Plates, Leach, T., Cadou, C.
- 9:50 D22 Optimization of a Clean and Efficient Catalytic, Mesoscale Combustor Using Jet Propulsion Fuel (JP8), Kyritsis, D. C., Roychoudhury, S., Gomez, A.

Session E4: Turbulent Flames I

8:00 Meeting Announcements

- 8:10 E17 Calculations of a Turbulent Bluff-Body Stabilized Flame, Liu, K., Pope, S. B., Caughey, D. A.
- 8:30 E18 A Detailed Examination of Turbulent Nonpremixed Flame Structure of Wood Pyrolysis Gas via Numerical Simulations, Pakdee, W., Zhou, X., Mahalingam, S.
- 8:50 E19 Bifurcation of Flame Structure in a Lean-Premixed Swirl-Stabilized Combustor: Transition from Stable to Unstable Flame, Huang, Y., Yang, V.
- 9:10 E20 A Mathematical Model for Predicting Scalar Transport in a Transient Incompressible Jet, Schreiber, W.C.
- 9:30 E21 An Improved Premixed Conditional Moment Closure Model, Martin, S. M.
- 9:50 E22 Accounting for Flamelet Structures in Conditional Moment Closure Modeling of Turbulent Combustion, Cha, C. M.

Session F4: Combustion Synthesis

8:00 Meeting Announcements

- 8:10 F17 Combustion of Complex Metal Particles, Varma, A., Mukasyan, A.
- 8:30 F18 The Combustion Characteristics of Aluminum Hydride under Solid Rocket Motor Conditions, Bazyn, T., Eyer, R., Krier, H., Glumac, N. G.
- 8:50 F19 Modeling and Simulation of Titania Formation and Growth in Temporal Mixing Layers, Wang, G., Garrick, S. C.
- 9:10 F20 Synthesis of Silica Nanoparticles in a Diffusion Flame, Earhart, R. P., Geier, M., Parker, T. E.

- 9:30 F21 Nucleation of Zirconia in a Droplet Stream of Liquid Precursor Processed by Flat Premixed Flame, Ozturk, A., Cetegen, B. M.
9:50 F22 Flame Synthesis of SnO₂ for Sensor Applications, Miller, T. A., Joy, K. T., Hesch, L. J., Wooldridge, M. S.

9:10 Break

Session A5: μ g Combustion II

- 10:30 A23 Radiative Heat Loss Measurements during Microgravity Droplet Combustion in a Slow Convective Flow, Hicks, M. C., Kaib, N., Easton, J., Nayagam, V., Williams, F. A.
10:50 A24 Experimental Demonstration of an Earth-Based Equivalent Low Stretch Apparatus to Assess Material Flammability for Microgravity & Extraterrestrial Fire-Safety Applications, Olson, S. L., Beeson, H., Haas, J. P.
11:10 A25 Computed Radiation Effects on Thin Fuel Flame Spread in Quiescent Microgravity Environment, Tolejko, K., Kumar, A., T'ien, J. S.
11:30 A26 Detailed Heat and Mass Transfer process in Flame and Flamelet Spread over Thin Fuels in Microgravity, Long, Y., Wichman, I. S., Olson, S. L.
11:50 A27 Flame Spread over Wire Insulation in Extended Low-Gravity Conditions, Sacksteder, K. R., Greenberg, P. S., T'ien, J.S.

Session B5: Ignition I

- 10:30 B23 Hot Gas Ignition of Non-Premixed Methane Flames in the Presence of Inert Particles, Andac, G. M., Egolfopoulos, F. N., Campbell, C. S.
10:50 B24 An Experimental Investigation of Ignition Delay Times of IsoOctane/O₂/N₂ Mixtures Using a Rapid Compression Facility, He, X., Donovan, M. T., Palmer, T. R., Zigler, B. T., Wooldridge, M. S., Atreya, A.
11:10 B25 Premixed Flame Ignition by Transient Plasma Discharges, Lui, J. B., Ronney, P. D.
11:30 B26 Autoignition and Extinction of Hydrocarbon Fuels in Nonpremixed Systems, Humer, S., Seiser, R., Seshadri, K.
11:50 B27 The Influence of Water Vapor on the Critical Conditions of Extinction and Autoignition of Premixed Ethene Flames, Geieregger, M., Seiser, R., Seshadri, K.

