June 3, 2019 (Sunday)

4:00 PM - 7:00 PM	**Registration and Welcome Reception (Anti Chakra Engineering Building Atrium)**

June 3, 2019 (Monday)

8:00 AM - 4:00 PM	**Conference Registration (Anti Chakra Engineering Building Atrium)**
8:30 AM - 9:30 AM	**Plenary Session (Ivey BMO Auditorium): "Artificial Knees: Can They Benefit from New Technologies?" Peter Walker (New York University)**
9:30 AM - 10:00 AM	**Coffee Break (Anti Chakra Engineering Building Atrium)**

	Session A-1 (Advanced Manufacturing I)	Session B-1 (Advanced Energy Systems I)	Session C-1 (Biomechanics I)	Session D-1 (Biomedical Engineering I)	Session E-1 (Energy Materials I)	Session F-1 (Heat Transfer I)	Session G-1 (Fluid Mechanics I)	Session H-1 (Micro- Nano-Technologies I)	Session J-1 (Materials Engineering I)	Session K-1 (Solid Mechanics I)
	Room: ACEB 1400	Room: ECB 2440	Room: SEB 1056	Room: SEB 1058	Room: ACEB 1450	Room: SEB 2099	Room: ACEB 2435	Room: ACEB 1415	Room: ACEB 1415	Room: ACEB 1420
10:00 AM- 10:20 AM	**Laser Polishing and Structuring of Tooling and Functional Surface** **(Keynote Presentation)** Eugueni Bordatchev (National Research Council of Canada)	**Thermodynamic Modeling and Optimization of Ejector Refrigeration Systems Using Alternative Working Fluids** Aggrey Mwesigye (Ryerson University); Amir Kiamari (Ryerson University); Seith Davoskin (Ryerson University)	**Computational Modeling of Passive Ankle Exoskeleton Biomechanics** Jin Zhu (University of Ottawa); Marc Doumit (University of Ottawa)	**Multiscale Fluid Flow Analysis of Decellularized Mouse Lungs to Improve Lung Regeneration** Eric Chadwick (University of Toronto); Mohammadali Ahmadipour (University of Toronto); Takaya Suzuki (University of Toronto); Golnaz Karoubi (University of Toronto); David Romero (University of Toronto); Cristina Amon (University of Toronto); Thomas Waddell (University of Toronto); Amy Bazylak (University of Toronto);	**Phase Inversion: A Universal Method to Create High-Loading Porous Electrodes for Energy Storage Devices** Xiaofei Yang (Western University); Xueliang Sun (Western University)	**Heat Flux Analysis of a Li-Ion Cell during Charging and Discharging Periods** Abu Rishan Siddique (University of Guelph); Shohel Mahmud (University of Guelph); S. Andrew Gadsden (University of Guelph); Ali Heydari (University of Guelph)	**Experimental Study on the Effects of Surface Hydrophobicity on Drag Reduction in a Taylor Couette Flow** Ahmed Alarfa Mohamed (Memorial University); Ali Ouan (Memorial University); Yuri Muzychka (Memorial university)	**Development of BioMEMS 3D Stress/Strain Sensing Mechanism** Mohammed Kayed (University of Alberta); Amr Bulbola (University of Alberta); Walied Moussa (University of Alberta)	**Novel Welding Processes and Joint Evaluation Techniques in Pipeline Construction** **(Keynote Presentation)** Adrian Gerlich (University of Waterloo)	**Modelling of Creep Recovery in Carbon Fiber Reinforced Polymer Composites** Spencer Cabel (University of Manitoba); Raghavan Jayaraman (University of Manitoba)
10:20 AM- 10:40 AM		**Energy Analysis of Renewable Resources for Energy Production in Remote Communities** Mudi Nijhawan (University of Windsor); Cihita Jana (University of Windsor)	**Computational Investigation into Materials with Lower Stiffness for Hemarthroplasty** Carolyn Bertsmoter (University of Western Ontario); Daniel Langdon (University of Western Ontario); James Johnson (University of Western Ontario); Graham King (Saint Joseph's Healthcare)	**3D Bio-Printing of Starch-Chitosan Scaffolds for Neuron Cells** Haley Butler (University of Prince Edward Island); Emad Naiem (University of Prince Edward Island); Debra MacDonald (University of Prince