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Monday, August 10, 2015

Welcome Reception, Exhibition and Poster Sessions

McGill Otto Maass – Ground Hall and Lab 100

18:00 to 21:00

General Poster Session

**Shanti Singh, NRCan Canadian Explosives Research Laboratory &
Chi-Min Shu, National Yunlin University of Science and Technology (Session Chairs)**

- * Chemical Kinetics on Thermal Decompositions of Di-tert-butyl Peroxide Studied by 1 GP-1
Calorimetry: an Overview
C.-S. Kao (National United University), Y.-S. Duh, W.-L. Lee
- * Chemical Kinetics on Thermal Decompositions of Dicumyl Peroxide Studied by 21 GP-2
Calorimetry: an Overview
C.-S. Kao (National United University), Y.-S. Duh, W.-L. Lee
- Prediction of Crystallization Onset of Amorphous Pharmaceutical Solids by N/A GP-3
Nonisothermal Crystallization Using DSC
K.-N. Hu (Vertex Pharmaceuticals), H.-R. Wang
- Crystallization Measurement by Optical Observation DSC using a Polarizing Filter N/A GP-4
Y. Kasai (Hitachi High-Tech Science Corporation), M. Iwasa, K. Shibata, B. Goolsby
- Predicting Friction Material Composition Solely from TGA Data GP-5
T. Adams (The Lubrizol Corporation)
- Optimization of Friction Material Analysis by TGA using Optical Microscopy N/A GP-6
R. Kovach (The Lubrizol Corporation)
- The Solid and Liquid Heat Capacity of Poly(N-isopropylacrylamide) N/A GP-7
M. Pyda (Rzeszow University of Technology), I. Zarzyka, A. Czerniecka
- Higher Orders of Virial Coefficients for Polar Molecules GP-8
J. Avsec (University of Maribor)
- Thermal Analysis-Photo Ionization Mass Spectrometry (TA-PIMS) for Analysis of Crude GP-9
Oils and Toxic Tricresylphosphates in Jet-turbine Oils N/A
R. Zimmerman (University of Rostock), M. R. Saraji-Bozorgzad, J. Varga, T. Groeger, S. Ehlert, T. Streibel, A. Walte, T. Denner
- Thermal Properties of a 1,8-Diaminonaphthalene Phytic Acid Salt N/A GP-10
B. A. Howell (Central Michigan University), A. Dembski
- Combustion of Three Ionic Liquids via GC/MS and FTIR: an Approach of Thermal N/A GP-11
Hazard Assessment and Properties
C.-M. Shu (National Yunlin University of Science and Technology), Y.-T. Tsai, W.-C. Lin, S.-H. Liu, J. Deng, J.-R. Chen

Green Approach to Evaluating Thermal Hazard Reaction of PAA N/A GP-12
C.-M. Shu (National Yunlin University of Science and Technology), Y.-T. Tsai, W.-C. Chen, J.-R. Lin, M.-S. Liao, Y.-W. Wang

Bomb Calorimetry of Barium Styphnate using a Reduced Sample Size N/A GP-13
S. Hightower (Sandia National Laboratories)

Student Poster Session
Chris Li, Drexel University &
Steve Sauerbrunn, University of Delaware (Session Chairs)

- DSC Analysis of Thermal Stability of Polymers to Determine Suitability as Bio Medical Implants N/A SP-1
A. Gore (Case Western Reserve University), A. Riga, C. Maier, A. Venkataswamy, D. Mantheni
- Evaluating Polymer Durability as Measured by Thermogravimetric Analysis (TGA) N/A SP-2
A. Leong (Case Western Reserve University), A. Riga, M. P. K. Maheswaram, F. Jia, J. Beiriger, C. Grimme
- * Characterization on the Thermal Runaway of Commercial 18650 Lithium-ion Batteries Used in Electric Vehicle 39 SP-3
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- * Characterization on Thermal Decompositions of Tert-Butyl Hydroperoxide (TBHP) by Confinement Test 60 SP-4
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- Thermal Stability of Gelatin Gels Confined to Silica Gel Nanopores N/A SP-6
J. Prado (University of Alabama Birmingham), S. Vyazovkin
- Effect of Salt on the Main Phase Transition of Solid-Supported Lipid Bilayers N/A SP-7
U. Kayiganwa Natyvella (Université de Montréal)
- Phase Transitions of Organogels of N-Alkyl-(R)-12-Hydroxyoctadecylammonium Chlorides in Safflower Oil N/A SP-8
F. Alvarez Mitre (UASLP), R. G. Weiss, V. Ajay Mallia, J. F. Toro Vazquez
- Evaluating the Binding Affinity of a GM1 Binding Pro-drug N/A SP-9
I. St-Jean (Université de Montréal), A. Melkoumov, X. Banquy, J. L. Chain, G. Leclair
- * Polyelectrolyte Effects in G-quadruplexes 91 SP-10
B. Kim (University of Toronto)