Session C5: Supersonic Combustion

- 10:30 C23 Detailed and Reduced-Chemistry Descriptions for Ignition and Detonation of Propane, Petrova, M. V., Varatharajan, B., Williams, F. A.
10:50 C24 Detonationless Supersonic Flame Spread, Oran, E. S., Gamezo, V. N., and Khokhlov, A. M.
11:10 C25 Application of the FM Spectroscopic Technique to SiH₂ Shock-Tube Detection, Crofton, M. W., Petersen, E. L.
11:30 C26 Effects of Silane Addition on Acetylene and Ethane Ignition Behind Reflected Shock Waves, Rickard, M. J. A., Petersen, E. L.
11:50 C27 Shock Wave Phenomena generated by Supersonic Spray Particles, Im, K. S., Kim, H., Yoon, S. J., Lai, M. C.

Session D5: NO_x I

- 10:30 D23 Fuel Effects on NO_x Emissions in Partially Premixed Flames, Naha, S., Xue, H., Aggarwal, S.
10:50 D24 NO Concentration Profiles in Methane/Air Counterflow Diffusion Flames Measured with ps-LIF, Driscoll, J. F., Sick, V., Farrow, R. L., Schrader, P. E.
11:10 D25 Fuel-bound Nitrogen Chemistry in Neat and Pyridine-Doped Methane/Air Non-premixed Flames, Pearson-Franks, T. K., Wilson, E. L., Awtry, A., Miller, J. H.
11:30 D26 Real-Time Control of Lean Blow Out Limit in Premixed Combustors for Reduced NO_x Emissions, Lieuwen, T., Neumeier, Y., Seitzman, J., Nair, S., Thiruchengode, M. M., Jagoda, J., Zinn, B. T.
11:50 D27 The Effects of Different Combustion Regimes on the Formation of NO in Municipal Waste Incineration, Rogaume, T., Jabouille, F., Torero, J. L.

Session E5: Turbulent Flames II

- 10:30 E23 Characterization of Oscillatory Heat Release in Vortex Combustion, Pang, B., Cipolla, S., Yu, K.
10:50 E24 Measurements of Flame Orientation and Scalar Dissipation in Turbulent Hydrocarbon Flames, Karpetsis, A. N., Barlow, R. S.
11:10 E25 Effects of Buoyancy and Forcing on Transitioning and Turbulent Lifted Flames, Nichols, J. W., Riley, J. J.
11:30 E26 On the Modeling of the Flamelet Model Conditional Dissipation Rate for LES of Pool Fires, DesJardin, P. E.
11:50 E27 Liftoff of Turbulent Jet Flames – Assessment of Edge Flame and Other Concepts Using Cinema-PIV, Upatnieks, A., Rasmussen, C. C., Driscoll, J. F., Ceccio, S. L.

Session F5 PAH Formation

- 10:30 F23 Emissions from Burning of Jet Fuel JP-8 and Diesel Oil in Diffusion Flames, Topal, M. H., Wang, J., Leventis, Y. A., Carlson, J., Jordan, J.
10:50 F24 Identification of Pathways for Polyaromatic Growth Using Molecular Dynamics, Violi, A., Cuma, M., Voth, G. A., Sarofim, A. F.
11:10 F25 Aromatic Ring Formation within Premixed Allene-Doped Ethylene Flat Flames, Law, M. E., Oulundsen, G. E. III, Carriere, T., Westoreland, P. R.
11:30 F26 PAH Emissions from Atmospheric-Pressure Combustion of Ethyl-Benzene Using a Flat-Flame Burner, Ergut, A., Leventis, Y., Richter, H., Howard, J. B., Carlson, J., Jordan, J.
11:50 F27 Investigation of PAH Formation in Different Flames Using UNICORN, Katta, V. R., Roquemore, W. M.

12:10 Lunch

Session A6: Laminar Flames IV

- 1:10 A28 Curvature Effects on Edge-Flame Propagation in the Premixed-Flame Regime, Nayagam, V., Williams, F. A.

- 1:30 A29 Shear Layer Effect on Edge Flame Structure in a Nonpremixed Methane-Air Flame, McCoy, R. B., Najm, H. N., Ray, J.
 1:50 A30 Flames Propagating in Channels: Differential Diffusion Effects, Cui, C., Matalon.
 2:10 A31 The Structure of Nonpremixed n-Decane Flames, Tanoue, K., Seiser, R., Seshadri, K.
 2:30 A32 Structure of Laminar Partially Premixed Jet Flames, Karpetis, A. N., Barlow, R. S.

Session B6: Ignition II

- 1:10 B28 Laser Ignition Fundamental and Applications: A Review of Recent Studies, Phuoc, T. X.
 1:30 B29 Evolution of Laser Sparks for Combustion Ignition, McNeill, D. H.
 1:50 B30 The Effect of Temperature Inhomogeneity on Low-Temperature Autoignition of Fuel-Lean Premixed Hydrogen/Air Mixtures, Chen, J. H., Mason, S. D., Hewson, J. C.
 2:10 B31 A Flamelet-Based Lagrangian Approach to Non-Premixed Turbulent Combustion Including Local Flame Extinction and Re-ignition, Mitarai, S., Kosaly, G., Riley, J. J.
 2:30 B32 Effect of Multicomponent Diffusion on Modeling Ignition Characteristics of an N-Heptane Diffusion Flame, Gopalakrishnan, V., Abraham, J.