Edward Island); Andrew Tucker (University of Prince Edward Island); Ali Ahmadi (University of Prince Edward Island)	**Sulfide Solid-State Electrolyte Protection Layer In-Situ Formed on the Surface of Metallic Li for High-Performance Li Batteries** Jianwen Liang (Western University); Xueliang Sun (Western University)	**The Impacts of Exterior Surface Convective Heat Transfer Coefficients on High-Rise Building Energy Consumption** Meseret Kahsay (Western University); Simre Brouwerse (Western University); Fitsum Tariku (British Columbia Institute of Technology)	**Laminar Boundary Layer Response to an Impulse Forcing by a Spanwise Array of Plasma Actuators** Hossein Kharajo (York University); Ronald Hanson (York University); Philippe Lavoie (University of Toronto)	**Microfluidic Oil-Water Separation Using a Hydrophobic-Oleophilic Stainless Steel Membrane** Tamela Alkayali (University of Prince Edward Island); Bradley Habli (University of Prince Edward Island); Russell Keir (University of Prince Edward Island); Ali Ahmadi (University of Prince Edward Island)		**Using Limestone Concrete as a Multi-Function Material** S. Fossing (Polytechnique Montréal); A. Ricci (Polytechnique Montréal); T. Lacoompe (Université Bretagne Sud)
10:40 AM- 11:00 AM	**Innovative Strategies for Assessing the Metrological Performance of Optical 3D Scanners** Fabiool Khamsemedar (Polytechnique Montréal)	**A Data-Driven Thermal Fault Detection Method in Lithium Ion Batteries** Olaoluwa Ojo (University of Ontario Institute of Technology); Xianke Lin (University of Ontario Institute of Technology); Haoxiang Lang (University of Ontario Institute of Technology)	**Artificial Intelligent Examination of DXA Image Quality for Automatic Finite Element Assessment of Hip Fracture Risk** Mranmi Yu (University of Manitoba); Yunhua Luo (University of Manitoba)	**Carbon-based pH Biosensors for Monitoring Infections** Dogan Sinar (Western University); George Knopf (Western University)	**Organic/Inorganic Composite Electrolyte for Dendrite-Free Solid-State Lithium Batteries** Hanyu Huo (Western University); Xueliang Sun (Western University)	**Experimental Investigation of a Loop Heat Pipe with a Two-Way Pressure Regulated Valve** Hooman Jazmidadeh (Carleton University); Tarik Kaya (Carleton University)	**Effect of Background Turbulence on the Evolution of and Entrainment into a Turbulent Jet** Rana Sehedijan (McGill University); Susan Gaskin (McGill University)	**Design of a High Density MEMS Membrane-Rod based Hydrophone** Tara Ahmadi (University of Windsor); Mohammed Jalal Ahamed (University of Windsor); Shahpour Alirezaee (University of Windsor)	**Experimental Characterization of Anisotropic Mechanical Properties of Extruded AA6061-T4** Matthew Bondy (University of Windsor); William Altenhof (University of Windsor); John Maddan (University of Windsor); Morten Jensen (CertaSIM LLC)	**Molecular Dynamics Simulations of Nanoindentation – The Effect of Force-Field Choice on the Predicted Elastic Modulus** Douglas Pratt (Memorial University); Sam Nakhla (Memorial University)
11:00 AM- 11:20 AM	**Multi-Objective Optimization During Sustainable Machining of Difficult-to-Cut Materials** A. Salem (University of Ontario Institute of Technology); H. Hegab (University of Ontario Institute of Technology); A. Kishawy (University of Ontario Institute of Technology); S. Rahmanpour (University of Ontario Institute of Technology)	**Energy and Exergy Analysis of a Combined Brayton/Brayton Power Cycle with Humidification** Abdoul Kader Moro Idriss (Royal Military College of Canada); Kuan Gong Boudama (Royal Military College of Canada)	**Impact Location Affects Brain and Neck Strain During Football Sport** Kewei