CHEMICAL AND PHYSICAL PROCESSES IN COMBUSTION

1990 FALL TECHNICAL MEETING
The Eastern Section of The Combustion Institute
December 3 - 5, Orlando, Florida
EASTERN SECTION OF THE COMBUSTION INSTITUTE - 1990 FALL TECHNICAL MEETING

SUNDAY, DECEMBER 2, 1990, 6:30 - 9:00 P.M. -- REGISTRATION

MONDAY, DECEMBER 3, 1990

8:10 a.m.  A. Invited Speaker -- "Multi-Dimensional Laser Diagnostics for Flame Studies," Marshall Long, Kevin Lyons, and Jonathan Frank, Yale University.

Session A - 1  Chemical Kinetics

Chairperson: Richard A. Yetter  Princeton University

9:00 a.m.  1. "The Pyrolysis of Cyclopentadiene," M. B. Colket, United Technologies Research Center.


10:20 a.m.  Coffee Break


11:40 a.m.  8. "Propane Oxidation Through the NTC Region: A Comparison of Results at 10 and 15 Atmospheres," D. N. Koert, D. L. Miller, and N. P. Cernansky, Drexel University.

12:00  Lunch
MONDAY, DECEMBER 3, 1990

Session B - 1
Chairperson: Vahid Motievalli
Worcester Polytechnic Institute


10:20 a.m. Coffee Break

10:40 a.m. 53. "Flame Temperature and Radiative Effects on Flame Spread over Thermally Thick Fuels," J. West, S. Bhattarcharjee and R. A. Altenkirch, Mississippi State University.


12:00 Lunch

MONDAY, DECEMBER 3, 1990

Session C - 1
Chairperson: Joseph E. Shepherd
Rensselaer Polytechnic Institute


10:20 a.m. Coffee Break


12:00 Lunch
MONDAY, DECEMBER 3, 1990

1:10 p.m.  B. Invited Speaker — "The Chemistry of Hazardous Waste Incineration," Wing Tsang, National Institute of Standards and Technology.

Session A - 2  Waste Combustion

Chairperson:  David L. Miller
Drexel University


2:40 p.m.  11. "Methyl Chloride/Propane Combustion in a Fluidized Bed Combustor," J. J. Bloomer and D. L. Miller, Drexel University.


3:20 p.m.  Refreshment Break


5:20 p.m.  Adjourn

5:30 p.m.  Executive Committee Meeting

MONDAY, DECEMBER 3, 1990

1:10 p.m.  B. Invited Speaker — "The Chemistry of Hazardous Waste Incineration," Wing Tsang, National Institute of Standards and Technology.

Session B - 2  Poll and Enclosure Fires

Chairperson:  Baki M. Cetegen
University of Connecticut

2:00 p.m.  57. "Transient Scalar Properties of Luminous Pool Flames," Y. R. Sivathanu and J. P. Gore, University of Maryland.


3:00 p.m.  60. "Characteristics of Confined Fire-Plume-Driven Ceiling Jets," C. Ricciuti and V. Motewalli, Worcester Polytechnic Institute.

3:20 p.m.  Refreshment Break


4:40 p.m.  64. "Overview of a Model for Predicting the Generation Rate and Distribution of Products of Combustion in Two-Layer Fire Environments," L. Y. Cooper, National Institute of Standards and Technology.

5:00 p.m.  65. "Carbon Monoxide Yields from Hexane-Fueled Compartment Fires," D. T. Gottuk and R. J. Roby, Virginia Polytechnic Institute and State University.

5:20 p.m.  Adjourn

5:30 p.m.  Executive Committee Meeting
MONDAY, DECEMBER 3, 1990

1:10 p.m. B. Invited Speaker — "The Chemistry of Hazardous Waste Incineration," Wing Tsang, National Institute of Standards and Technology.

Session C - 2 Diagnostics
Chairperson: Robert W. Pitz
Vanderbilt University


3:00 p.m. 110. "Vibrational Thermally Assisted Laser Induced Fluorescence of \( \text{A}^2\Sigma^+ \) OH for Temperature Measurement in Flames," R. G. Joklik, National Institute of Standards and Technology.

3:20 p.m. Refreshment Break


4:00 p.m. 112. "Construction of a Three-Color Pyrometer for Applications in Coal Combustion," Y. A. Levendis and K. R. Estrada, Northeastern University.


5:00 p.m. 115. "Measurement of Electric Field and Electrical Conductivity in Propane-Air Flames by using Rydberg State Stark Spectroscopy," M. J. Wolf, University of Dayton Research Institute, and B. N. Ganguly, Aero Propulsion and Power Laboratory, Wright-Patterson Air Force Base.

5:20 p.m. Adjourn

5:30 p.m. Executive Committee Meeting

TUESDAY, DECEMBER 4, 1990


Session A - 3 Chemical Kinetics
Chairperson: Phillip R. Westmoreland
University of Massachusetts


10:00 a.m. 21. "Theoretical Study of the Reaction of Small Radicals with HNO," M. R. Soto, M. Page, and M. L. McKee, Naval Research Laboratory.

10:20 a.m. Coffee Break

10:40 a.m. 22. "QRRK Chemical Activation Analysis on Reactions of CH with N\(_2\), O\(_2\) and NO: Importance in Prompt NO Formation," H. Karim and J. Bozelli, New Jersey Institute of Technology, and A. M. Dean, Exxon Research and Engineering Co.