Thermal Hazards for Cumene Hydroperoxide Mixed with Metal Ions by DSC, TAM III, and GC/MS N/A <i>B. Laiwang (National Yunlin University of Science and Technology), Y.-L. Chen, J. Deng, C.-M. Shu, Z.-M. Luo, M.-L. You</i>	SP-11
Thermal Release Hazard for Decomposition of CHP in the Existence of Incompatibles by DSC, TAM III, and TIC N/A <i>B. Laiwang (National Yunlin University of Science and Technology), S.-H. Liu, S.-Y. Huang, C.-M. Shu, H.-Y. Hou, J. Deng</i>	SP-12
Microcosmic Thermal Analysis on Coal Mixed with Oxide at Different Temperatures N/A <i>C.-Y. Huang (National Yunlin University of Science and Technology), Y.-H. Chang, C.-M. Shu, J. Deng, J.-Y. Zhao, A. Huang</i>	SP-13
Thermal Analysis of Li ₂ O-Containing Oxide Systems N/A <i>B. Konar (McGill University), P. Hudon, M.-A. Van Ende, I.-H. Jung</i>	SP-14
Thermal Analysis and Thermodynamic Optimization of the K ₂ O-SiO ₂ and K ₂ O-Al ₂ O ₃ Systems N/A <i>D.-G. Kim (McGill University), M.-A. van Ende, I.-H. Jung</i>	SP-15
Crystallization Kinetics of Salts from Aqueous Solutions N/A <i>V. Stanford (University of Alabama at Birmingham), C. McCulley, J. Prado, S. Vyazovkin</i>	SP-16
Evaluation of Explosion Properties with Different Particle Size Distribution of Bisphenol A Dust N/A <i>T.-H. Lin (National Yunlin University of Science and Technology), C.-P. Li, S.-J. Shen, J.-Y. Liao, Y.-T. Tsai, C.-M. Shu</i>	SP-17
Thermal Decomposition Analysis Using Calorimetric Technology and a Simulation Approach to Determine the SADT of Self-reactive Bis (2,4-dichlorobenzoyl) Peroxide N/A <i>T.-H. Lin (National Yunlin University of Science and Technology), M. Das, M.-H. Lee, J.-R. Chen, C.-M. Shu</i>	SP-18
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The Binary System n-Decane – n-Eicosane as a Model System for the Analysis of Complex Mixtures of Hydrocarbons N/A <i>M. Ignacio (University of Guelph), K. M. Marczenko, G. W. Reitz, D. V. Soldatov</i>	SP-20
Thermal Stability of Phosphorus Compounds Derived from 2-Dopyl-1,4-benzenediol Dioleate N/A <i>G. Lienhart (Central Michigan University), B. A. Howell</i>	SP-21
A Coupled Experimental Study and Thermodynamic Modeling of Mn-RE Systems for the Development of Mg Alloys N/A <i>J. Kim (McGill University), M. Paliwal, I.-H. Jung</i>	SP-22
Interactions of Prolyl Oligopeptidase with Covalent and Non-covalent Inhibitors Studied by DSC N/A <i>C. Nevitt (McGill University), J. Di Trani, A. Mittermaier</i>	SP-23

Tuesday, August 11, 2015

Plenary Lecture McGill Otto Maass – Auditorium 112 Peggy Cebe, Tufts University (NATAS President)

8:00–8:05	Greetings		
8:05–8:50	Plenary Lecture: Thermosensitive Liposomes: a Therapeutic Strategy to Enhance the Effectiveness of Nanomedicines in Oncology <i>C. Allen (University of Toronto)</i>	N/A	PL-1

Pharmaceutics Auditorium 10 Karine Khougaz, National Research Council & Suresh Narine, Trent University (Session Chairs)

9:00–9:40	A Perspective on Thermal Analysis in Pharmaceutics <i>Invited Speaker: S.-D. Clas (PharmaSolv Consulting)</i>	N/A	Phar-1
9:40–10:00	Direct Measurement of a Binary Amorphous Drug-polymer Phase Diagram: Methodology and Implications for Physical Stability <i>M. Grass (Bend Research Inc), M. Morgen, D. Vodak</i>	N/A	Phar-2
10:00–10:20	Thermal Analysis in Characterization and Evaluation of Novel Lipid-based Drug Delivery Systems <i>J. Musakhanian (Gattefosse Corporation)</i>	N/A	Phar-3
10:20–10:40	EXHIBITION & COFFEE BREAK (Lab 100)		
10:40–11:20	Thermal Analysis to Design Freeze-dried Pharmaceuticals <i>Invited Speaker: R. Suryanarayanan (University of Minnesota)</i>	N/A	Phar-4
11:20–11:40	* Thermal Dissolution Analysis and Chemical Imaging by Dissolution Analysis; Two New Techniques for Characterising Dissolution Kinetics and Mapping Materials on a Micro and Nano Scale <i>M. Reading (Huddersfield University)</i>	105	Phar-5
11:40–12:00	Calorimetric Studies of the Interactions Between Immunoglobulin G and Polyacrylates <i>F. Winnik (Université de Montreal), D. Ma</i>	N/A	Phar-6

Environmental Sustainability & Green Chemistry Room 217

Wassila Benaissa, SOLVAY Corporate Research & Innovation (Session Chair)

9:00–9:20	Thermal Degradation of Phosphorus Derivatives of 2,5-bis-Hydroxymethylfuran <i>B. A. Howell (Central Michigan University), X. Han</i>	112	Env-1
9:20–9:40	* NATAS Student Travel Grant Award: Thermal Degradation of Bisphosphorus Esters of Isosorbide <i>Y. Daniel (Central Michigan University), B. A. Howell</i>	N/A	Env-2
9:40–10:00	Solid State Chemical Transformation of Glycyl-glycine and Leucyl-alanine <i>F. I. Ali (University of Guelph), A. Tsang, M. Schreiber, D. V. Soldatov</i>	N/A	Env-3
10:00–10:20	* NATAS Student Travel Grant Award: Thermal Decomposition of Poly(styrene) in the Presence of an Antioxidant <i>S. Lazar (Central Michigan University), B. A. Howell</i>	126	Env-4

High Temperature Thermal Analysis

Room 328

Stephen Corbin, Dalhousie University (Session Chair)