Bian (Western University); Hooje Mao (Western University)	**A Novel Microfluidic Device for Real-Time Micronscopic Imaging of Endothelial Cell Responses to Laminar and Disturbed Fluid Flow** Daniel Lorusso (Western University), Kayla Scott (Western University), Hitoshi Akiba (Western University), Jaques Milner (Western University), John de Bruyn (Western University), J. Geoffrey Pickering (Western University), S. Jeffrey Dixon (Western University), David Holdsworth (Western University), Tamer Pangsing (Western University)	**Stabilization of Solid-state Electrolyte by Atomic Layer Deposition for High Performance All-solid-state Li-S Battery** Jiemeng Liang (Western University); Xueliang Sun (Western University)	**Experimental Investigation of Phase Change Material in Concrete and Bentonite-Based Thermal Energy Storage Media** Pedram Aelfaqi (Ryerson University); Hiep Nguyen (Ryerson University); Reza Dalmarzaban (Ryerson University); Aggrey Mwesigye (Ryerson University); Seith Davoskin (Ryerson University); David Salt (Capture Technologies)	**CFD and CAA Analysis of the SD 7037 Airfoil for Low Reynolds Number Flow** Alicon Zilstra (University of Waterloo); David Johnson (University of Waterloo)	**Encapsulation of Single Cells with Gelatin-Methacryloyl (GelMA) on Microfluidic Device using a Stratified Flow with Viscosity Contrast** Thu Nguyen (University of Waterloo); Sarah Chan (University of Waterloo); Evelyn Yim (University of Waterloo); Carolyn Ren (University of Waterloo)	**Failure Characterization of Heavily Cross-linked Epoxy Part I: Testing** Ahmed Elkuby (Memorial University); Sam Nakhla (Memorial University)	**Wave Propagation in Anisotropic Elastic Metamaterials with Broad Bandgaps** Zhengwei Li (University of Alberta); Huan Hu (University of Alberta); Xiaodong Wang (University of Alberta)
11:20 AM- 11:40 AM	**Machining Studies on High Silicon Content Al-Si Alloys for the Aerospace Industry** Olusola A Olufayo (Ecole de Technologie Supérieure); Oussama Chaieb (Ecole de Technologie Supérieure); Victor Songmene (Ecole de Technologie Supérieure); Mohammad Jahazi (Ecole de Technologie Supérieure)	**Numerical Modelling of Helical Steel Piles as In-Ground Heat Exchangers for Ground-Source Heat Pumps** Sarah Nicholson (Ryerson University); Aggrey Mwesigye (Ryerson University); Seith Davoskin (Ryerson University)	**Design of a 3D Printed Knee Wearable for Biomechanical Monitoring of Locomotor Activities of Daily Living** Calvin Young (University of Guelph); Michele Oliver (University of Guelph); Karen Gordon (University of Guelph)	**Design of a Custom Bioreactor for the Dynamic Culture of Perfused Cell-Laden Alginate Scaffolds Obtained by 3D Printing** Simon Collin (Université Laval)*; André Bégin-Drolet (Université Laval); Julie Fradette (Université Laval); Cindy Hoquard (Université Laval); Jean Ruel (Université Laval)	**Optimizing Porous Transport Layer Structures for Polymer Electrolyte Membrane Electrolyzers Using Stochastic and Pore Network Models** Jason Lee (University of Toronto); Amy Bazylak (University of Toronto)	**Characterization of Transient Flow Velocities During Melting of PCM in a Uniformly Heated Circular Cavity** Kyle Teather (Western University); Kamran Siddiqui (Western University)	**Effect of Anchor Impeller Speed on Gas Dispersion in Highly Viscous non-Newtonian Fluids Using Coaxial Mixers: A Peculiar Phenomenon** Sinthuran Jegatheesaretnam (Ryerson University); Farhad Ein-Mozaffari (Ryerson University)	**A Quantative Study of the Dynamic Response of Soft Tubing in a Microfluidic Contract for Pressure-Driven Flow** Marie Hebert (University of Waterloo); Jan Huissoon (University of Waterloo); Carolyn Ren (University of Waterloo)	**Failure Characterization of Heavily Cross-linked Epoxy Part II: Multiscale Modeling** Ahmed Elkuby Memorial University); Sam Nakhla (Memorial University)	**Multiscale Analysis of Ferroelectric Cellular Metamaterials** Jiahao Shi (McGill University); Hamid Akbarzadeh (McGill University)
