Combustion Institute Canadian Section Spring Technical Meeting

University of Toronto
May 13-16, 2012
Technical Program

	Colony Grande Centre (2nd floor)	St. David North & South (3rd floor)
	Monday, May 14th	
07:50 - 08:10	Welcome and Opening Remarks - Colony Grand Centre (2nd floor) Chair: Ö. L. Gülder	
08:10 - 09:00	Plenary Lecture # 1 - Colony Grand Centre (2nd floor) Prof. Volker Sick, University of Michigan - High Speed Imaging Near Surfaces Chair: A. M. Steinberg	
09:00 - 09:20	Coffee Break - Colony Grand West (2nd floor)	
	Numerical Methods and Simulations 1 Chair: W. K. Bushe	Stationary Combustion 1 Chair: W. Hallet
09:20 - 09:40	08-001: Linear-Eddy Model Formulated Probability Density Function Model for Premixed Turbulent Combustion - *H. P. Tsui, W. K. Bushe*	12-001: Nitrous Oxides Formation in Electric Arc Steelmaking Furnaces - *A. Korabi, S. Tullis*
09:40 - 10:00	08-009: Comparative Study of Algebraic and Transported FSD Models for LES of Premixed Flames in Flamelet and Thin Reaction Zone Regimes- *N. Shahbazian, C. P. T Groth, Ö. L. Gülder*	12-003: Feasibility of Biomass Treatment with Carbon Containing Plasma Gases in a Redesigned Gasification Reactor - *A. M. Mitrasinovic, J. Z. Wen, L. Pershin, J. Mostaghimi*
10:00 - 10:20	08-003: Modelling of a lifted hydrogen jet flame in a vitiated coflow using the Conditional Moment Closure - *A. El Sayed , R. A. Fraser*	12-004: Scaling of Nitrogen Oxide Emissions from Experimental Lab-scale Flare Measurements - *D. J. Corbin, M. R. Johnson*
10:20 - 10:40	08-011: LES of a Hydrogen-Enriched Lean Turbulent Premixed Flame - *F. E. Hern á nde z - P é rez, C. P. T. Groth, Ö . L. G ü lder*	12-005: Characterization of Ultrafine Particulate Matter from Traditional and Improved Biomass Cookstoves - *B. Just, S. Rogak, M. Kandlikar*
10:40 - 11:00	Coffee Break - Colony Grand West (2nd floor)	
	Soot, PAH, and Other Large Molecules 1 Chair: P. Joo	Fire Research 1 Chair: M. Radulescu
11:00 - 11:20	10-008: A Soot Particle Surface Ageing Model Applied to Laminar Ethylene/Air Diffusion Flames - *A. Veshkini, M. J. Thomson, S. B. Dworkin*	04-001: Discolouration as an Indicator of Mechanical Strength of Firefighters' Protective Clothing - *M. Rezazadeh, D. A. Torvi*
11:20 - 11:40	10-007: The Effect of Pressure and Conjugate Heat Transfer on Soot Formation Modelling - *N. Eaves, S. B. Dworkin, M. J. Thomson*	04-003: Royal Canadian Navy Evaluation of Handheld Aerosol Extinguishers - *T. Sheehan, A. Topic, E. J. Weckman*