9:00–9:40	Characterization of the Sintering Process of Engineering Ceramics Using Advanced Thermal Analysis Methods <i>Invited Speaker: J. Blumm (NETZSCH)</i>	N/A	High-1
9:40–10:00	Study of the Sintering Behaviour of Powder-metallurgy-based Titanium-iron Alloys Using Differential Scanning Calorimetry and Dilatometry <i>J. O'Flynn (Dalhousie University), S. Corbin</i>	N/A	High-2
10:00–10:20	Determining the Transient Liquid Phase Bonding Behaviour of Inconel 625 and BNi-2 foil using Differential Scanning Calorimetry <i>D. C. Murray (Dalhousie University), S. Corbin</i>	N/A	High-3
10:20–10:40	EXHIBITION & COFFEE BREAK (Lab 100)		
10:40–11:20	An Overview of the Fundamentals of Both Low and High Temperature Thermal Conductivity as Related to Thermoelectric Materials <i>Invited Speaker: T. Tritt (Clemson University)</i>	N/A	High-4
11:20–11:40	Determining the Oxidation Behavior of Metal Powders During Heating Through Thermogravimetric and Evolved Gas Analysis Using a Coupled Gas Chromatography-Mass Spectrometry Technique <i>C. Whitman (Dalhousie University), J. O'Flynn, S. Corbin, A. Rayner</i>	N/A	High-5

General Session
Room 321
Louis Cuccia, Concordia University &
Pierre-Claver Nkinamubanzi, National Research Council (Session Chairs)

9:00–9:20	Gel Networks Made from Positive and Negatively Charged Fractal Particles N/A <i>B. Grady (University of Oklahoma), J. Weston, J. Harwell</i>	GS-1
9:20–9:40	* Latent Heat of K-SmA, SmA-N and N-I Phase Transitions of 8CB 133 Liquid Crystal N/A <i>K. Farah (Lasell College), D. Sharma</i>	GS-2
9:40–10:00	Heat Capacity Measurements of Aviation Turbine Fuels N/A <i>T. Fortin (National Institute of Standards and Technology), T. Bruno</i>	GS-3
10:00–10:20	Proximate Analysis of Coal Mine Dust N/A <i>C. Potter (TA Instruments)</i>	GS-4
10:20–10:40	EXHIBITION & COFFEE BREAK (Lab 100)	
10:40–11:00	ASTM Standards & Applications of Thermal Analysis in Forensic Science N/A <i>A. Riga (Case Western Reserve University), M. P. K. Maheswaram, D. Mantheni, C. Scott</i>	GS-5
11:00–11:20	Legal Case Study to Evaluate Product Liability Used Forensic Polymer Chemistry Measured by FTIR Spectroscopy and Differential Scanning Calorimetry N/A <i>J. Moran (Notre Dame College), A. Riga</i>	GS-6
11:20–11:40	Managing an Expert Scientific Witness: Skills, Qualifications, Preparation, and Testimony N/A <i>A. Riga (Case Western Reserve University), D. Mantheni, M. P. K. Maheswaram, C. Scott, J. Moran</i>	GS-7
11:40–12:00	Forensic Chemistry Structure-Property Fundamentals Interpret Legal Cases with Understanding of Chemical Structure and Physical Properties N/A <i>J. Beiriger (Case Western Reserve University), A. Riga, D. Mantheni, M. P. K. Maheswaram, J. Moran, C. Scott</i>	GS-8
12:00–13:20	LUNCH BREAK	
13:20–13:40	Forensic Pharmacy to Support Litigation: Patent and Civil N/A <i>A. Leong (Case Western Reserve University), A. Riga, D. Mantheni, M. P. K. Maheswaram, C. Scott, K. S. Alexander</i>	GS-9

13:40–14:00	*	Thermomechanical, Thermorheological and Dynamic Mechanical Measurements Using a Temperature Controlled Stage, a Digital Microscope and Image Analysis Software <i>M. Reading (Huddersfield University), G. Parkes, M. Morton</i>	146	GS-10
14:00–14:20		Fog Testing of Automotive Components <i>C. Potter (TA Instruments)</i>	N/A	GS-11
14:20–14:40	*	Energetic of Degradation and Thermal Behaviour of Glass Fibre Reinforced Polymer Rebars (GFRP) Composites <i>F. Al-Mubaddel (King Saud University)</i>	152	GS-12
14:40–15:00	*	Thermal and Morphological Studies on PP/Petroleum Fly Ash Composites With and Without Compatibilizer <i>F. Al-Mubaddel (King Saud University)</i>	319	GS-13
15:00–15:20		EXHIBITION & COFFEE BREAK (Lab 100)		

Energetic Materials

Room 217

Charles Dubois, École Polytechnique de Montréal (Session Chair)

10:40–11:20		Techniques to Assess the Thermal Hazard Properties of Ammonium Nitrate and Ammonium Nitrate-Based Explosives <i>Invited Speaker: R. Turcotte (NRC Canadian Explosives Research Laboratory)</i>	N/A	EM-1
11:20–11:40		Nanocalorimetry of Energetic Materials <i>D. LaVan (National Institute of Standards and Technology), F. Yi, M. Staymates, J. G. Gillen</i>	N/A	EM-2
11:40–12:00		Safe Handling of Peroxide Explosives <i>J. Oxley (University of Rhode Island), J. Smith</i>	N/A	EM-3
12:00–13:20		LUNCH BREAK		
13:20–13:40		Testing Explosives and Propellants in the ARC <i>P. Ralbovsky (NETZSCH Instruments North America)</i>	N/A	EM-4
13:40–14:00		On-going Study on the Thermal Decomposition of Nitrocellulose and its Mixture with Nitroglycerine <i>R. Turcotte (NRC Canadian Explosives Research Laboratory), Q. Kwok, S. Singh, M. Paquet</i>	N/A	EM-5
14:00–14:20	*	Effect of Particle Coating on the Thermal Response of Mixtures of Micro- and Nano-Aluminum Particles and Water <i>K. Trowell (McGill University), Y. Wang, Y. Yavor, S. Goroshin, J. Berghorson, D. Frost, J.-C. St-Charles, C. Dubois</i>	160	EM-6

