

2006 CI/CS SPRING TECHNICAL MEETING

Sunday, May 14, 2006

17:00 – 20:00

REGISTRATION AND RECEPTION, Earth Sciences Museum, EIT Building

Monday, May 15, 2006

8:00 - 8:30	REGISTRATION Davis Center (DC), Room 1301	
8:15 - 8:30	WELCOME Room DC1302	
8:30 - 9:20	PLENARY SESSION 1 (Room DC1302) Prof. Arnaud Trouvé , University of Maryland, <i>Combustion Modeling Challenges in CFD-based Descriptions of Compartment Fires</i>	
	Session A: Fire I (Room DC1304) Session Chair: C.B. Devaud	Session B: Engines I (Room DC1302) Session Chair: G. Smallwood
9:30 - 9:50	<i>Investigation on Performance of Water Mist in Extinguishing Various Sizes of Pool Fires</i> , Z. Liu, D. Carpenter, A. K. Kim	<i>Investigating the Effects of Reformed Fuel Blending in a Natural Gas-HCCI Engine Using a Multi-Zone Model</i> , P. Kongsreeparp, M.D. Checkel
9:50 - 10:10	<i>Comparison of Predicted and Measured Temperatures in Fire Tests of Mattresses</i> , T.G. Threlfall, D.A. Torvi	<i>A HCCI Engine Fueled with Ethanol and Iso-Octane</i> , G. Gnanam, C. Zhang, A. Sobiesiak, G. Reader
10:10 - 10:30	<i>Heat Transfer in Forest Floor Soil Under Simulated Wildland Fire Conditions</i> , E.K. Enninfu, D.A. Torvi	<i>Reformer Gas Enrichment of Natural Gas Homogeneous Charge Compression Ignition (HCCI) Combustion</i> , V. Hosseini, M.D. Checkel
10:30 - 10:50	BREAK	BREAK
	Session C: Explosions, Detonations and Hazard Analysis (Room DC1304) Session Chair: A. Higgins	Session D: Engines II (Room DC1302) Session Chair: M.R. Johnson
10:50 - 11:10	<i>Moderation of Dust Explosions</i> , P.R. Amyotte, M.J. Pegg, F.I. Khan, M. Nifuku, T. Yingxin	<i>A Cyclic Variability Monitoring System Based Upon Cycle Resolved Exhaust Temperature Sensing</i> , D.P. Gardiner, M.F. Bardon
11:10 - 11:30	<i>Blast Wave from the Explosion of a Reacting Sphere</i> , N.F. Ponchaut, F. Zhang, J.H.S. Lee	<i>A Simple Post-processing Approach to Modeling In-homogeneous HCCI Combustion</i> , A. Singha, D.S.K. Ting, M.D. Checkel
11:30 - 11:50	<i>Effects of Mixture Reactivity on Flame Acceleration in an Obstacle-Laden Channel</i> , C. Johansen, G. Ciccarelli	<i>Multi-Zone Modeling of a Primary Reference Fuel HCCI Engine</i> , T. Tzanetakis, M. Thomson, C.R. Koch
11:50 - 12:10	<i>Promoting Destruction of Decachlorobiphenyl in Supercritical Water Using Methanol and Oxygen</i> , Z. Fang, H. Assaaoudi, A. Sobhy, M.M. Barsan, I.S. Butler, J.A. Kozinski	<i>Modeling the Ignition Quality of Liquid Fuels Tested in Ignition Quality Tester</i> , H. Li, H. Guo, W.S. Neill, J.D. Taylor
12:10 - 13:30	LUNCH	LUNCH