11:40 - 12:00	10-005: A Numerical Investigation of a Simplified Two-Equation Soot Model in Methane/Air Co-flow Laminar Diffusion Flames at 1 to 40 atmospheres for use in Natural Gas Engine Simulations - *J. J. Shum, M. J. Thomson, Q. Zhang, S. B. Dworkin*	04-004: The Effect of Ageing on the Fire Performance Testing of Fire-Retarded Polyurethane Foam - *M. J. DiDomizio, E. J. Weckman*
12:00 - 12:20	10-001 - A Numerical and Experimental Study of Soot Formation in a Laminar Coflow Diffusion Flame of a Jet A-1 Surrogate - *M. Saffaripour, M. Kholghy, Q. Zhang, M. J. Thomson, S. B Dworkin*	04-005: TD-GC-MS Analysis of Volatile Organic Compunds from the Combustion of Flame Retarded Rigid Polyurethane Foams - *D. Adeosun, E. J. Weckman, B. Epling*
12:20 - 14:00	Lunch - Colony Grand West (2nd floor)	
	CI/CS Board of Directors Meeting - Elm Suite (2nd floor)	
	Engine Combustion 1 Chair: A. Sobiesiak	Detonations, Explosions, and Supersonic 1 Chair: G. Ciccarelli
14:00 - 14:20	03-003: Parametric study of vortex structures and their dynamics in a swirl-stabilized gas turbine model combustor - *A. M. Steinberg, C. M. Arndt, and W. Meier*	01-001: Explosion Research Needs for Nontraditional Dusts - *P. R. Amyotte, F. I. Khan*
14:20 - 14:40	03-010: Efficiency and Emissions Study of a Residential Micro-Cogeneration System Based on a Modified Stirling Engine and Fuelled by a Wood Derived Fast Pyrolysis Liquid-Ethanol Blend - *U. Khan, T. Tzanetakis, M. J. Thomson, S. Kim*	01-003: Modelling of detonation re-initiation following the Mach reflection of a quenched detonation - *S. S.-M. Lau-Chapdelaine, M. I. Radulescu*
14:40 - 15:00	03-012: Clean and Efficient Combustion Fuelled with Ethanol and Diesel at Extended Engine Loads - *M. Zheng, J. Tjong, M. Wang, X. Han*	01-009: Detonation Re-initiation Mechanism following the Mach Reflection of a Quenched Detonation - *R. R. Bhattacharjee, G. Maines, L. Maley, M. I. Radulescu*
	New Technology Concepts 1 Chair: M. Birouk	Reaction Kinetics 1 Chair: M. R. J. Charest
15:00 - 15:20	07-001: The effect of flame-wall heat transfer on the propagation of flames in small heated channels - *G. M. G. Watson, G. P. Gauthier, J. M. Bergthorson*	09-001: CO and NOx Predictions of Syngas Premixed Combustion in a Numerical Perfectly Stirred Reactor - *D. Lapalme, P. Seers, M. Johnson*
15:20 - 15:40	07-002: Influence of sample orientation and fuel diameter on smouldering of liquids for application to STAR (Self-sustaining Treatment for Active Remediation) - *R. M. Hadden, J. I. Gerhard, G. Rein, J. L. Torero*	09-002: Combustion chemical kinetic mechanism reduction using an Alternate Species Elimination Method (ASEM) - *B. Akih-Kumgeh, J. M. Bergthorson*
15:40 - 16:00	Coffee Break - Colony Grand West (2nd floor)	

	Diagnostics 1 Chair: G. Smallwood	Laminar Flames 1 Chair: S. Dworkin
16:00 - 16:20	02-001: An approach to identify boundary layer temperature field structures in internal combustion engines - *M. Cundy, V. Sick*	06-001: Role of the Lewis Number in Hydrogen Jet Ignition - *E. Bourgin, L. Bauwens, F. Fachini Filho*
16:20 - 16:40	02-002: A Seeding System for Velocity Measurements in Turbulent Flames - *M. Saediamiri, M. Birouk, J. A. Kozinski*	06-002: Numerical and Experimental Determination of Laminar Flame Speed of $H_2/CO/CO_2/CH_4$ Mixtures - D. Lapalme, P. Seers, M. Johnson, C. P. T. Groth, Ö. L. Gülder
16:40 - 17:00	02-004: Optimal Beam Configuration for Laser Absorption Spectroscopy Tomography - *M. G. Twynstra, K. J. Daun*	06-003: NO_x formation and flame velocity profiles of iso− and n− isomers of butane and butanol - *G. A. Chung, J. M. Bergthorson, B. Akih-Kumgeh*
17:00 - 17:30	CI/CS Annual Business Meeting - Colony Grand Centre (2nd floor)	