Session C6: Detonations

- 1:10 C28 On the theory of Detonation Wave with an Embedded Sonic Surface, Kasimov, A., Stewart, D. S.
 1:30 C29 Numerical Simulation of Pulse Detonation Engine Phenomena, He, X., Karagozian, A. R.
 1:50 C30 Performance Mapping of a Cyclic Pulse Detonation Engine (PDE) Using Ethylene/Air, Shimo, M., Heister, S. D., Gore, J. P.
 2:10 C31 Self-Similarity in Detonation Diffraction, Wescott, B. L., Stewart, D. S.
 2:30 C32 Propagation of Spherically Symmetric Hard Detonations in Open Environments of Fuel/Air Mixtures, McGrath, T. P., Buckley, S. G., Jackson, G. S.

Session D6: NOx II

- 1:10 D28 The Use of Urea for Selective Non-Catalytic Removal (SNCR) of Nitric Oxides: Laboratory Experiments, Park, Y., Caton, J. A.
 1:30 D29 Development of a Multi-Zone Phenomenological Model for Combustion and NO Emissions in Pilot-Ignited Natural Gas Engines, Krishnan, S. R., Srinivasan, K. K., Paul, M., Midkiff, K. C., Bell, S. R.
 1:50 D30 NOx Emissions From Intermediate-Temperature Combustion of Steel-Industry By-Product Gases, Djuricic, Z. M., Eddings, E. G.
 2:10 D31 A Simple Model for Lean NOx Adsorber Catalysts, Daw, C. S., Chakravarthy, K., Lenox, K. E.
 2:30 D32 Perspectives on NO Formation in Combusting Diesel Spray Systems, Labs, J. E., Parker, T. E.

Session E6: Turbulent Flames III

- 1:10 E28 Phase-Locked Flow Structure and CH Chemiluminescence Measurements in Strongly Swirling Combustion, Ji, J., Gore, J. P.
 1:30 E29 Transient Response of Premixed Hydrogen and Methane Flames, Vagelopoulos, C. M., Frank, J. H., Najm, H. N.
 1:50 E30 Buoyancy Dependence of Thermal Characteristics of Fully-Modulated, Turbulent Diffusion Flames, Page, K. L., Stocker, D. P., Hegde, U.G., Hermanson, J.C., Johari, H.
 2:10 E31 Ternary Species Mixing and Reaction in Compressible Isotropic Turbulence at Supercritical Pressure, Lou, H., Miller, R. S.
 2:30 E32 Flame-Generated Vorticity Production in Premixed Flame-Vortex Interactions, Patnaik, G., Kailasanath, K.

Session F6: Utility Combustors

- 1:10 F28 Pyrolysis and Group Ignition behavior of Coal, Feedlot Biomass and Blends under TGA Conditions, Thien, B., Annamalai, K., Bukur, D. B.
 1:30 F29 Modeling of Oxide Formation in Secondary Aluminum Melting Furnaces, De, A. K., Sen, S., Puri, I. K., Mukhopadhyay, A.
 1:50 F30 Cadmium Capture by Sorbents in Combustion Flue Gases, Gale, T. K., Wendt, J. O. L.
 2:10 F31 Determination of the Relative Importance of Oil-Introduction Mechanisms on the Hydrocarbon Emissions from Small Utility Engines, Reisel, J. R., Dujmovic, J. W., Schisel, T. D., and Schmitt, A. C.
 2:30 F32 Advanced CFD Post-Processing for p.f. Flame Structure and Emissions, Liu, G. S., Niksa, S., Boylan, D.M.

