

**2010 Combustion Institute Canadian Section Spring Technical Meeting
Carleton University**



Technical Program



SUNDAY, May 9, 2010

17:00 – 20:00	Registration and Reception – Baker’s Grille, University Centre
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MONDAY, May 10, 2010

7:30 – 8:00	On-site Registration	
8:00 – 8:20	Welcome & Opening Remarks Location: Tory Building, Room 360	
8:20 – 9:10	Invited Lecture 1: Dr. Fengshan Liu, <i>National Research Council - Institute for Chemical Process & Environmental Technology</i> Location: Tory Building, Room 360	
	SESSION A1: Modelling & Simulation , Location: Tory Building Rm. 340, Chair: C. Groth	SESSION A2: Engines I , Location: Tory Building Rm. 342, Chair: J. Wallace
9:30 – 9:50	A1-1 Numerical simulation of turbulent bluff-body stabilized methane-air combustion, <i>N.V. Girish, M. M. Salehi, W.K. Bushe</i>	A2-1 Influence of Cetane Number, 90% Distillation Temperature and Aromatic Content on HCCI Combustion, <i>V. Hosseini, H. Guo, C.E. Dumitrescu, W.L. Chippior, W.S. Neill</i>
9:50 – 10:10	A1-2 Large-Eddy Simulation of a Spatially Developing Compressible Jet, <i>P.G. Ziade, C.B. Devaud</i>	A2-2 Recognizing partial burn operation in an HCCI engine, <i>A. Ghazimirsaid, M. Shahbakhti, C.R. Koch</i>
10:10 – 10:30	A1-3 Numerical Simulation of a Turbulent Premixed Flame using Conditional Source-term Estimation, <i>M.M. Salehi, W. K. Bushe</i>	A2-3 Mode-Switching Development for a Natural Gas SI-HCCI Engine, <i>J. Boddez, M.D. Checkel, and C.R. Koch</i>
10:30 – 10:50	BREAK	

	SESSION A3: Modelling & Simulation , Location: Tory Building Rm. 340, Chair: K. Bushe	SESSION A4: Engines I , Location: Tory Building Rm. 342, Chair: G. Ciccarelli
10:50 – 11:10	A3-1 Evaluation of Tabulated Chemistry Techniques for Laminar Flames: Comparison of Flame Prolongation of ILDM and Flamelet Methods, <i>P.K. Jha, C.P.T. Groth</i>	A4-1 On the Formation of NO _x and N ₂ O in a HCCI Engine Fuelled with n-Heptane, <i>H. Guo, W.S. Neill, H. Li</i>
11:10 – 11:30	Withdrawn	A4-2 Indicated Performance of HCCI Combustion Utilizing Simulated Biomass Gas – Varying EGR Dilution Levels, <i>D. Haggith, A. Sobiesiak, L. Miller</i>
11:30 – 11:50	A3-3 RANS Prediction of Ignition Delay of H ₂ -Air Mixtures with Coupled Conditional Moment Closure, <i>A.J.M. Buckrell and C.B. Devaud</i>	A4-3 Combustion characteristics of Butanol/n-Heptane blend fuels in an HCCI engine, <i>M. Shahbakhti, A. Ghazimirsaid, A. Audet, C.R. Koch</i>
11:50 – 12:10	A3-4 Assessment of Subfilter-Scale Models for LES of Turbulent Premixed Flames, <i>C.P.T. Groth, W. Lin, F.E. Hernandez-Perez, and Ö.L. Gülder</i>	A4-4 Experimental Study of n-Heptane Droplet Evaporation in a Turbulent hot Atmosphere, <i>S.C. Fabbro, M. Birouk</i>
12:10 – 14:00	LUNCH AT 'FRESH FOOD COMPANY' (included) / BOARD OF DIRECTORS MEETING	
	SESSION A5: Flame Dynamics , Location: Tory Building Rm. 340, Chair: L. Kostiuk	SESSION A6: Solid Fuels , Location: Tory Building Rm. 342, Chair: D. Torvi
14:00 – 14:20	A5-1 Premixed flames stabilized in narrow channels: Effect of chemical heat release on interfacial flame/wall energy transfer, <i>G.M.G. Watson, J.M. Bergthorson</i>	A6-1 Particle Size Effects in Packed Bed Combustion – II, <i>W. Hallett, Y. Yang</i>
14:20 – 14:40	A5-2 Two-dimensional simulation of a superadiabatic premixed laminar flame in a heated channel, <i>G.P. Gauthier, G. Watson, J.M. Bergthorson</i>	A6-2 Lime-Based Sorbents for High-Temperature CO ₂ Capture in Post-Combustion Processes, <i>V. Manovic and E.J. Anthony</i>
14:40 – 15:00	A5-3 Stagnation flame hydrodynamics, <i>J.M. Bergthorson and S.D. Salusbury</i>	A6-3 Particle size effects on the reaction of aluminum nano- and micron- sized particles with water, <i>C. Jackson, J. Sidey, S. Goroshin, and J. M. Bergthorson</i>
15:00 – 15:20	A5-4 Flame Front Behaviour in a Stratified Iso-Octane/Air Turbulent V-Flame, <i>P.C. Vena, B.M. Deschamps, G.J. Smallwood, M.R. Johnson</i>	A6-4 Experimental Study on Biomass Reburning with Rice Husk in Liquid Fuel Flame, <i>S. Kim, M. Shin, C. Lee</i>
15:20 – 15:40	BREAK	