11:00 a.m. 23. "Ab Initio Studies of the Potential Energy Surface of H H B O," M. R. Soto, M. McKee, and M. Page, Naval Research Laboratory.


12:00 Lunch
TUESDAY, DECEMBER 4, 1990


Session B - 3  Pyrolysis, Metal Combustion, and Catalytic Combustion

Chairperson:  Alessandro Gomez  Yale University


10:20 a.m.  Coffee Break


12:00  Lunch

TUESDAY, DECEMBER 4, 1990


Session C - 3  Turbulent Combustion

Chairperson:  Peck Cho  Michigan Technological University


10:20 a.m.  Coffee Break

10:40 a.m.  120. "Turbulence Measurements in a Propagating, Premixed Flame," B. D. Videto and D. A. Santavicca, The Pennsylvania State University.


12:00  Lunch
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<td>2:00 p.m.</td>
<td>Laminar Flames</td>
<td>Sprays and Spray Combustion</td>
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<td>Chairperson: Mitchell Smooke</td>
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<td>Yale University</td>
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<td>5:20 p.m.</td>
<td>Reception and Banquet</td>
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<td>5:30 p.m.</td>
<td>General Business Meeting (all members are invited)</td>
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<td>6:30 p.m.</td>
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TUESDAY, DECEMBER 4, 1990
TUESDAY, DECEMBER 4, 1990


Session A-4: Soot
Chairperson: Meredith B. Colket, III
United Technologies Research Center


3:20 p.m. Refreshment Break


4:00 p.m. 129. "A Unifying Phenomenological Model for Smoke-Point Laminar Flames," M. A. Delichatsios, Factory Mutual Research Corporation.


5:20 p.m. Adjourn

5:30 p.m. General Business Meeting (all members are invited)

6:30 p.m. Reception and Banquet

WEDNESDAY, DECEMBER 5, 1990

8:30 a.m. E. Invited Speaker — "High Energy Density Materials Combustion," Richard S. Miller, Office of Naval Research, Andrzej W. Miziolek, Ballistic Research Laboratory.

Session A-5: Laminar Flames
Chairperson: Paul D. Ronney
Princeton University

9:00 a.m. 35. "Reaction Mechanism for Prediction of NO, NH, CH, CN and OH in Rich Laminar Methane Flame," H. Karim and J. Bozzelli, New Jersey Institute of Technology, and A. M. Dean, Exxon Research and Engineering Co.


10:00 a.m. 38. "Numerical Calculations of the Structures of Flames Burning CH4 and NO2," M. Bui-Pham and K. Seshadri, University of California, San Diego.

10:20 a.m. Coffee Break


11:00 a.m. 40. "Reduced Chemistry and Simplified Transport Modeling of Premixed and Nonpremixed Combustion," M. D. Smooke, Yale University, and V. Govannigar, Ecole Polytechnique.

11:20 a.m. 41. "Use of Single Step Chemistry in Multi-Dimensional Flame Modeling," G. Patnaik and K. Kailasanath, Naval Research Laboratory.


12:00 Lunch
8:10 a.m. E. Invited Speaker -- "High Energy Density Materials Combustion," Richard S. Miller, Office of Naval Research, Andrzej W. Miziolek, Ballistic Research Laboratory.

Session B - 5

Chairperson:
Benjamin D. Shaw
The University of Connecticut


10:20 a.m. Coffee Break


12:00 Lunch

WEDNESDAY, DECEMBER 5, 1990

8:10 a.m. E. Invited Speaker -- "High Energy Density Materials Combustion," Richard S. Miller, Office of Naval Research, Andrzej W. Miziolek, Ballistic Research Laboratory.

Session C - 5

Chairperson:
Arthur M. Mellor
Vanderbilt University

9:00 a.m. 133. "Unimolecular Decomposition of 1,3,5-Trioxane: Comparison of Theory and Experiment," H. K. Alldridge, X. Liu, M. C. Lin Emory University, and C. F. Mielus, Sandia National Laboratory.


10:20 a.m. Coffee Break


12:00 Lunch
Session A - 6  
Microgravity Combustion

Chairperson: Howard D. Ross  
NASA Lewis Research Center

1:10 p.m.  

1:30 p.m.  
44. "Observations of Candle Flames in Low Pressure and Low Gravity," H. D. Ross, NASA Lewis Research Center, J. S. Tien, Case Western Reserve University, and D. L. Dietrich, Sverdrup Technology Inc.

1:50 p.m.  

2:10 p.m.  

2:30 p.m.  

2:50 p.m.  

3:10 p.m.  
Adjourn

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Session B - 6  
Coal and Coke Combustion, and Combustion Processing

Chairperson: Fokion N. Egolfopoulos  
Princeton University

1:10 p.m.  

1:30 p.m.  

1:50 p.m.  

2:10 p.m.  

2:30 p.m.  

2:50 p.m.  

3:10 p.m.  

3:30 p.m.  

3:50 p.m.  
Adjourn
Session C-6  Practical Combustion

Chairperson: Richard J. Roby
Virginia Polytechnic Institute and State University


1:30 p.m.  142. "Evaluation of the Recently Developed Shell Premixed Burner Number as a Predictor of Combustion Performance," S. G. Pande, D. R. Hardy, and C. S. Mitchell, Geo Centers Inc. and Naval Research laboratory.


3:30 p.m.  Adjourn