14:20–14:40		Cure Kinetics of Glycidyl Azide Polymer with Electron Acceptors Molecules by Means of DSC Analysis N/A <i>E. Comtois (General Dynamics Ordnance and Tactical Systems Canada - Valleyfield University), C. Dubois, R. Pontes</i>	EM-7
14:40–15:00	*	Flame Propagation Characteristics and Combustion Behaviour of FeOOH-coated Zirconium Particles 171 <i>Q. Wang (Xi'an University of Science and Technology), J. Deng, J. Sun, H. Wen, Z. Luo, L. Ma, B. Liu</i>	EM-8
15:00–15:20		EXHIBITION & COFFEE BREAK (Lab 100)	
15:20–15:40	*	Numerical Simulation of the Deflagration-to-Detonation Transition in Granular HMX Explosives Under Thermal Ignition 186 <i>H. Dong (Institute of Applied Physics and Computational Mathematics), T. Hong, X. Zhang</i>	EM-9
15:40–16:00	*	Numerical Simulation for the Thermal Response of the Cookoff Bombs with PBX Explosive on Fire N/A <i>X. Zhang (Institute of Applied Physics and Computational Mathematics), T. Hong, H. Dong</i>	EM-10
16:00–16:20		Dynamics Features of Fluoropolymer - Al ₂ O ₃ Reactions at Various Heating Rates N/A <i>K. Martirosyan (University of Texas Rio Grande Valley), M. Hobosyan</i>	EM-11

Biomaterials & Biopolymers

Auditorium 10

**Sophie-Dorothée Clas, PharmaSolv Consulting &
Karine Khougaz, National Research Council (Session Chairs)**

13:20–14:00		The Lipid Biorefinery: Polymers and Fine Chemicals N/A <i>Invited Speaker: S. Narine (Trent University)</i>	BB-1
14:00–14:20		Evaluation of the Ability of Cationic Lipids to Disrupt Membranes N/A <i>L. Crocker (Merck Research Laboratories)</i>	BB-2
14:20–14:40		Localized Heating Around Nanoparticles on Polymeric and Lipid Membranes: Application in Drug Delivery N/A <i>A. Skirtach (Ghent University)</i>	BB-3
14:40–15:00		Vibrational Heat Capacity of Collagen and Collagen-Water N/A <i>M. Pyda (Rzeszow University of Technology), P. Zawada, P. Cebe</i>	BB-4
15:00–15:20		EXHIBITION & COFFEE BREAK (Lab 100)	
15:20–15:40		Lipid Derived Phase Change Materials for Thermal Energy Storage N/A <i>M. Floros (Trent University), M. Tessier, S. Narine</i>	BB-5

15:40–16:00	Green Silk-Graphene Nano-composite Materials N/A <u>X. Hu</u> (Rowan University)	BB-6
16:00–16:20	Mitigating the Crystallization Temperature of Biodiesel N/A <u>A. Mohanan</u> (Trent University), <u>S. Narine</u> , <u>L. Bouzidi</u>	BB-7
16:20–16:40	Fast Scanning Calorimetry of Silk Fibroin Protein N/A <u>P. Cebe</u> (Tufts University), <u>B. Partlow</u> , <u>D. Kaplan</u> , <u>A. Wurm</u> , <u>E. Zhuravlev</u> , <u>C. Schick</u>	BB-8

Fast Scanning Calorimetry

Room 328

Louis Cuccia, Concordia University (Session Chair)

13:20–13:40	NATAS Fellows Award sponsored by NETZSCH: Melting Kinetics of Polymer Crystals Examined by Fast-scan DSC N/A <u>A. Toda</u> (Hiroshima University), <u>T. Ando</u> , <u>K. Taguchi</u> , <u>K. Nozaki</u> , <u>M. Maruyama</u> , <u>Y. Mizutani</u> , <u>K. Tagashira</u> , <u>T. Fukushima</u> , <u>H. Kaji</u> , <u>M. Konishi</u>	Fast-1
13:40–14:00	About the Interplay Between Rigid Amorphous Fraction and Crystalline Fraction in Polypropylene N/A <u>J. Schawe</u> (Mettler-Toledo AG)	Fast-2
14:00–14:20	NATAS Student Travel Grant Award: Determination of the Nonlinearity Parameter in the TNM Model of Structural Recovery: Simulation of Flash DSC Data N/A <u>R. Bari</u> (Texas Tech University), <u>S. Simon</u>	Fast-3
14:20–14:40	NATAS Student Travel Grant Award: Intrinsic Isotherms, Asymmetry of Approach, and Memory Effect Experiments for a Single Polystyrene Film using Rapid Scanning Chip Calorimetry 195 <u>E. Lopez</u> (Texas Tech University), <u>S. Simon</u>	Fast-4
14:40–15:00	Investigation of Injection Molded PBT Microstructure via Fast Scanning Calorimetry N/A <u>A. Rhoades</u> (Penn State Erie, Behrend College), <u>J. Guo</u> , <u>J. Williams</u> , <u>R. Androsch</u>	Fast-5
15:00–15:20	EXHIBITION & COFFEE BREAK (Lab 100)	