Wednesday

March 19, 2003

8:00 Meeting Announcements

8:10 Invited Speaker II **Building and Fire Safety Investigation of the World Trade Center Disaster**
Dr. William Grosshandler, N I S T Building & Fire Research Laboratory, Gaithersburg, MD

9:10 Invited Speaker III **Theoretical and Experimental Studies of the Mesoscale Response of Shock-Loaded Explosive Materials**, Dr. Mel R. Baer, Sandia National Laboratories, Albuquerque, NM

10:10 Break

Session A7: Kinetics IV

- 10:30 A33 Kinetics of the Reaction of H₂S with NO₂, Jazbec, M., Sendt, K., Haynes, B. S.
10:50 A34 Experimental and Theoretical Studies of the Phenyl Radical Reaction with Propene, Tokmakov, I. V., Nam, G. J., Park, J., Lin, M. C.
11:10 A35 High Pressure Single Pulse Shock Tube Study of 1,5 Headiyne Pyrolysis at Temperature between 820-1040 K, Tang, W., Tranter, R. S., Brezinsky, K., Raju, A.S.K.
11:30 A36 Kinetic Analysis on the Reactions of Neopentyl Radical with Oxygen, Sun, H., Bozzelli, J. W.
11:50 A37 First-Principles Prediction of the Mechanisms for the Isomerization and Decomposition of 2-Hydroxypropyl, 2-Hydroxyprop-2-yl and 2-propoxy Radicals, Bui, B., Lin, M. C.

Session B7: Numerical Methods

- 10:30 B33 Combustion Simulation using the Lattice Boltzmann Method, Yamamoto, K., He, X., Doolan, G. D.
10:50 B34 High-Order Spatial Discretizations and Extended Stability Methods for Reacting Flows on Structured Adaptively Refined Meshes, Ray, J., Kennedy, C., Lefantzi, S., Najm, H.N.
11:10 B35 Numerical Simulation of Laminar Jet Diffusion Flames Using an Adaptive Grid, Venuturumilli, R., Chen, L. D.
11:30 B36 Computational Economy Improvements in PRISM, Tonse, S. R., Brown, N. J.
11:50 B37 Local Rectangular Refinement Solution-Adaptive Gridding with Application to Oscillating Laminar Diffusion Flames, Bennett, B. A. V., Smooke, M. D.

Session C7: Fire I

- 10:30 C33 How to Use a Scale Model to Simulate the Fire and Structural Failure of the World Trade Center Towers, Quintiere, J. G.
10:50 C34 Simulating Fire Dynamics and the Thermal Response of Structural Elements, Prasad, K., Baum, H.
11:10 C35 Dynamics of Suppression of a Boundary Layer Flame Formed Over a Solid Surface with Forced Flow of Air containing Water Mist, Ananth, R., Ndubizu, C. C., Tatem, P. A..
11:30 C36 Determination of Low-Limit Oxygen Concentration in Flame Spread Down Paper Cylinders, Beck, J., Liu, X., Essenhigh, R. H., Wildman, R.
11:50 C37 Thermal Behavior of "Small" Fire Plumes, Williamson, J. W., Marshall, A. W.

Session D7: Diagnostics IV

- 10:30 D33 Strategies for Quantitative NO-Concentration and Temperature Measurements by NO LIF in High-Pressure Flames, Bessler, W.G., Lee, T., Schulz, C., Jeffries, J. B., Hanson, R. K.
10:50 D34 Laser-induced Fluorescence Measurements and Modeling of Nitric Oxide in High-Pressure Partially Premixed Flames, Naik, S. V., Laurendeau, N. M.
11:10 D35 UV Laser-Induced Fluorescence of Carbon Dioxide in High-Pressure Flames, Bessler, W. G., Lee, T., Schulz, C., Jeffries, J. B., Hanson, R. K.
11:30 D36 Temperature-Dependent Cross Sections for Quenching of NO LIF by NO, H₂O, and CO₂, Settersten, T. B., Patterson, B., Gray, J. A.
11:50 D37 Measurements of Soot Volume Fractions in Laminar Diffusion Flames at Elevated Pressures Using Laser Induced Incandescence, McCrain, L. L., Roberts, W. L.

Session E7: LES Methods

- 10:30 E33 An Alternative Approach to Subgrid-Scale Modeling for LES of Turbulent Combustion, McDonough, J. M., Holloway, J. C.
10:50 E34 Subgrid Scalar Mixing and Combustion Models for Large-Eddy Simulation, Chumakov, S., Rao, S., Rutland, C. J.
11:10 E35 Characteristics of Supercritical Turbulence from Direct Numerical Simulations of C₇H₁₆/N₂ and O₂/H₂ Temporal Mixing Layers, Okong'o N. A., Bellan, J.
11:30 E36 A G-Equation Formulation for Large-Eddy Simulation of Premixed Turbulent Combustion, Pitsch, H.

- 11:50 E37 Comparison of OH Time-Series Measurements and Large-Eddy Simulations in Hydrogen Jet Flames, Chaturvedy, A., King, G. B., Laurendeau, N. M., Renfro, M. W., Kempf, A., Dreizler, A., Sadiki, A., Janicka, J.