11:40 AM- 12:00 PM	**Investigation of Hybrid MQL-Nano Fluid Performance When Machining Inconel 718 Super Alloy** Shakti Chaulya (University of Guelph); Abdelkrim Ellaggoz (University of Guelph); Ibrahim Deiab (University of Guelph); Khalifah Khanafer (Australian College of Kuwait); Akram Abdul-Latif (University of Paris 8)	**Economic Analysis of Off-Grid Hybrid Solar-Hydrogen Energy Systems with Energy Storage** Amin Ghobeity (Sheridan College)	**Using Kinematic Signals Features of Body-Worn Inertial Sensor For Temporal Events Detection of Locomotion** Nikoufar Ahmadian (University of Alberta); Milad Nazarahari (University of Alberta); Jackie Whitaker (University of Alberta); Hossein Rouhani (University of Alberta)	**In-Vitro Assessment of Aerosol Delivery via the Spiriva Respimat Soft Mist Inhaler Using the ODAPT™ Adapter with Facemask** Ryan Mehl (Carleton University); Abubakar Abdullahi (Carleton University); Edgar Matida (Carleton University); Frank Forencich (MedArthur Medical Sales Inc.)	**High-Performance All-Solid-State Li-Se and Li-SeS$_x$ Batteries** Xiaona Li (Western University); Xueliang Sun (Western University)	**Inverse Heat Transfer Application in a Scaled Model of a Power Transmission Line Tower Foundation** Daojian Zhang (Memorial university); Ali Ouan (Memorial University)	**An Exact Solution to the 3D Navier-Stokes and Applications to the Rankue-Hilsch Vortex Tube** Nolan Dyck (Western University); Anthony Straatman (Western University)	**Reading Intravocular Pressure Non-Invasively** Angelica Castagnola (Queen's University); Robert Campbell (Queen's University); Yong Jun Liu (Queen's University)	**Discrete-Element Modeling of Nacre-like Materials: Statistical Variation, Nonlinear Deformations and Fracture** Naghmi Abid (McGill University); Francois Barthelat (McGill University)	**Verification and Validation of a Finite Element Model for Structural Health Monitoring of Aluminum Structures using Guided Wave Ultrasonic Testing** Mohammad Tariq Valoo (University of Ontario Institute of Technology); Remco Pop-Iliev (University of Ontario Institute of Technology); Ghaus Rizvi (University of Ontario Institute of Technology)
12:15 PM - 1:00 PM	**Lunch (Anti Chakra Engineering Building Atrium) and CSME Technical Committee Meetings**									
1:00 PM - 2:00 PM	**Plenary Session (Ivey BMO Auditorium): "Pretascale Supercell Thunderstorm Simulations and New Hypothesis for Tornado Formation and Maintenance" Leigh Orf (University of Wisconsin)**									
2:00 PM - 2:30 PM	**Coffee Break (Anti Chakra Engineering Building Atrium)**									

	Session A-2 (Additive Manufacturing I)	Session B-2 (Advanced Energy Systems II)	Session C-2 (Engineering Analysis & Design)	Session D-2 (Biomedical Engineering II)	Session E-2 (Energy Materials II)	Session F-2 (Fluid Mechanics II)	Session G-2 (Fluid Mechanics III)	Session H-2 (Micro- Nano-Technologies II)	Session J-2 (Materials Engineering II)	Session K-2 (Solid Mechanics II)
	Room: ACEB 1400	Room: ECB 2440	Room: SEB 1056	Room: SEB 1058	Room: ACEB 1450	Room: SEB 2099	Room: SEB2020	Room: ACEB 2435	Room: ACEB 1415	Room: ACEB 1420