Nanocomposites & Composites

Room 328

Pierre-Claver Nkinamubanzi, National Research Council (Session Chair)

15:20–16:00	High Performance Multi-functional Nanocoatings N/A <i>Invited Speaker: <u>L. Sun</u> (University of Connecticut)</i>	Nano-1
16:00–16:20	Void Level in Composites by Thermal Diffusivity N/A <i><u>S. Sauerbrunn</u> (University of Delaware - CCM), <u>J. Deitzel</u></i>	Nano-2
16:20–16:40	The Use of Thermal Analysis Methods in Cement and Concrete Applications N/A <i><u>P.-C. Nkinamubanzi</u> (National Research Council)</i>	Nano-3
16:40–17:00	Influence of Carbon Nano-tubes and Calcium Carbonate Filler on the Crystallization Behavior of Polypropylene at Processing Relevant Supercooling N/A <i><u>J. Schawe</u> (Mettler-Toledo AG)</i>	Nano-4

NATAS Members Meeting
McGill Otto Maass – Auditorium 10
17:00 to 17:30

CTAS Annual General Meeting
McGill Otto Maass – Room 328
17:00 to 17:30

Wednesday, August 12, 2015

METTLER Award in Thermal Analysis – Plenary Lecture sponsored by Mettler Toledo

McGill Otto Maass – Auditorium 112

Queenie Kwok, NRCan Canadian Explosives Research Laboratory (Conference Chair)

8:00–8:05	Greetings
8:05–8:50	METTLER Award in Thermal Analysis: The Role of Thermal Analysis N/A PL-2 in Understanding Fundamentals Essential for Solving Practical Problems in Polymer Applications and Processing <u>R. Chartoff</u> (University of Oregon)

In Memoriam Edith Turi

Auditorium 10

Joseph Menczel, Thermal Measurements &
Lawrence Judovits, Arkema Inc (Session Chairs)

9:00–9:20	In Memoriam Edith Turi – Introduction N/A <u>J. Menczel</u> (Thermal Measurements)	
9:20–9:40	Crystal-to-Crystal Transition in Semicrystalline Polymers N/A <u>J. Menczel</u> (Thermal Measurements), <u>S. Kohl</u>	Turi-1
9:40–10:00	Thermal Analysis of Isosorbide Containing Thermoplastics and Thermosets N/A <u>M. Jaffe</u> (New Jersey Institute of Technology), <u>W. Hammond</u> , <u>G. Olaoya</u> , <u>G. Busto</u> , <u>R. Bhatt</u> , <u>A. Sadoh</u>	Turi-2
10:00–10:20	Fast Scanning Calorimetry of Semicrystalline Trogamid N/A <u>P. Cebe</u> (Tufts University), <u>B. Mao</u> , <u>A. Wurm</u> , <u>E. Zhuravlev</u> , <u>C. Schick</u>	Turi-3
10:20–10:40	EXHIBITION & COFFEE BREAK (Lab 100)	
10:40–11:00	Mimicking Bone Nanostructure by Combining Block Co-polymer Self- Assembly and 1D Crystal Nucleation N/A <u>C. Li</u> (Drexel University)	Turi-4
11:00–11:20	Tackling Difficult Industrial Problems: Thermal Analysis of Oily Nanofilms on Steel N/A <u>J. Matisons</u> (Gelest Inc)	Turi-5

11:20–11:40	Strong Memory of Crystallization in Melts of Broadly Distributed Ethylene 1-Alkene Copolymers. A Study of Molar Mass and Comonomer Compositions Fractions N/A <i>A. Mamun (Florida State University), X. Chen, R. G. Alamo</i>	Turi-6
11:40–12:00	Cure Characterization of Readily Available Epoxies by Modulated Temperature DSC N/A <i>L. Judovits (Arkema), R. B.Prime</i>	Turi-7
12:00–13:20	LUNCH BREAK	
13:20–13:40	Single Fiber Shear Modulus: Using a Rheometer as a Torsional Pendulum N/A <i>S. Sauerbrunn (University of Delaware), M. Sheehan</i>	Turi-8
13:40–14:00	Influence of Moisture on Coal Oxidation Kinetics by TG-IR Analysis N/A <i>X. Zhai (Xi'an University of Science&Technology), H. Wen, K. Wang, J. Guo, Z. Yu</i>	Turi-9

Thermal Hazards & Process Safety

Room 217

Wassila Benaissa, SOLVAY Corporate Research & Innovation & Richard Kwasny, Fauske and Associates (Session Chairs)

9:00–9:40	Enthalpy or Energy that is the Question for Process Safety Calorimetry N/A <i>Invited speaker: D. Carson (Institut National de l'Environnement Industriel et des Risques)</i>	TH-1
9:40–10:00	Process Safety and Heterogeneous Catalytic Hydrogenation using Reaction Calorimetry N/A <i>R. Kwasny (Fauske & Associates, LLC), D. Knoechel</i>	TH-2
10:00–10:20	Thermal Hazard Evaluation of Cumene Hydroperoxide (CHP) Using an Isothermal Calorimeter N/A <i>S.-H. Wu (TransWorld University)</i>	TH-3
10:20–10:40	EXHIBITION & COFFEE BREAK (Lab 100)	
10:40–11:00	Thermal Analysis of Two Alkyl-imidazolium Ionic Liquids N/A <i>C.-Y. Huang (National Yunlin University of Science and Technology), S.-Y. Huang, S.-H. Liu, J. Deng, H.-Y. Hou, Y.-H. Chang, C.-M. Shu</i>	TH-4
11:00–11:20	Fire Prevention Mechanism of the Coal Spontaneous Combustion for Zn/Mg/Al Layered Double Hydroxides N/A <i>B. Liu (Xi'an University of Science and Technology), C. Wang, X. Zhai, X. Zhang, Q. Wang, J. Deng</i>	TH-5