Session F7: Nanostructures and Soot I

- 10:30 F33 A Simulation of Soot Formation Using Particle Dynamics with One Dimensional Nucleation Mode, Zhang, H.R, Violi, A., Sarofim, A. F., Frenklach, M.
- 10:50 F34 Soot Oxidation: Dependence upon Initial Nanostructure, Vander Wal, R. L., Tomasek, A. J.
- 11:10 F35 Synthesis of Single-Walled Carbon Nanotubes in a Premixed Acetylene/Oxygen/Argon Flame, Height, M. J., Howard, J. B., Tester, J. W.
- 11:30 F36 Effects of Differential Diffusion on Nanoparticle Coagulation and Growth, Khakpour, M., Garrick, S. C.
- 11:50 F37 Numerical Simulation of Hydrogen-Hydrocarbon Reactions for Applications in Nanocarbon Synthesis, Garg, R. K., Fisher, T. S., Gore, J. P.

9:10 LUNCH

Session A8: Kinetics V

- 1:10 A38 Effects of Convection and Diffusion on Rational Reduction of Detailed Kinetic Schemes, Singh, S., Powers, J. M., Paolucci, S.
- 1:30 A39 Vinyl + O₂: A Complete Theoretical Treatment, Klippenstein, S. J., Georgievskii, Y., Miller, J. A., Carpenter, B. K., Harding, L. B., Westmoreland, P.R.
- 1:50 A40 Vinylidene Insertion Reactions: Thermochemical Properties, Reaction Paths, Kinetic Parameters, Implications to intermediate (1200 K) Temperature Soot Formation, Rutz, L. Bockorn, H., Bozzelli, J. W.
- 2:10 A41 Dissociation, Relaxation, and Incubation in the Pyrolysis of Neopentane: Heat of Formation for tert-butyl Radical, Srinivasan, N. K., Kiefer, J. H., Tranter, R. S.
- 2:30 A42 Modeling the Negative Temperature Coefficient in the Low Temperature Oxidation of Propane, Barckholtz, T. A., Bozzelli, J. W., Chen, C.

Session B8: Utility Combustors II

- 1:10 B38 Prediction of Tar and Light Gas During Pyrolysis of Black Liquor and Biomass, Pond, H. R., Fletcher, T. H., Baxter, L. L.
- 1:30 B39 Numerical Simulation of Biomass Gasification in a Fluidized Bed Combustor, Chang, S. L., Lee, H., Zhou, C. Q.
- 1:50 B40 Application of Laser Diagnostics in a Boiler during Combustion of Biomass and Coal, Blevins, L. G., Horiuchi, C. M., Jakeway, L. A., Turn, S. Q., Williams, R. B., Jenkins, B. M.
- 2:10 B41 Chemiluminescent Visualization of Spatially-Resolved Nitric Oxide Production Rates in Single and Two-stage Industrial Burners, Annen, K. D., Knight, R. A.
- 2:30 B42 Integration of Combustion Modifications with Mercury Control, Lissianski, V. V., Ho, L., Maly, P., Seeker, W. R., Zamamsky, V. M.

Session C8: Fire II

- 1:10 C38 Turbulent Structure of the Flow Field in a One-meter Diameter Methane fire by Large Eddy Simulation, Zhang, W., Klassen, M., Roby, R.
- 1:30 C39 Suppression of Premixed C₃H₈-Air Flames by Halogenated and Phosphorus-Containing Compounds, Jayaweera, T. M., Pitz, W. J., Westbrook, C. K.
- 1:50 C40 Water Mist Suppression of a Forced Convection Boundary layer Flame over PMMA, Ndubizu, C. C., Ananth, R., Tatem, P. A.
- 2:10 C41 Comparison of Measured Transient Ceiling Jet Temperature and Velocity Profiles in the Presence of an Upper Layer with Predictions by LAVENT/JET Computer Fire Model, Motevalli, V., Riahi, S.
- 2:30 C42 Mitigation of Blast Waves from Explosives using Water Mist, Schwer, D. A., Kailasanath, K.

Session D8: Particle Burning

- 1:10 D38 Molecular Dynamics Study of the Combustion of Nano Aluminum, Sonwane, C. G., Zachariah, M. R.
- 1:30 D39 Aluminum and Boron Particle and Gas Temperatures During Combustion at Elevated Pressures, Eyer, R., Bazyn, T., Krier, H., Glumac, N. G.
- 1:50 D40 Experimental and Theoretical Investigation of 2-D Laminar Heterogeneous Propellant Combustion, Fitzgerald, R. P., Brewster, M. Q.
- 2:10 D41 Intrinsic Reactivity-based Model for Mode of Particle Burning, Ma, L., Mitchell, R.E.
- 2:30 D42 Influence of Subsurface Gaseous Combustion on the Burning of Confined Porous Energetic Materials, Margolis, S. B., Telengator, A. M., Williams, F. A.