	Colony Grande Centre (2nd floor)	St. David North & South (3rd floor)
	Tuesday, May 15th	
08:00 - 08:10	Announcements - Colony Grand Centre (2nd floor)	
08:10 - 09:00	Plenary Lecture # 2 - Colony Grand Centre (2nd floor) Dr. Hayley Ozem - Pratt & Whitney Canada Challenges for Aviation Engines - A Combustion Point of View Chair: C. P. T. Groth	
09:00 - 09:20	Coffee Break - Colony Grand West (2nd floor)	
	Engine Combustion 2 Chair: J. Wallace	Detonations, Explosions, and Supersonic 2 Chair: L. Bauwens
09:20 - 09:40	03-004: Performance of a Diesel Fuel Piloted Syngas Compression Ignition Engine - *C. Spaetha, G. Ciccarelli*	01-004: Experimental Validation of a 1-D Model for Predicting Ignition Limits of Pressurized Hydrogen Jets - *B. M. Maxwell, P. Tawa, M. I. Radulescu*
09:40 - 10:00	03-005 - Combustion and Emission Characteristics of an HCCI Engine Fuelled by n-Heptane/Toluene Blends - *H. Guo, W. S. Neill*	01-005: The Effect of Finite Perturbations on the Critical Tube Diameter Phenomenon of Gaseous Detonations - *N. Mehrjoo, H. D. Ng*
10:00 - 10:20	03-006: H2:CO Ratio Effects on Auto-Ignition Temperature of Lean Fuel/Air Mixtures for Producer Gas HCCI Combustion - *D. Haggith, A. Sobiesiak*	01-007: Influence of Channel Width on Flame Acceleration - *M. Kellenberger, T. Pinos, G. Ciccarelli, C. Johansen*
10:20 - 10:40	03-011: Cycle by Cycle Actuation of Intake Valve Closing in HCCI - *M. Mashkournia, C. R. Koch*	01-008: Design of a Blast Simulating Shock Tube - *J. M. Armstrong, M. I. Radulescu*
10:40 - 11:00	Coffee Break - Colony Grand West (2nd floor)	

	Turbulent Flames 1 Chair: M. Johnson	Fire Research 2 Chair: E. Weckman
11:00 - 11:20	13-001: Structure and Stabilization of Hydrogen Jet Flames in Cross-Flows - *A. M. Steinberg, R. Sadanandan, C. Dem, P. Kutne, W. Meier*	04-002: Flammability Limits of Hydrogen-Diluent Mixtures in Air - *M. Terpstra, I. Wierzba, G.A. Karim*
11:20 - 11:40	13-002: Effect of the Geometrical Parameters of a Circular Fuel Nozzle on the Liftoff and Blowout of a Co-flowing Non-Premixed Turbulent Methane Flame - *M. Akbarzadeh, M. Birouk*	04-006: Dimensionless correlation for large scale propellant fires radiant heat flux - *F. Paquet, H. D. Ng*
11:40 - 12:00	13-003: On the Stability of a Turbulent Non-Premixed Biogas Flame - *M. Saediamiri, M. Birouk, J. A. Kozinski*	04-007: The Effects of Boundary Conditions on the Temperature Distribution within a Methanol Pool Fire - *A. Vali, D. S. Nobes, L. W. Kostiuk*
12:00 - 12:20	13-004: Experimental and Numerical Examination of Premixed Flames in a Rectangular Combustion Chamber - I. S. Wichman, A. Hariharan, R. Kiran, N. Mueller	04-008: Study of the initiation and spread of smouldering combustion in peat - *R. M. Hadden, G. Rein*
12:20 - 13:30	Lunch - Colony Grand West (2nd floor)	
	Soot, PAH, and Other Large Molecules 2 Chair: F. Liu	Laminar Flames 2 Chair: H. Guo
13:30 - 13:50	10-004: Numerical Modelling of Soot Oxidation to Predict Smoking and Non-Smoking Behaviour in Laminar Diffusion Flames - *Ali Khosousi, M. J. Thomson, S. B. Dworkin*	06-004: Flame Propagation of Jet Fuel Surrogate Components and Blends - B. Denman, J. Munzar, J. M. Bergthorson
13:50 - 14:10	10-002: Numerical Investigation of Sooting Partially Premixed Ethylene-Air Coflow Flames - *V. Chernov, Q. Zhang, M. J. Thomson, S. B. Dworkin*	06-005: Flame Response of Syngas – Methane Mixtures in an Acoustically Forced Flat Flame - *J. Gorski, W. Chishty, M. Johnson*
14:10 - 14:30	10-003: Laser Induced Incandescence and Elastic Light Scattering of Soot in a Lab-Scale Gas Flare - *B. M. Crosland, M. R. Johnson, K. A. Thomson*	06-006: Spark Discharge Effects on Flame Kernel Development in Propane-Air Expanding Flames - *S. Yu, K. Xie, X. Han, G. T. Reader, M. Zheng*
	Numerical Methods and Simulations 2 Chair: S. Tullis	Diagnostics 2 Chair: J. Bergthorson
14:30 - 14:50	08-008: Presumed PDF modelling for LES of Turbulent Premixed Combustion - *M. M. Salehi , N. Shahbazian, W. K. Bushe, C. P. T. Groth, P. Gauthier*	02-005: Sising Molybdenum Nanoparticles using Time-Resolved Laser Induced Incandescence - *T. A. Sipkens, K. J. Daun, J. T. Titantah, and M. Karttunen*
14:50 - 15:10	08-002: RANS simulation of a turbulent premixed bluff body flame using Conditional Source Estimation - *D.Dovizio , M.M. Salehi, C.B. Devaud*	02-006: Approach for Reducing Uncertainty in Field Measurements of Soot Emission Rates Using Sky-LOSA - *R. W. Devillers, K. A. Thomson, M. R. Johnson*