Monday, May 15, 2006

	Session E: Fire II Room DC1304 Session Chair: D.A. Torvi	Session F: Emissions and Pollutants Room DC1302 Session Chair: E.W. Grandmaison
13:30 - 13:50	<i>Buoyancy-Driven Structures on Jet Diffusion Flames</i> , J. Boulanger, F. Liu, G.J. Smallwood	<i>Emissions Testing of CF Jet Fuels in a Scaled Laboratory Rig</i> , G. Pucher, S. Guy, W.D. Allan
13:50 - 14:10	<i>Numerical Study of a Buoyant Helium Plume Using Modified $k-\epsilon$ Turbulence Models</i> , W. Chung, C.B. Devaud	<i>The Effect of Unsaturation on the Oxidation of Fatty Acid Methyl Esters in an Opposed Flow Diffusion Flame and a Jet Stirred Reactor</i> , S.M. Sarathy, S. Gail, S.A Syed, M.J. Thomson, P. Dagaut
14:10 - 14:30	<i>Application of Numerical Techniques to Study Fire Growth and Smoke Movement in an Atrium</i> , A. Kashef, L. Gao, N. Benichou	<i>Soot and NO Formation in a Laminar Axisymmetric Coflow Ethylene/Air Diffusion Flame</i> , H. Guo, G.J. Smallwood
14:30 - 14:50	<i>Formation and Dissipation of Flammable Mixtures Following the Release of a Fixed Mass of Gaseous Fuels Within Enclosures</i> , P. Cisse, G.A. Karim	<i>The Influence of Recirculated Particulate Matter on Emissions from a Direct-Injection of Natural Gas Engine</i> , G.P. McTaggart-Cowan, S.N. Rogak, P.G. Hill, S.R. Munshi, W.K. Bushe
14:50 - 15:10	BREAK	BREAK
	Session G: Flames I Room DC1304 Session Chair: P. Amyotte	Session H: Alternative Fuels Room DC1302 Session Chair: J. Wallace
15:10 - 15:30	<i>Flame Surface Density Evaluations for Lean Premixed Turbulent Flames</i> , S.V. Puranam, D. Pavé, Ö.L. Gülder	<i>Evaporation of Biomass Pyrolysis Oil as Single Droplets</i> , A. Sari, W.L.H. Hallett
15:30 - 15:50	<i>Geometric Considerations of Changing Flame Area in Quantifying the Burning Rate of Premixed Flames</i> , L. Kostiuk	<i>Biodiesel Droplet Combustion</i> , S.C.A. Lam, A. Sobiesiak
15:50 - 16:10	<i>Investigation of Structure and Dynamics of Lean Turbulent Premixed Flames by Rayleigh Scattering</i> , F.T.C. Yuen, N.K. Galley, S.V. Puranam, D. Pave, O.L. Gulder	<i>Ignition and Emission Characteristics of Methane Direct Injection Compression Ignition Combustion</i> , N. Wu, M.H. Davy, W.K. Bushe
16:10 - 16:30	<i>The Effect of Mixture Fraction Gradients in Partially Premixed Combustion</i> , P.C. Vena, B.M.R. Deschamps, G.J. Smallwood, M.R. Johnson	<i>Stretching of Spark-Ignited, Freely-Propagating, Premixed Methane-Air Flame at Standard and Elevated Pressures and Temperatures</i> , D.S.K. Ting, A. De, M.D. Checkel
16:30 - 16:50	<i>Axisymmetric Flame Deconvolution using Automated Tikhonov Regularization</i> , K.J. Daun, K.A. Thomson	<i>Ignition Delay of Methane/Ethane Jets</i> , B. Jin, N. Wu, J. Huang, M.H. Davy, W.K. Bushe

