CHEMICAL AND PHYSICAL PROCESSES IN COMBUSTION

1986 FALL TECHNICAL MEETING

Eastern Section of The Combustion Institute
December 15–17, 1986, San Juan, Puerto Rico
EASTERN SECTION OF THE COMBUSTION INSTITUTE - 1986 FALL TECHNICAL MEETING

SUNDAY, DECEMBER 14, 1986, 6:30 - 9:00 P.M. -- REGISTRATION

MONDAY, DECEMBER 15, 1986

8:30 a.m.  A. Invited Speaker -- "Pulsed Laser Diagnostics in Turbulent Jet Diffusion Flames - An Update", Michael C. Drake, General Electric Research and Development Center.

Session A-1  Turbulent Flows
Chairperson: D. A. Santavicca
The Pennsylvania State University

9:20 a.m.  1. "Importance of Isothermal Mixing Processes to the Understanding of Lift-Off and Blow Out of Turbulent Jet Flames", W. M. Pitts, National Bureau of Standards.

9:45 a.m.  2. "Turbulent Jet Mixing in Cross Flow", A. Vranos and D. S. Liscinsky, United Technologies Research Center.

10:10 a.m. Refreshment Break

10:30 a.m.  3. "A Solution for Diffusion-Controlled Reaction in a Vortex Field", R. Behm, H. Baum and D. W. Lozier, National Bureau of Standards.


11:20 a.m.  5. "Reaction Distortion at a Turbulent Contact Surface", J. A. Johnson, III, L. E. Johnson, and X. N. Lu, The City College (CUNY).

11:45 a.m. Lunch Break
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Title of Presentation</th>
<th>Authors/Institutions</th>
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<tr>
<td>9:20 a.m.</td>
<td>B-1</td>
<td>The Cigarette as a Heat Source for Smolder Initiation in Upholstery Materials</td>
<td>T. Ohlemiller and R. Breese, National Bureau of Standards</td>
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<td>9:45 a.m.</td>
<td>B-1</td>
<td>Characterization of Flame Spread over PMMA Using Holographic Interferometry, Sample Orientation Effects</td>
<td>A. Ito and T. Kashiwagi, National Bureau of Standards</td>
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<td>10:10 a.m.</td>
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<td>Refreshment Break</td>
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<td>10:30 a.m.</td>
<td>B-1</td>
<td>Flame Propagation: Effect of Solid-Phase Heat Conduction</td>
<td>C. Chen, NASA Lewis Research Center</td>
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<tr>
<td>10:55 a.m.</td>
<td>B-1</td>
<td>Edge Effects in Flame Spreading Down Thermally Thin Solid Fuels</td>
<td>M. Vedha-Nayagan, K. Saito and R. A. Altenkirch, University of Kentucky</td>
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<td>11:45 a.m.</td>
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<td>Lunch Break</td>
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<tr>
<td>9:20 a.m.</td>
<td>G-1</td>
<td>Laser Ignition of Nitramine Propellants</td>
<td>J. U. Kim, T. Torikai, D. Chen and K. Kuo, The Pennsylvania State University</td>
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<td>9:45 a.m.</td>
<td>G-1</td>
<td>Combustion and Rupture of Single-Perforated Stick Propellants</td>
<td>J. M. Char and K. K. Kuo, The Pennsylvania State University</td>
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<td>10:10 a.m.</td>
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<td>Refreshment Break</td>
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<td>10:30 a.m.</td>
<td>G-1</td>
<td>Numerical Simulation of Erosive Burning of Unslotted Stick Propellants</td>
<td>W. H. Hsieh and K. K. Kuo, The Pennsylvania State University</td>
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<tr>
<td>10:55 a.m.</td>
<td>G-1</td>
<td>Effect of Geometry on Ignition of a Reactive Solid: Acute Angles</td>
<td>L. G. Vorsteveld and C. E. Hermance, University of Vermont</td>
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<td>11:20 a.m.</td>
<td>G-1</td>
<td>Thermocouple Measurements During Fragment Ignition of Propellant Powders</td>
<td>A. Cohen, M. S. Miller and N. E. Holmes, USA Ballistic Research Laboratory</td>
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<td>11:45 a.m.</td>
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<td>Lunch Break</td>
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Mondays, December 15, 1986

1:15 p.m. B. Invited Speaker - "Some Recent Advances in Combustion Chemistry", Frederick L. Dryer, Princeton University.

Session A-2
Chairperson: Alexander Vranos
United Technologies Research Center


3:20 p.m. Refreshment Break


4:55 p.m. Adjourn

5:00 p.m. Executive Committee Meeting

Session B-2
Chairperson: Frederick W. Williams
Naval Research Laboratory


2:30 p.m. 23. "The Cooling Effect Induced by a Single Evaporating Droplet on a Semi-Infinite Body", N. di Marzo, University of Maryland and D. Evans, National Bureau of Standards.


3:20 p.m. Refreshment Break


4:30 p.m. 27. "Heat Transfer Through Multilayer Boundary", U. Jones, National Bureau of Standards.