15:10 - 15:30	08-007: Large-Eddy Simulation of Turbulent Premixed Flames using Conditional Source-term Estimation - *M. M. Salehi , N. Shahbazian, W. K. Bushe, C. P. T. Groth, P. Gauthier*	02-007: Effects of Self-Absorption on the Reconstruction of Soot Temperature and Volume Fraction Distributions in Laminar Coflow Diffusion Flames based on Spectrally Resolved Flame Emissions - *F. Liu, K. A. Thomson, G. J. Smallwood*
15:30 - 15:50	Coffee Break - Colony Grand West (2nd floor)	

	Heterogeneous Combustion & Synthesis 1 Chair: G. Bourque	Spray and Droplet Combustion 1 Chair: W. Chisty (tentative)
15:50 - 16:10	05-001: Aluminium Dust Combustion in Premixed Methane-Air Flames - *P. Julien, M. Soo, S. Goroshin, J. Bergthorson, D. Frost*	11-001: Theoretical Analysis and Experimental Investigation of the Breakup Mechanism of Biofuel Droplets in the Electrostatic Field - *Z. Wang, A. M. Mitrašinović, J. Z. Wen*
16:10 - 16:30	05-005: Quenching Distance Measurement in Aluminum-Methane-Air Laminar Flames - *J. Palecka, S. Goroshin, A. Higgins, D. Frost, J. M. Bergthorson, P. Julien, M. Soo*	11-002: Exploratory Investigation of the Effects of Distilled Water, Tap Water, and Salt Water on Flare Particulate Emissions - *M. Kazemimanesh, L. W. Kostiuk, M. R. Johnson, B. Fleck, J S. Olfert*
16:30 - 16:50	05-003: Dimensional Scaling of Quenching for Flame Propagation in Random Media - *C. Wagner, J. Palecka, S. Goroshin, A. J. Higgins, F.-D. Tang*	11-003: Evaporation Characteristics of a Liquid Bio-Fuel from Chicken Litter - *E. Tolonen, C. Monreal, W. Hallett*
16:50 - 17:10	05-004: Combustion Synthesis of a Chromium/Chromium Sulfide Ceramic-Metal Composite - *A. Nabavi, A. Capozzi, A. Higgins, D. Frost, S. Goroshin, F. Barthelat*	11-004: Primary Breakup Simulation of Biodiesel Jet in Gaseous Crossflow - *E. Farvardin, A. Dolatabadi*
17:10 - 17:30	05-002: Thermal, Chemical and Molecular Dynamic Behaviours of Al/NiO Nanothermites - *J. Z. Wen, N. N. Ha, S. Ringuette, C. F. Petre*	11-005: Comparative Study of Biodiesel Properties and Standards - *M. Youssef, J. Agou, B. Paquet, A. deChamplain*
17:50	Busses depart from 89 Chestnut Hotel to Conference Banquet	
18:00 - 22:00	Conference Banquet - University of Toronto Hart House	