Tuesday, May 16, 2006

8:30 - 9:20	PLENARY SESSION 2 (Room DC1302) Prof. Anne Bourlioux , Université de Montréal, <i>Mathematical Multiscale Models in Turbulent Combustion</i>	
	Session I: Soot and Particulates Room DC1304 Session Chair: M. Thomson	Session J: Numerical Simulations Room DC1302 Session Chair: W.K. Bushe
9:30 - 9:50	<i>Co-Generation of Carbon Nanostructures and Hydrogen During Non-Thermal Plasma Processing of Natural Gas</i> , R.R. Vintila, D. Fletcher, T. Whidden, R.A.L. Drew, I.S. Butler, J.A. Kozinski	<i>DNS Ignition of Oxygenated and Conventional Hydrocarbon Fuels in a Non-Homogeneous Turbulent Field with High Dissipation Rate</i> , J. Boulanger, F. Liu, W.S. Neill, G.J. Smallwood
9:50 - 10:10	<i>Particle Characterization and Diffusion Coefficients of an Aerosol from Ethane</i> , G.A. Milán, P.D. Pacey	<i>LES of Turbulent Premixed Combustion using the Thickened Flame Model with a Power-Law Flame Wrinkling Approach</i> , F.E. Hernández-Pérez, C.P.T. Groth, Ö.L. Gülder
10:10 - 10:30	<i>Sampling of Soot Emitted from Lab-Scale Flares</i> , P.M. Canteenwalla, K.A. Thomson, G.J. Smallwood, M.R. Johnson	<i>Applying Scale Adaptive Simulation (SAS) to Turbulent Combustion</i> , J. Cooper, H. Forkel, R. Bender, J. Carregal-Ferreira
10:30 - 10:50	BREAK	BREAK
	Session K: Combustion Processes Room DC1304 Session Chair: Ö. Gülder	Session L: Engines III Room DC1302 Session Chair: G. Ciccarelli
10:50 - 11:10	<i>The Investigation of Mixing Patterns in a Model Flameless Combustion System</i> , Y. He, D. Matovic, E.W. Grandmaison	<i>Investigating EGR on Low-Temperature Combustion NOx and PM in Diesel Engines</i> , M.C. Mulenga, M. Zheng, G.T. Reader, D.S.-K. Ting, Y. Tan, U. Asad, M. Wang
11:10 - 11:30	<i>Development of Air-methanol Flames in Supercritical Water</i> , A. Sobhy, M. Barsan, Z. Fang, I. Butler, J. Kozinski	<i>Extending the EGR Limit Using a Partially Stratified Charge in a Spark Ignited Natural Gas Engine</i> , D. Williams, R.L. Evans
11:30 - 11:50	<i>Kinetic Modeling of Carbon Nanotube Formation during Flame Synthesis</i> , J.Z. Wen, H. Richter, W.H. Green	<i>A Study on the Energy and Emission Efficacy of Multi-Pulse Fuel Injection on Low-Temperature Combustion</i> , R. Kumar, M. Zheng, G.T. Reader, C.M. Mulenga, W. Bombardier, S.J. Ko, M. Wang
11:50 - 12:10	<i>A Process for Clean Combustion of Solid Fuels</i> , J. Wang, E.J. Anthony	<i>Real-Time Heat Release Analysis Towards On-Fly Combustion Control for Diesel Engines</i> , U. Asad, M. Zheng, D.S.K. Ting, R. Kumar, S. Banerjee, G.T. Reader, J. Tjong
12:10 - 13:30	LUNCH	LUNCH
12:30 - 14:00	Board Meeting	