11:20–11:40	Accelerated Reactions in Thermal Hazards Screening N/A <i>P. Ralbovsky (NETZSCH Instruments North America)</i>	TH-6
11:40–12:00	Thermal Hazard Analysis with Custom-Made High-Pressure Crucibles and Their Application to Ionic Liquids N/A <i>H. Xia (University of Notre Dame), J. Brennecke</i>	TH-7
12:00–13:20	LUNCH BREAK	
13:20–13:40	Simultaneous Consideration of DSC, ARC and DEWAR Data for Determination of Thermal Hazard Indicators N/A <i>B. Roduit (AKTS Inc.), M. Hartmann, P. Folly, A. Sarbach, P. Brodard, R. Baltensperger</i>	TH-8
13:40–14:00	Effects of UV for (3,4-Epoxy cyclohexane) Methyl-3'4'- Epoxy cyclohexyl-carboxylate (EEC) Mixed with Reactants via Calorimetric Technology and Theoretical Kinetic Models <i>B. Laiwang (National Yunlin University of Science and Technology), Y.-T. Tsai, J. Deng, C.-M. Shu, J.-R. Chen</i>	TH-9
14:00–14:20	Detection of Thermal Explosion Hazards for 18650 Li-ion Batteries Module by VSP2 N/A <i>C.-Y. Huang (National Yunlin University of Science and Technology), W.-C. Chen, Y.-W. Wang, J.-R. Chen, C.-M. Shu, Y.-H. Chang</i>	TH-10
14:20–14:40	Effects of Dust Explosion on the Production of Powdered Polyester Resin N/A <i>C.-M. Shu (National Yunlin University of Science and Technology), Y.-T. Tsai, T.-H. Lin, S.-Y. Lin, S.-C. Ho</i>	TH-11
14:40–15:00	* Experimental Study on the Corresponding Relationship Between the Index Gases and Critical Temperature for Coal Spontaneous Combustion <i>201</i> <i>Y. Xiao (Xi'an University of Science and Technology), Q.-W. Li, J. Deng, C.-M. Shu</i>	TH-12
15:00–15:20	EXHIBITION & COFFEE BREAK (Lab 100)	

Biocalorimetry

Room 328

Anthony Mittermaier, McGill University (Session Chair)

9:00–9:40	Transforming ITC Into kinITC Yields Thermodynamic and Kinetic Information N/A <i>Invited Speaker: P. Dumas (Centre National de la recherche scientifique Bureau)</i>	Bioc-1
9:40–10:20	Volume Change on Protein Unfolding: Paradox Solved N/A <i>Invited Speaker: G. Makhatadze (Rensselaer Polytechnic Institute)</i>	Bioc-2
10:20–10:40	EXHIBITION & COFFEE BREAK (Lab 100)	
10:40–11:00	Probing G-register Exchange Dynamics in Guanine Quadruplexes N/A <i>R. Harkness (McGill University), A. Mittermaier</i>	Bioc-3
11:00–11:40	Isothermal Titration Calorimetry Methods for Studying Protein Allostery and Coupled Folding/Binding Reactions N/A <i>A. Mittermaier (McGill University)</i>	Bioc-4
11:40–12:00	* Energetics of G-quadruplex Polymorphism 213 <i>B. Kim (University of Toronto)</i>	Bioc-5
12:00–13:20	LUNCH BREAK	
13:20–14:00	Characterization of Ligand Binding by the Cocaine-Binding Aptamer N/A <i>Invited Speaker: P. Johnson (York University), O. Reinstein, S. Slavkovic</i>	Bioc-6
14:00–14:20	Facile Determination of Hoogsteen Base Pair Populations in Duplex DNA N/A <i>R. Harkness (McGill University), A. Mittermaier</i>	Bioc-7
14:20–15:00	Ion Binding Properties of K ⁺ -selective and Non-selective Cation Channels N/A <i>Invited Speaker: S. Lockless (Texas A&M University)</i>	Bioc-8
15:00–15:20	EXHIBITION & COFFEE BREAK (Lab 100)	
15:20–16:00	Ionic Switch Controls the DNA State in Phage λ N/A <i>Invited Speaker: A. Evilevitch (Carnegie Mellon University)</i>	Bioc-9
16:00–16:20	Studying Biological Reaction Kinetics Using Isothermal Calorimetry N/A <i>J. Di Trani (McGill University), A. Mittermaier</i>	Bioc-10

Simultaneous & Combined Techniques
Room 321
Charles Potter, TA Instruments (Session Chair)