	St. Patrick North & South (3rd floor)	St. David North & South (3rd floor)
	Wednesday, May 16th	
08:00 - 08:10	Announcements - Giovanni Room (2nd floor)	
08:10 - 09:00	Plenary Lecture # 3 - Giovanni Room (2nd floor) Dr. Andrzej Sobiesiak - University of Windsor Low Emissions, Fuel Flexible Combustion for Power Systems and Process Heating Chair: Ö. L. Gülder	
09:00 - 09:20	Coffee Break - St. David and St. Patrick (3rd floor)	

	Engine Combustion 3 Chair: A. Steinberg	Soot, PAH, and Other Large Molecules 3 Chair: M. Thomson
09:20 - 09:40	03-001: A Comparative Study Between Round and Elliptical Nozzle Holes on Natural Gas Combustion and Soot Formation in a Direct Injection Engine - *C. Habbaky and J. S. Wallace*	10-009: Effects of pressure and composition on soot formation in laminar biogas diffusion flames - *M. R. J. Charest , A. Barnwal, A. Barua, Ö. L. Gülder, C. P. T. Groth*
09:40 - 10:00	03-002: Particulate Emissions from an E10 Fueled GDI Engine - *P. Mireault, J. S. Wallace*	10-006: The Effect of Pressure on Soot Formation in a Laminar Ethylene/Air Diffusion Flame from 1 to 8 atm - *H. Guo, Z. Gu, K. A. Thomson, G. J. Smallwood, F. F. Baksh*
10:00 - 10:20	03-007 - Particulate Matter Emissions from a Natural Gas Fueled High Pressure Direct Injection Engine tested over the SCRE 9 Mode Test Cycle - *B. D. Patychuk, S. N. Rogak*	10-010: Sooting behaviour of laminar diffusion flames of n-heptane at super atmospheric pressures - *A. E. Karataş, G. Intasopa, Ö. L. Gülder*
10:20 - 10:40	03-009: Modified Phase Change Rate Expressions For Modelling Cavitating Flow Inside Direct Injection Fuel Injectors - *K. Saha, E. Abu-Ramadan*	10-011: Two zone structure of laminar methane-oxygen diffusion flames in comparison to methane-air flames - *P. H. Joo, M. R. J. Charest, C. P. T. Groth, Ö. L. Gülder*
10:40 - 11:00	Coffee Break - St. David and St. Patrick (3rd floor)	
	Numerical Methods and Simulations 3 Chair: C. Devaud	Detonations, Explosions, and Supersonic 3 Chair: Ö. Gülder
11:00 - 11:20	08-004: DSMC Simulation of H_2/Air Mixtures in Micro-channels Undergoing Oxidation on Platinum Coated Walls - *A. Ahmadzadegan, J. Z. Wen, M. Renksizbulut, A. Q. Zade*	01-002 - Stability of Detonation Waves under Chain-Branching Kinetics with Slow Initiation - *M. M. Lopez-Aoyagi, J. Melguizo-Gavilanes, L. Bauwens*
11:20 - 11:40	08-005: Shock induced ignition in Fickett's model - *J. Tang, M. I. Radulescu*	01-010 - Detonation Cell Size Correlations with ZND parameters - *B. Borzou, L. Maley, M. I. Radulescu*
11:40 - 12:00	08-006: CFD Model Assessment to Simulate Turbulent Combustion in a Wood Log Stove- *S. Kalla, A. deChamplain, B, Paquet, A, Ababsa*	01-011 - Detonation Cell Size Data for Methanol-Air and Ethanol-Air Mixtures - *P. Diakow, G. Ciccarelli*
12:00 - 12:20	08-010: Evaluation of Maximum Entropy Moment Closures for Predicting Radiation Transport Phenomena - *D. Fan , M. R. J. Charest, F. Liu, C. P. T. Groth*	