	SESSION A7: Combustion Emissions , Location: Tory Building Rm. 340, Chair: E. Weckman	SESSION A8: Explosions , Location: Tory Building Rm. 342, Chair: J. Bergthorson
15:40 – 16:00	A7-1 Efficiency and Emissions Study of a Residential Microco-generation System Based on a Stirling Engine and Fuelled by Diesel and Ethanol, <i>N. Farra, T. Tzanetakis, M.J. Thomson</i>	A8-1 The Effect of Common Formulation Changes on the Minimum Burning Pressure of Emulsion Explosives and their Precursors, <i>S. Goldthorp, C.M. Badeen, R. Turcotte, H. Feng, and S.K. Chan</i>
16:00 – 16:20	A7-2 Development of Advanced Reburning for NO _x Reduction by Oscillating Injection of Reburn Fuel, <i>M. Shin, S. Kim, and C. Lee</i>	A8-2 CFD Modeling of Dust Explosions: DESC Applications for Industrial Scenarios, <i>M. Abuswer and P. Amyotte</i>
16:20 – 16:40	A7-3 Field Demonstration of Sky-LOSA to Directly Measure Soot Flux from a Flare in Uzbekistan, <i>M.R. Johnson, R.W. Devillers, K.A. Thomson</i>	A8-3 Critical ignition in rapidly expanding flows described by a power law, <i>B. Maxwell, M.I. Radulescu</i>
16:40 – 17:00	A7-4 Gas Turbine Systems as a Cleaner Energy Choice, <i>M. Klein</i>	A8-4 Ignition gas flow in the perforation of a propellant, <i>F. Paquet and H.D. Ng</i>
Annual Business Meeting of the Canadian Section , Location TBD		

TUESDAY, May 11, 2010

8:30 – 9:20	Invited Lecture 2: Prof. George Hadjisophocleous, <i>NSERC-Forintek Industrial Research Chair in Fire Safety Engineering, Carleton University</i> Location: Tory Building, Room 360	
	SESSION B1: Fire Studies , Location: Tory Building Rm. 340, Chair: M. Johnson	SESSION B2: Chemical Kinetics , Location: Tory Building Rm. 342, Chair: W. Hallett
9:30 – 9:50	B1-1 Scaling of Fire Test Results in Rigid Polyurethane Foams, <i>H. Schmidt and E.J. Weckman</i>	B2-1 RCM study of methane auto-ignitions at intermediate temperatures, <i>V.V. Leschevich, O.G. Penyazkov, V. Tangirala, N. Joshi</i>
9:50 – 10:10	B1-2 Effects of Thermal Boundary Condition on Burning Rate in a Pool Fire, <i>A. Vali, D.S. Nobes, L.W. Kostiuk</i>	B2-2 Experimental and kinetic modeling of methyl octanoate oxidation in an opposedflow diffusion flame, <i>S. M. Sarathy, C. Yeung, M.J. Thomson, G. Dayma, C. Togbé, and P. Dagaut</i>
10:10 – 10:30	B1-3 Salt-Water Modeling of a Wildland Fire's Convection Column, <i>M.R. Obach, D.A. Torvi, D. Sumner and D.J. Bergstrom</i>	B2-3 Aromatic Content Variations in Thermally Stressed Aviation Fuel: A Spectroscopic Analysis, <i>M. Commodo, O. Wong, I. Fabris, C.P.T. Groth, Ö.L. Gülder</i>