9:00–9:20	Innovative TG-GC-MS Methods for Thermal Degradation Studies of Polymers N/A <u>K. Lilova</u> (SETARAM Inc)	Sim-1
9:20–9:40	Investigation of Sulfur and Selenium Vapors with Thermal Analysis – Single Photon Ionization Mass Spectrometry N/A <u>J. Varga</u> (Helmholtz Zentrum München), M. Fischer, S. Wohlfahrt, M. R. Saraji-Bozorgzad, G. Matuschek, A. Reller, R. Zimmermann	Sim-2
9:40–10:00	Identification of Different NR/SBR Blends with Low SBR Contents by TGA-GC/MS N/A <u>N. Fedelich</u> (Mettler Toledo AG)	Sim-3
10:00–10:20	On-line Characterization of the Organic Chemical Signature of Thermal Processes in Evolved Gas Analysis: Thermogravimetry Hyphenated to Photo-Ionization Mass Spectrometry or Fast Gas Chromatography-Photo-Ionization Mass Spectrometry N/A <u>R. Zimmermann</u> (JMASC Helmholtz Zentrum München/CMA and University of Rostock), M. Fischer, S. Wohlfahrt, T. Denner, G. Matuschek, A. Walte, T. Streibel, M. R. Saraji-Bozorgzad, J. Varga	Sim-4
10:20–10:40	EXHIBITION & COFFEE BREAK (Lab 100)	
10:40–11:00	Development of a TG/DTA Instrument with High-Resolution Sample Observation Capability and Some Applications N/A <u>B. Goolsby</u> (Hitachi High Technologies), Y. Nishiyama, K. Shibata, M. Iwasa	Sim-5
11:00–11:20	Beyond Peak Area: Approaches for Improving Data Treatment for Evolved Gas Analysis N/A <u>C. DeCarlo</u> (Extrel CMS)	Sim-6

Molecular Materials
Room 321
Dmitriy Soldatov, University of Guelph (Session Chair)

13:20–13:40	* NATAS Student Award sponsored by SETARAM: Self Nucleation and Crystallization of Poly(vinyl alcohol) 234 <u>D. Thomas</u> (Tufts University), P. Cebe	MM-1
13:40–14:00	Nucleation and Supercooling in Saturated Fatty Acid Phase Change Materials N/A <u>J. Noel</u> (Dalhousie University), M. A. White	MM-2

14:00–14:20	Composition, Molecular and Solid State Structure, and Thermal Properties of Polyethylene Based Industrial Waxes N/A <i>M. Ignacio (University of Guelph), K. M. Marczenko, G. W. Reitz, D. Di Mondo, D. V. Soldatov</i>	MM-3
14:20–14:40	Complex Phase Behavior of Mesomorphic and Crystalline Dyes N/A <i>H. Taing (University of Windsor), S. Holger Eichhorn</i>	MM-4
14:40–15:00	NATAS Student Travel Grant Award: Evaluation of Glucose Doped TiO ₂ /Carbon Electrocatalyst Supports for Fuel Cell Application <i>C. Odetola (University of Ontario Institute of Technology), L. Trevani, B. Easton</i>	N/A MM-5
15:00–15:20	EXHIBITION & COFFEE BREAK (Lab 100)	
15:20–15:40	Thermal Stability and Decomposition Pathways of Short Leucine-Based Peptides N/A <i>A. J. Smith (University of Guelph), F. I. Ali, D. V. Soldatov</i>	MM-6
15:40–16:00	Temperature Dependent Conformational Polymorphism of a 1,2,3-DTA Ligand N/A <i>R. A. Mayo (University of Guelph), D. J. Sullivan, T. A. P. Fillion, D. V. Soldatov, K. E. Preuss</i>	MM-7

Thermal Transport & Electrical Properties
Auditorium 10
Adam Harris, C-Therm (Session Chair)

15:20–15:40	Simultaneous Thermal Property Measurements N/A <i>E. Wolff (Precision Measurements And Instruments Corporation Laboratory)</i>	TE-1
15:40–16:00	* Thermodynamic and Transport Properties for Fluids and Solids Participating in CuCl and Solar Production Processes 241 <i>J. Avsec (University of Maribor), Z. Wang, G. Naterer</i>	TE-2
16:00–16:20	A Study of Solid-Solid Phase Transitions of Ammonium Nitrate N/A <i>M. Yao (Nanjing University of Science & Technology), J. Peng</i>	TE-3
16:20–16:40	Thermal Conductivity Testing of Metal Hydrides at Elevated Temperatures and Atmospheric Pressures N/A <i>S. Ackermann (University of New Brunswick), A. Harris; G. S. McGrady, S. Riley</i>	TE-4
16:40–17:00	* Effect of Compressive Pressure on Thermal Contact Resistance and Anisotropic Thermal Conductivity of Natural Flake Graphite Sheets <i>A. Soleymani (Simon Fraser University), M. A. Fayazbakhsh, M. Bahrami</i>	N/A TE-5

Kinetics
Room 217
Refat Ghunem, National Research Council &
Peter Ralbovsky, NETZSCH Instruments North America (Session Chairs)

15:20–15:40	Temperature Dependence of the Reaction Rate During Gas-solid Reactions N/A <i>L. Favergeon (Ecole des Mines), M. Pijolat</i>	KS-1
15:40–16:00	New Kinetic Workflow Intended for Scale-up of Thermal Behavior of Materials Based on Merging Heat Flow Traces with Adiabatic or Large Scale Test Data N/A <i>B. Roduit (AKTS Inc.), M. Hartmann, P. Folly, A. Sarbach, P. Brodard, R. Baltensperger</i>	KS-2
16:00–16:20	<i>NATAS Student Travel Grant Award</i> : Kinetics of Gelatin Gel Melting: Probing the Effect of Solid Surfaces N/A <i>J. Prado (University of Alabama Birmingham), S. Vyazovkin</i>	KS-3
16:20–16:40	* <i>NATAS Student Travel Grant Award</i> : Reaction Kinetics of Phenyl Cyanate Ester Trimerization 285 <i>M. Pallaka (Texas Tech University), S. Simon</i>	KS-4

Shuttle bus from La Citadelle / Delta Hotels to Old Port of Montreal
18:00 to 18:30