Session E8: DNS Methods

- 1:10 E38 DNS of a Nonpremixed CO-H₂ Jet Using Detailed Chemistry - toward Improved LES Models, Sutherland, J. C., Smith, P. J., Chen, J. H.
- 1:30 E39 On the Combustion of Normal Heptane Fuel Droplets in Isotropic Turbulence with DNS, Wang, Y., Rutland, C. J.
- 1:50 E40 Numerical Modeling of Nonreacting and Reacting Swirl Combustors: Key Issues and Validation Studies, Dittakavi, N., Khosla, S., Eriksen, M., Chand, A., Gore, J. P., Frankel, S. H.
- 2:10 E41 Artificial Acoustic Stiffness Reduction in Fully Compressible, Direct Numerical Simulation of Combustion, Wang, Y., Trounev, A.
- 2:30 E42 The influence of the Diffusive Scales on Local Extinction and Reignition, Sripakagorn, P., Kosa'ly, G., Riley, J.J.

Session F8: Nanostructures and Soot II

- 1:10 F38 CFD Analysis on CVD Synthesis of Multi-Walled Carbon Nanotubes, Kuwana, K., Endo, H., Li, T., Saito, K., Grulke, E. A.
- 1:30 F39 Synthesis, Laser Processing and Flame Purification of Nanostructured Carbon, Vander Wal, R. L., Tomasek, A. J., Berger, G. M., Tich, T. M.

- 1:50 F40 Synthesis of Carbon Nanotubes in Methane Counter-Flow Diffusion Oxy-Flames, Merchan-Merchan, W, Saveliev, A. V., Kennedy, L. A.
- 2:10 F41 Optimization of Flame Synthesis for Carbon Nanotubes Using Supported Catalyst, VanderWal, R. L., Hall, L. J., Berger, G. M.
- 2:30 F42 Carbon Nanostructure Examined by Lattice Fringe Analysis of High Resolution Transmission Electron Microscopy Images, Vander Wal, R. L., Tomasek, A. J., Thompson, W. K., Street, K.

POSTER SESSIONS

Tuesday, 4:00

March 18, 2003

Session PA: Fuel Cells

- PA01 Comparison of Experimental Results to Model Predictions for n-Butane Pyrolysis under High-Temperature Fuel Cell Conditions, Sheng, C. Y., Dean, A. M.
- PA02 A Model for a Single-Chamber Fuel Cell, Goodwin, D. G., Hao, Y.
- PA03 The Use of Unmixed Reforming to Convert Biomass and Animal Waste to Fuel Cell Hydrogen, Lyon, R. K., Clark, W., Hutton, P. N.
- PA04 A Dual - Channel Model for Analyzing the Chemically Reacting Flow in Fuel Cell Systems, Zhu, H., Kee, R. J., Walters, K.
- PA05 An Experimental Study of PEM Fuel Cell: Liquid Water in Gas Channel, Gan, M, Chen, L. D.
- PA06 A Simulink Study of Hydrogen Storage in Metal Hydride, Schaeffer, J.A., Chen, L. D.

Session PB: Gas Generation

- PB01 Dissociation of Nitrous Oxide in High Pressure Environments Using ZPP and THPP Based Pyrotechnic Initiators, Green, D. J., Johnson, M. S., Richardson, W. B., Rink, K. K.
- PB02 Hydrogen Synthesis via Cool-Flame-Initiated Combustion: A Computational Study, Krier, H., Glumac, N. G., Mullen, J.
- PB03 Optimization of Hydrogen Production by Filtration Combustion of Methane by Oxygen Enrichment and Depletion, Kennedy, L. A., Saveliev, A. V., Bingue, J. P.
- PB04 Ion-Transport Membranes for Oxygen Production-A Viable Approach for Combustion Modification, Bose, A. C., Stiegel, G. J.
- PB05 Modeling the Direct Solar Conversion of CO₂ to CO and O₂, Price, R. J., Morse, D. A., Hill, S. C., Fletcher, T. H., Jensen, R., Hardy S. L.