4:55 p.m. Adjourn

5:00 p.m. Executive Committee Meeting
Session C-2
Chairperson: Kenneth Brezinsky
Princeton University


2:30 p.m. 29. "Kinetics of the CH₃ + NO₂ → CH₂O + NO Reaction at High Temperatures", S. C. Cooper, C. Y. Lin, A. Argestinger and M. C. Lin, Naval Research Laboratory.


3:20 p.m. Refreshment Break


4:55 p.m. Adjourn

5:00 p.m. Executive Committee Meeting

TUESDAY, DECEMBER 16, 1986

8:30 a.m. G. Invited Speaker - "Soot Inception in Hydrocarbon Diffusion Flames", Kermit C. Smyth and J. Houston Miller, National Bureau of Standards.

Session A-3 Soot Formation
Chairperson: Robert Santoro
The Pennsylvania State University


9:45 a.m. 34. "Structure of Near and Slightly Sooting Inverse Diffusion Flames", G. W. Sidebotham and I. Glassman, Princeton University.

10:10 a.m. Refreshment Break


11:45 a.m. Lunch Break

9:20 a.m.  38. "Measurements of the Transient Temperature and Velocity Profiles in Ceiling Jets", V. Motevalli and C. Marks, University of Maryland; B. McCaffrey, L. Cooper, National Bureau of Standards.


10:10 a.m.  Refreshment Break

10:30 a.m.  40. "Variables Affecting Decay of Hydrogen Chloride After a Fire", M. M. Hirschler and G. F. Smith, BF Goodrich Co.


11:45 a.m.  Lunch Break

Session C-3  Chemical Modeling  Chairperson: Hartwell F. Calcote  AeroChen Research Laboratories, Inc.

9:20 a.m.  43. "A Comparison of QRRK, RRRK and RRK Methods for Calculating Unimolecular Rate Constant Falloff", R. A. Shandross, J. B. Howard and J. P. Longwell, Massachusetts Institute of Technology.

9:45 a.m.  44. "Benzene Formation by Chemically Activated Isomerization", P. R. Westmoreland, University of Massachusetts; A. M. Dean, Exxon Research and Engineering Company; J. B. Howard, and J. P. Longwell, Massachusetts Institute of Technology.

10:10 a.m.  Refreshment Break


11:20 a.m.  47. "Application of an Implicit Flux-Corrected Transport Scheme to Combustion Modeling", G. Fatnhaik, K. Kallasanach and E. S. Oran, Naval Research Laboratory.

11:45 a.m.  Lunch Break
TUESDAY, DECEMBER 16, 1986


Session A-4
Chairperson:  J. Houston Miller
The George Washington University


2:30 p.m.  49. "Soot Initiation at Elevated Pressures", W. T. Rawlins, T. E. Parker, R. H. Krech, L. M. Cowles and A. A. Boni, Physical Sciences Inc.


3:20 p.m.  Refreshment Break


4:30 p.m.  53. "Absorption and Scattering of Agglomerated Soot in Flames", B. L. Droben and C. L. Tien, University of California - Berkeley.

4:55 p.m.  Adjourn

6:30 p.m.  Reception and Banquet

Session B-4
Chairperson:  Joseph Sengiovanni
United Technologies Research Center

2:05 p.m.  54. "Interactions Between Gaseous Electrical Discharges and Single Liquid Droplets", B. D. Shaw, P. L. Dryer and F. A. Williams, Princeton University.


3:20 p.m.  Refreshment Break


4:55 p.m.  Adjourn

6:30 p.m.  Reception and Banquet
Session C-4
Chairperson: Phillip R. Westmoreland
University of Massachusetts


3:20 p.m. Refreshment Break


4:30 p.m. 64. "Combustion Studies With a Microjet Burner", W. Groeger and J. B. Fenn, Yale University.

4:55 p.m. Adjourn

6:30 p.m. Reception and Banquet

WEDNESDAY, DECEMBER 17, 1986


Session A-5
Chairperson: Mervin Sibulkin
Brown University


9:45 a.m. 66. "The Premixed Reactive Turbulent Stokes Layer on a Porous Surface", R. A. Beddini and T. A. Roberts, University of Illinois at Urbana-Champaign.

10:10 a.m. 67. "Simulations of the Reactive Flowfield in a Ramjet Combustion", K. Kallamamth, J. N. Gardner, J. P. Boris and E. S. Oran, Naval Research Laboratory.

10:35 a.m. Refreshment Break


12:10 p.m. 71. "Spark Ignition of Lean CH4-Air Mixtures at Low Pressures", M. Esseghir and C. Polymeropoulos, Rutgers University.

12:35 p.m. Adjourn
Session B-5
Chairperson: H. Bach Semejian
National Bureau of Standards


9:45 a.m.  73. "Temperature Fluctuations in a Spray Flame", M. Queiroz, S. C. Yao, Carnegie-Mellon University.


10:35 a.m. Refreshment Break

Flame Studies


12:35 p.m. Adjourn

Session C-5
Chairperson: Lisa D. Pfefferle
Yale University


10:10 a.m. 81. "Surface Effects in Oxidations", J. E. Taylor, Kent State University.

10:35 a.m. Refreshment Break


12:35 a.m. Adjourn