Boarding at Quai Jacques-Cartier
18:30–19:00

Award Banquet – Le Bateau Mouche Dinner Cruise
19:00–22:00

Shuttle bus to La Citadelle / Delta Hotels
22:00–22:30

Thursday, August 13, 2015

Plenary Lecture

McGill Otto Maass – Auditorium 112

Shanti Singh, NRCan Canadian Explosives Research Laboratory (Technical Program Chair)

8:00–8:05	Greetings	
8:05–8:50	Plenary Lecture: Thermal Microscopy for Discovery of New Molecular Materials: from Pharmaceutical Cocrystals to Photo/Thermomechanical Solids N/A <i>T. Friscic (McGill University)</i>	PL-3

Thermal Transport & Electrical Properties

Auditorium 10

Adam Harris, C-Therm (Session Chair)

9:00–9:20	Measuring the Thermal Barrier Function of Phase Change Material (PCM) Integrated in Sheet-like Carrier Materials N/A <i>B. Pause (Textile Testing & Innovation, LLC.)</i>	TE-6
9:20–9:40	* Improving the Thermal Performance of Printed Circuit Boards by Optimizing Vias Configuration 251 <i>A. Soleymani (Simon Fraser University), M. Ahmadi, M. Bahrami</i>	TE-7
9:40–10:00	* The Influence of Thermophysical Properties on Electromagnetic Liquid Flows 263 <i>J. Avsec (University of Maribor)</i>	TE-8
10:00–10:20	A New Concept for the Measurement of Seebeck Coefficients N/A <i>M.-A. Thermitus (NETZSCH Instruments), T. Denner, J. Blumm</i>	TE-9
10:20–10:40	EXHIBITION & COFFEE BREAK (Ground Hall)	
10:40–11:00	Criterion and Need for a Standard for Thermal Effusivity Measurements N/A <i>R. Bateman (C-Therm Technologies)</i>	TE-10
11:00–11:20	Polar Ionic Conduction in the Solid State of Drugs and Polymers Can be Verified by Dielectric Thermal Analysis N/A <i>K. Rodgers (Case Western Reserve University), A. Riga, D. Mantheni,</i>	TE-11
11:20–11:40	Microscale IR Thermography; a Practical Application to Visual Thermal Analysis N/A <i>J. Morikawa (Tokyo Institute of Technology)</i>	TE-12

11:40–12:00	* Forced Convection Heat Transfer Model & Simulation in the Developing Region of Porous Material Filled Channel for Same Wall Temperature <i>N. Singh (Endurance Technology), M. Sahni</i>	274 TE-13
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Kinetics

Room 217

**Refat Ghunem, National Research Council &
Peter Ralbovsky, NETZSCH Instruments North America (Session Chairs)**

9:00–9:20	* Prediction of Modulus Evolution of a Silicone Composite Using DMA for Cure Kinetic Profile Development 291 <i>J. Gao (GE Global Research), M. Ravalli, J. Kelley, K. Gurnon, F. LeBel, S. Rubinsztajn</i>	KS-5
9:20–9:40	Kinetics of Wire Insulation Decomposition N/A <i>H. Salerno (DuPont)</i>	KS-6
9:40–10:00	Oxidation Kinetics and Reactivity of Jurassic Coal in North Shaanxi N/A <i>J. Deng (Xi'an University of Science & Technology), K. Wang, Y. Zhang, H. Yang</i>	KS-7
10:00–10:20	Oxidation Kinetics Characteristics of Jurassic Coal in North Shaanxi in the Low Temperature Process N/A <i>Y. Zhang (Xi'an University of Science & Technology), J. Deng, K. Wang, J. Zhao</i>	KS-8
10:20–10:40	EXHIBITION & COFFEE BREAK (Ground Hall)	

Localized TA & Nanoconfinement

Room 328

Jonathan Felts, Texas A&M University (Session Chair)

9:00–9:20	Thermomechanical Bond Scission Dynamics Measured on Functionalized Graphene using Scanning Probes <i>J. Felts (Texas A&M University), A. Oyer, S. Hernandez, K. Whitener, J. Robinson, S. Walton, P. Sheehan</i>	N/A LN-1
9:20–9:40	Measuring Bias Dependence of Thermal Strain in AlGaIn/GaN High Electron Mobility Transistors with Scanning Joule Expansion Microscopy <i>M. Rosenberger (University of Illinois Urbana-Champaign), W. King, S. Graham, J. Jones, G. Pavlidis</i>	N/A LN-2

9:40–10:00	*	Thermal Analysis by Structural Characterisation; a New General Purpose Thermal Analysis Technique 312 <i>M. Reading (Huddersfield University), M., Morton</i>	LN-3
10:00–10:20		Multilayer Films and Polymer Blends Characterized by NanoTA and Lorentz Contact Resonance N/A <i>E. Dillon (Anasys Instruments), K. Kjoller</i>	LN-4
10:20–10:40		EXHIBITION & COFFEE BREAK (Ground Hall)	
10:40–11:00	*	NATAS Student Travel Grant Award: Glass Transition and Viscoelastic Properties of thin Selenium Films at the Nano Scale 306 <i>H. Yoon (Texas Tech University), Y. P. Koh, S. Simon, G. McKenna</i>	LN-5
11:00–11:20		Modification of PVC Materials for Breath Alcohol Sensor Devices N/A <i>J. Allan (University of Ontario Institute of Technology)</i>	LN-6
11:20–11:40		The Glass Transition Behaviors of Polymers Confined in Alumina Nanoporous Templates N/A <i>L. Li (Nanjing University), J. Chen, G. Xue</i>	LN-7

End of Conference