Session PC: Diffusion Flames

- PC01 LIF Measurements of CH Profiles in Methane/Air Counterflow Diffusion Flames, Gibaud, C., Sick, V.
- PC02 Strain and Heat Loss Effects on the Propagation Rates of Edge Flames, Chen, C., Kwon, O. C., Liu, J., Ronney, P. D.
- PC03 On Burner-Generated Low-Stretch Diffusion Flames in Natural-Convective Flows, Han, B., Sung, C. J., Tien, J. S., Ibarreta, A. F.
- PC04 Computational and Experimental Study of a JP-8 Counterflow Diffusion Flame, Cooke, J. A., Smooke, M. D., Bellucci, M., Gomez, A., Violi, A., Faravelli, T., Ranzi, E.
- PC05 Laser-Rayleigh Temperature Measurements in an Ethylene/Air Counter Flow Flame, Cattolica, R., Seiser, R., Humer, S., Seshedrai, K.
- PC06 Optimization of A Microjet Controlled Nonpremixed Flame, Sinha, A., Ganguly, R., Puri, I. K.
- PC07 Temperature Measurements of Laminar Diffusion Flames in Non-uniform Magnetic Fields Using Holographic Interferometry, Varagani, R., Baker, J.
- PC08 Nonpremixed Jet Flame Instabilities: From Hydrodynamic to Thermo-diffusive Modes, Papas, P., Rais, R. M.
- PC09 A Modified Theory of Laminar Flow near a Rotating Disk, Sohrab, S.H.
- PC10 The Effects of Oxygen-Enriched Air/Diluted Fuel on Extinction of Counterflow Diffusion Flames, Chen, R., Axelbaum, R. L.

Session PD: Premixed Flames

- PD01 Effect of Strain Rate on High-pressure n-Heptane Autoignition in Counterflow, Liu, S., Hewson, J. C., Chen, J. H.
- PD02 Temperature and OH Concentration Measurements in a Low-Pressure Flame Doped with SiCl₄, Moore, T. A., Brady, B. B., Martin, L. R., Gardner, C.E
- PD03 Testing Chemical Mechanisms by Comparison of Predicted and Measured Flame Temperatures in Burner-Stabilized, 1-D Hydrogen Flames, Sepman, A. V., Mokhov, A. V., Levinsky, H. B.
- PD04 Downstream Interaction of Lean Premixed Flames, Cheng, Z., Wehrmeyer, J. A., Pitz, R. W.
- PD05 Interaction of a Planar Flame Front with a Line Vortex, Cetegen, B. M., Candel, S.
- PD06 Numerical Modeling of Flame Balls with Radiative Reabsorption Effects, Kowon, O. C, Abid, M., Ronney, P. D., Wu, M. S., Ju, Y.
- PD07 Flame Structure of Counterflow n-Heptane/Air Partially Premixed Flames, Berta, P., Aggarwal. S. K., Puri, I. K., Faravelli, T., Ranzi, E.
- PD08 Laminar Burning Velocities of Dry Carbon Monoxide Flames and the Influence of Small Quantities of Hydrogen Containing Species, Sutton, J. A., Driscoll, J. F.
- PD09 Response of Lean Premixed Methane Flames to Hydrogen-Enrichment Processes, Vagelopoulos, C. M., Oefelein, J. C., Schefer, R. W.
- PD10 Initial Results of Flame Spread Through a Free Stratified Layer, Hovermann, F., Marchese, A.J., Miller, F. J.
- PD11 Premixed Flame Extinction of Practical Liquid Fuels: Experiments and Simulations, Holley, A., Bateria, A., Dong, Y., Fan, Y., Egolfopoulos, F. N.

Session PE: μ g Combustion

- PE01 Measurement of Burning and Sooting Behavior of Ethanol Droplets under Microgravity Conditions, Yozgatligil, A., Pfau, D., Choi, M. Y., Kazakov, A., Dryer, F.L.
- PE02 Triple Flame Propagation and Stabilization in a Laminar Axisymmetric Jet, Qin, X., Puri, I. K., Aggarwal, S. K., Katta, V. R.
- PE03 Structure of Low-Speed Jet Diffusion Flames in Microgravity, Takahashi, F., Katta, V. R.
- PE04 Combustion of HAN-Methanol-Water Monopropellant Droplets under Reduced-Gravity Conditions, Shaw, B. D., Wei, J. B.