10:30 – 10:50	BREAK	
	SESSION B3: Fire Studies , Location: Tory Building Rm. 340, Chair: K. Daun	SESSION B4: Chemical Kinetics , Location: Tory Building Rm. 342, Chair: M. Thomson
10:50 – 11:10	B3-1 Effects of Polyurethane Foam Thickness on Flame Spread and Heat Release Rates in Furniture Calorimeter Tests, <i>L.D. Robson, M.R. Obach, J.U. Ezinwa, D.A. Torvi, E.J. Weckman</i>	B4-1 Shock tube ignition delay times of C1-C4 alcohols and iso-octane, <i>K.E. Noorani, B. Akih-Kumgeh, J.M. Bergthorson</i>
11:10 – 11:30	B3-2 Comparing the Heat Release Rate and Heat Flux of Uniformly Constructed Wood Cribs, <i>M.R. Obach and E.J. Weckman</i>	B4-2 Premixed butanol stagnation flame profile measurements, <i>G.A. Chung, S.D. Salusbury, B.A.S. Fishbein, M.H. Hakka and J.M. Bergthorson</i>
11:30 – 11:50	B3-3 Effect of Multi-Stage Thermal Ageing on the Thermal Response of Thermal Protective Fabrics, <i>M. Rezazadeh, D.A. Torvi</i>	B4-3 Premixed methane stagnation flames with oxygen enrichment, <i>S. D. Salusbury, J. M. Bergthorson</i>
11:50 – 12:10	B3-4 Modeling of Fire Spread Between Adjacent Buildings, <i>Q. Jia, G. Hadjisophocleous, H. Chen</i>	B4-4 Characteristics of Ammonia/Nitric Oxide/Air Combustion, <i>B. Motameni, D.S-K. Ting , and M.D. Checkel</i>
12:10 – 13:30	LUNCH AT 'FRESH FOOD COMPANY' (included)	
	SESSION B5: PAH and Soot , Location: Tory Building Rm. 340, Chair: K. Thomson	SESSION B6: Engines II , Location: Tory Building Rm. 342, Chair: V. Hosseini
13:35 – 13:55	B5-1 FTIR Analysis of Fire Gases in Flame Retarded Polyurethane Foams, <i>D. Adeosun, B. Jones, E.Weckman, B. Epling</i>	B6-1 An Investigation of the Conversion of a Compression Ignition Engine to Dual-Fuel Operation, <i>C. Spaeth, C. Johansen, G. Ciccarelli</i>
13:55 – 14:15	B5-2 Numerical Modelling of PAH Formation and Soot Inception in the Central/Pyrolysis Region of an Ethylene/Air Diffusion Flame, <i>S.B. Dworkin, Q. Zhang, H. Guo, F. Liu, G.J. Smallwood, M.J. Thomson</i>	B6-2 An Investigation of the Flow through Check-Valves in a Uniflow-Type Two-Stroke Engine, <i>I.K. Fraser and G. Ciccarelli</i>
14:15 – 14:35	B5-3 A Numerical and Experimental Study of a Laminar Sooting Coflow Jet-A1 Diffusion Flame, <i>M. Saffaripour, P. Zabeti, S.B. Dworkin, Q. Zhang, M.J. Thomson, H. Guo, F. Liu, G. J. Smallwood</i>	B6-3 An Investigation of the Combustion in an IDI Diesel Engine with Low Concentrations of Added Hydrogen, <i>F. Xiao, G.A. Karim</i>