Tuesday, May 16, 2006

	Session M: Chemical Kinetics Room DC1304 Session Chair: W. Hallett	Session N: Diagnostics Room DC1302 Session Chair: M. Birouk
13:30 - 13:50	<i>Reduction of a Detailed Reaction Mechanism for Natural Gas Ignition</i> , J. Huang, W.K. Bushe	<i>Planar Thermometry in Flames Based on Laser Induced Fluorescence</i> , C. Copeland, J. Friedman, M. Renksizbulut
13:50 - 14:10	<i>Methyl Butanoate Oxidation: Experimental Results and Comprehensive Kinetic Modelling in an Opposed Diffusion Flame and a JSR</i> , S. Gail, S.M. Sarathy, S.A. Syed, M. Thomson, P. Dagaut	<i>Heat Flux Measurements in Radiative and Mixed Radiative-Convective Environments</i> , C.S. Lam, E.J. Weckman
14:10 - 14:30	<i>Extending the Trajectory Generated Low-Dimensional Manifold to Low Temperatures with the Stochastic Particle Method</i> , M. Wang, A. Frisque, W.K. Bushe	<i>Light Sources and Image Processing Methods for 2D Optical Transmissivity Measurements of Soot Plumes</i> , C. Yang, K.A. Thomson, M.R. Johnson
14:30 - 14:50	<i>An Updated Detailed Mechanism for Dimethyl Ether Combustion</i> , F. Liu, Y. Ju, X. Qin, G.J. Smallwood	<i>Combustion Diagnostics at a Coal-Fired Power Plant with a Mid-Infrared Pyroelectric Sensor</i> , R. Saari, R. Mani, S. El Batroukh, S. Rego, M. Thomson
14:50 - 15:10	BREAK	BREAK
	Session O: Flames II Room DC1304 Session Chair: L. Kostiuk	Session P: Engines IV Room DC1302 Session Chair: M. Pegg
15:10 - 15:30	<i>New Developments in a Three-Dimensional Physical Model for the Strong-jet/Weak-jet Problem</i> , Y.J. Lee, E.W. Grandmaison, M.D. Matovic	<i>Investigation of Intake Airflow for a Novel Uniflow-Scavenged Two-Stroke GDI Engine</i> , S. Reynolds, G. Ciccarelli
15:30 - 15:50	<i>Numerical Simulation of a Droplet Evaporating in Hot Convective Turbulent Environments</i> , M.M. Abou Al-Sood, M. Birouk	<i>Numerical Investigation of a Scavenging Flow in a Uniflow-Scavenged Two-Stroke Engine</i> , P. Oliver, G. Ciccarelli
15:50 - 16:10	<i>Flame Propagation in Discrete Random Media</i> , F.D. Tang, A. Higgins, S. Goroshin	<i>Flame-Out Detection for Gas Turbine Engines Based Upon Thermocouple Signal Analysis</i> , D.P. Gardiner, G. Pucher, W.D. Allan, M. LaViolette
16:10 - 16:30		<i>Scaling of a Gas Turbine Combustion Chamber Test Rig to Simulate Operational Conditions</i> , S. Guy, W.D. Allan
16:40 - 17:00	CI/CS General Meeting	
18:30 -	BANQUET WALPER TERRACE HOTEL CRYSTAL BALLROOM (bus shuttle available) Buses depart University of Waterloo at 6:00 pm and return at 10:00 pm.	

Wednesday, May 17, 2006

8:30 - 9:20	PLENARY SESSION 3 (Room DC1302) Taylor Mali , University of Waterloo, <i>Automotive Powerplants Short, Mid, and Long Term</i>
	Session Q: Engines V Room DC1302 Session Chair: A. Sobiesiak
9:30 - 9:50	<i>Vehicle Architecture Design and Analysis of a Fuel Cell Chevrolet Equinox</i> , M. Stevens, C. Mendes, C. Haliburton, S. Beckermann, J. Marshall, M. Wahlstrom, D. McGowan, D. Sellan, D. Tse, K. Tong, M. DiFabio, J. Goh, T. Mali, A. Boutros, R. Fraser
9:50 - 10:10	<i>Experimental Measurement of On-Road Fuel Consumption Functions</i> , Y. Gao, M.D. Checkel
10:10 - 10:30	<i>A Study of the Power Recovery on Gasoline-CNG Flexible Fueled Vehicles</i> , C. Zhang, X. Jian, Y. Bian, L. Si, Z. Ma
10:30 - 10:50	BREAK
	Session R: Spray Room DC1302 Session Chair: E.J. Weckman
10:50 - 11:10	<i>Experimental Characterization of Air-blast Sprays</i> , H. Fu, X. Li
11:10 - 11:30	<i>Spray Combustion Response to Acoustically Excited Flow Field</i> , W.A. Chishty, U. Vandsburger
11:30 - 11:50	<i>Probability Distribution of Spray Droplet Size and Velocity</i> , M. Li, X. Li
PM	UW Fire Research Facility Tour