Session PF: Fire / Flame Spread

- PF01 Thermal Behavior of a High-Energy Material Immersed in a Fire, *Ciro, W., Eddings, E. G., Sarofim, A. F.*
- PF02 Structures of a Laboratory-Scale Fixed-Frame Fire Whirl, *Hassan, M. I., Kuwana, K., Saito, K.*
- PF03 Experimental Study of Burning Rate in Jet-Fuel Pool Fires, *Yan, S., Ciro, W., Eddings, E. G., Sarofim, A. F.*
- PF04 Flow Visualization of Butanol Flame Spread Behavior, *Yeboah, Y., Wang, Z., Liao, B., Malbrue, C., Bota, K., Ross, H. D., Miller, F.*
- PF05 Instabilities of Upward-Spreading Flames over Thermally Thick Fuels, *Son, Y., Zouein, G., Ronney, P. D.*
- PF06 Influence of Fuel Loading and Pressure Profiles on Flame Spread Rates in Crib Fires, *Lai, S., Sroka, J., Alexander, C., Dietrich, M., Gunawan, D., Oh, W., Essenhigh, R. H., Dickinson, M. B., Bova, A. S.*
- PF07 Fundamental Combustion Rates of Live Fuels, *Engstrom, J. D., Butler, J. K., Fletcher, T. H., Baxter, L. L.*
- PF08 Fire Behavior of Some Southern California Live Chaparral Fuels, *Sun, L., Zhou, X., Mahalingam, S., Weise, D. R.*
- PF09 Modeling of Moving Surfaces with Application to Combustion, *Nikolova, T. P.*
- PF10 The Interaction of a Buoyant Fire Plume with a Droplet Spray, *Schwille, J. A., Lueptow, R. M.*

Session PG: Burners & Combustors

- PG01 Combustion of Pre-vaporized, Pre-mixed Kerosene using Porous Inert Media, *Heatly, R., Marbach, T. L., Agrawal, A. K.*
- PG02 Experiments and Computations for a Propane/Air Porous Burner, *Smucker, M., Ellzey, J. L.*
- PG03 Combustion Studies for Meso and Micro Scale Spacecraft Thrusters, *Yetter, R. A., Yang, V., Wang, W., Wang, Y., Milius, D., Aksay, I.A., Dryer, F.L.*
- PG04 Combustion Synthesis of Porous Materials From Nanocomposite Reactants, *Hunt, E., Pantoya, M.*
- PG05 Ignition of Ni-Al System: An Experimental and Numerical Investigation, *Mullen, T. Pantoya, M.*
- PG06 Wavelength-agile Sensors for Piston and Aero propulsion Engines, *Kranendonk, L. A., Caswell, A. W., Myers, A. M., Sanders, S. T.*
- PG07 Development of a Dual-Time Scale Feedback Sensor Array for Real-Time Optimal Control of a Fuel Staged-Industrial Burner, *Demayo, T. N., McDonell, V. G., Samuelsen, G. S.*
- PG08 Experimental Ignition Study of Nanocomposite Al/MoO₃, *Grainer, J., Panoya, M., Son, S., Asay, B.*
- PG09 Black Liquor Pyrolysis, *Webster, J. D., Fletcher, T. H., Baxter, L. L.*
- PG10 An Analysis of Staged Combustion versus Tube-in-Tube Combustion in a Glass Furnace, *Golchert, B., Chang, S. L., Zhou, C. Q.*
- PG11 Molten Salt Oxidation of Chlorobenzene, *Pandeti, S., Buckley, S. G.*
- PG12 Control Strategy for Direct-Fired Furnaces, *Banerjee, S., Sen, S., Puri, I. K., Sanyal, D.*
- PG13 AFRL Combustion Science Branch Research Activities and Capabilities, *Hancock, R. D., Shouse D. T., Schauer, F. R., Belovich, V. M., Gord, J. R., Stutrud, J. S., Zelina, J., Frayne C. W., Reich, R. F., Ehret J. A., Litke, P. J., Roquemore, W. M.*
- PG14 Combustion Behavior of Sol-Gel Synthesized Nanocomposite Thermites, *Plantier, K. Pantoya, M, Gash, A.*
- PG15 Oxygen Enriched Coal-combustion for Steam Generators, *Chatel-Pelage, F., Marin, O., Perrin, N., Carty, R., Farzan, H., Vecchi, S. J.*

Session PH: Emissions

- PH01 On the Reactivity of Chars from Cellulosic Wastes: The Influence of Ash Content, *Sorum, L., Mitchell, R. E, Campbell, P.*
- PH02 NO_x Measurements in an Unsteady Counterflow Diffusion Flame, *DeBruhl, C. D., Echehki, T., Roberts, W. L.*
- PH03 UV Photofragmentation of Combustion Generated Particles, *Koshland, C. P., Sawyer, R. F., Lucas, D., Stipe, C.B, Choi, J.H.*
- PH04 Effects of Uncertainty in Burnout Models Used to Derive Char Kinetic Parameters from Experimental Data, *Murphy, J. J., Shaddix, C. R.*
- PH05 Modeling Soot Aggregate Formation in Premixed Laminar Flames, *Balthasar, M., Frenklach, M.*
- PH06 Computations and Experiments on Aggregated Soot Particles in Flames, *Yu, K., Teng, Y., Koyle, U. O.*
- PH07 Effect of Flame Temperature on Particle Size Distribution Functions of Soot in Laminar Premixed Ethylene Flames, *Yang, Z., Zhao, B., Wang, H.*
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