14:35 – 14:55	B5-4 Predictions and measurements of soot formation in high-pressure laminar ethylene diffusion flames, <i>M. Charest, H.I. Joo, Ö.L. Gülder, C.P.T. Groth</i>	B6-4 Light Hydrocarbon Emissions from Diesel Low Temperature Combustion, <i>K. Xie, X. Han, G.T. Reader, M. Wang, M. Zheng</i>
14:55 – 15:25	BREAK	
	SESSION B7: Soot & Particulates , Location: Tory Building Rm. 340, Chair: A. Sobiesiak	SESSION B8: Non-premixed flames , Location: Tory Building Rm. 342, Chair: M. Zheng
15:25 – 15:45	B7-1 An Experimental and Numerical Study of the Effects of Dimethyl Ether Addition to Fuel on PAH and Soot Formation in Laminar Coflow Ethylene/Air Diffusion Flame, <i>F. Liu, X. He, X. Ma, S. Shuai, J. Wang, and G.J. Smallwood</i>	B8-1 An Experimental Study of the Effect of Coherent Structures on the Stability of a Turbulent Non-Premixed Flame, <i>C.O. Igoyun, M. Birouk, , J. A. Kozinski</i>
15:45 – 16:05	B7-2 Investigation of Optical Properties of Aging Soot, <i>F. Migliorini, K.A. Thomson, G.J. Smallwood</i>	B8-2 Experimental Measurements of PM _{2.5} Emission Factors for Lab-Scale Flares, <i>J.D.N. McEwen, K.A. Thomson, M.R. Johnson</i>
16:05 – 16:25	B7-3 Polarization correction of sun-light scattering for sky-scattered solar radiation based plume transmissivity measurements, <i>R.W. Devillers, K.A. Thomson, M.R. Johnson</i>	B8-3 Spray Combustion Characteristics and Emissions of Biomass Fast Pyrolysis Liquid (Bio-Oil) in a Swirl Stabilized Burner, <i>T. Tzanetakis, N. Farra, S. Moloodi, A. McGrath and M.J. Thomson</i>
17:45 SHARP!	Departure by bus from Residence Commons, Carleton University to the docks at Jacques Cartier Park	
18:30 – 22:00	Banquet – Dinner Cruise aboard Empress of Ottawa on Ottawa River (Capital Cruises: http://capitalcruisesottawa.com/)	

WEDNESDAY, May 12, 2010

8:40 – 9:30	Invited Lecture 3: Andreas Tsangaris, Chief Scientist, Plasco Energy Group Location: Tory Building, Room 360	
	SESSION C1: Diagnostics , Location: Tory Building Rm. 340, Chair: F. Liu	SESSION C2: Alternative Fuels , Location: Tory Building Rm. 342, Chair: M. Radelescu
9:40 – 10:00	C1-1 Soot Particle Sizing by Inverse Analysis of Multiangle Elastic Light Scattering Using Bayesian Inference, <i>D.W. Burr, K.J. Daun, O. Link, K.A. Thomson, and G.J. Smallwood</i>	C2-1 Tailoring ethanol ignition properties by means of fuel additives, <i>B. Akih-Kumgeh and J.M. Bergthorson</i>

10:00 – 10:20	C1-2 Measurement of soot concentration in plumes with Remote Auto-Compensating Laser-Induced Incandescence: Design & lab scale demonstration, <i>R.W. Devillers, K.A. Thomson, G.J. Smallwood</i>	C2-2 Catalytic Oxidation of Lean Biogas-Air Mixtures, <i>S. A. Shahamiri, I. Wierzba</i>
10:20 – 10:40	C1-3 Uncertainty Analysis of AC-2D-LII via Monte-Carlo Simulation in a Laminar non-Premixed ethylene flame, <i>B.M. Crosland, K.A. Thomson, M.R. Johnson</i>	C2-3 Ignition of alkyl esters and alkanes: trends, similarities and differences, <i>B. Akih-Kumgeh and J. M. Bergthorson</i>
10:40 – 11:00	BREAK	
	SESSION C3: Diagnostics , Location: Tory Building Rm. 340, Chair: M. Birouk	SESSION C4: Burner Systems , Location: Tory Building Rm. 342, Chair: G. Smallwood
11:00 – 11:20	C3-1 Development of a Spark Discharge Sensor for Measurement of Engine-Out Soot Emissions: A Comparison of Diesel and Premixed Charge Engines, <i>D.P. Gardiner, G.R. Pucher, W.D. Allan, M. LaViolette</i>	C4-1 Premixed Gas Combustion in a Porous Medium Burner System, <i>K. Qiu, S. Hayden</i>
11:20 – 11:40	C3-2 Heated Flow Bench Test for Diesel Aftertreatment Control, <i>M. Jeftic, Z. Meng, X. Xu, M. Zheng</i>	C4-2 Design Optimization of a Porous Radiant Burner, <i>A.P. Horsman and K.J. Daun</i>
11:40 – 12:00	C3-3 Construction and Commissioning of a Hypersonic Test Facility, <i>Stéphane Mailhot, R. Stowe, R. Farinaccio, A. deChamplain, D. Couture, J. Verreault</i>	C4-3 Heat Flux Measurement in Industrial Furnaces, <i>C.S. Lam, O. Ramadan, J. Wong, R. Lycett, P.M. Hughes</i>
12:00 – 12:10	Closing Remarks	