2:30 PM- 2:50 PM	**Multi-Element Slicing Approach for Intelligent Additive Manufacturing Preprocessing** Dylan Bender (University of Ontario Institute of Technology); Akmaal Baig (Ryerson University); Rakesh Kumar (Ryerson University); Jianfei Ma (Ryerson University); Alan Fung (Ryerson University)	**Natural Gas Engine Driven Heat Pump System – A Case Study of an Office Building** Fanched Kirinaghatam (Ryerson University); Attarasch Baig (Ryerson University); Rakesh Kumar (Ryerson University); Jianfei Ma (Ryerson University); Alan Fung (Ryerson University)	**Dynamic Analysis and Design Optimization of an Outdoor Fitness Machine** Victor Hetsa (University of Ottawa); Eric Lamegrie (University of Ottawa)	**A Novel Method to Improve Estimation of Tissue Displacement Field in Ultrasound Elastography** Niusha Kheirkhah (Western University); Ali Sadeghi-Naini (York University); Abbas Samani (Western University)	**Local and electronic structure study of black phosphorus by XAFS** Weihuan Li (Western University); Minsi Li (Western University); Tsun-Kong Sham (Western University); Xueliang Sun (Western University)	**Multilayer Viscoplastic Fluid Flows in Axially Rotating Pipes** Seyed Mohammad Taghavi (Université Laval); Sihan Lyu (Université Laval)	**PIV Analysis of Flow Around a Simplified Ship Hull** Jerrice Fang (University of Manitoba); Boahua Yuyanshuy Kuatque (Memorial University); Xingjun Fang (University of Manitoba); Mark Tachie (University of Manitoba)	**Quantifying the Influence of Strain Engineering on Piezoresistivity Using a Six Elements Sensing Rosette** Ami Bulbola (University of Alberta); Mohammed Kayed (University of Alberta); Walied Moussa (University of Alberta)	**Moisture Effect on Mechanical Performance of Out-of-Autoclave Composite Material at Different Void Level** Afshin Bazgoosh (Concordia University); Mehdi Hojati (Concordia University)	
2:50 PM- 3:10 PM	**Prospects and Challenges of Reinforcement Methodologies for 3D Printable Plastics** Aman Preet Singh (Rochester Institute of Technology - Dubai Campus); Basim El-Essawi (Rochester Institute of Technology - Dubai Campus); Al Dunaj (Rochester Institute of Technology - Dubai Campus); Fadi Abdallah Perviez (Rochester Institute of Technology - Dubai Campus); Sathish Kannan (American University of Sharjah)	**Sizing, Modeling and Analysis of a Solar Seasonal Energy Storage System for Space Heating in New Foundland** Rabbani Rasha (Memorial University); Habibur Rahaman (Memorial University); Tariq Iqbal (Memorial University)	**Experimental and Numerical Modelling of a One-Degree of Freedom Non-Smooth Mechanical System** Sophie Kuitjech (Polytechnique Montréal); Yves Cousineau (Polytechnique Montréal); Silva Pollet (Polytechnique Montréal); Alain Bataille (Polytechnique Montréal)	**Modelling of Flow-Induced Shear Stress to Predict Targeted Delivery of Cells in the Decellularized Lung** Jason Chen (University of Toronto); Eric Chadwick (University of Toronto); Takaya Suzuki (University of Toronto); Golnaz Karoubi (University of Toronto); David Romero (University of Toronto); Cristina Amon (University of Toronto); Thomas Waddell (University of Toronto); Amy Bazylak (University of Toronto)	**Pt Single Atom Electrocatalysts by Atomic Layer Deposition for Fuel Cell Related Catalytic reactions** Lei Zhang (Western University); Xueliang Sun (Western University)	**Aspect Ratio Effects on Turbulent Flow over Forward-Backward-Facing Steps** Hesam Ghazvini (University of Manitoba); Boahua Yuyanshuy Kuatque (Memorial University); Xingjun Fang (University of Manitoba); Mark Tachie (University of Manitoba)	**Three-Dimensional Characterization of Bursting and Sweeping Phenomena in the Turbulent Boundary Layer** Kadeem Dennis (Western University); Kamran Siddiqui (Western University)	**Quantitative Analysis and Predictive Engineering of Self-rolling of Nanomembranes** Mostafa Kazemirpour (Memorial University); Sadar Salehi (Memorial University); Ali Nasir (Memorial University)	**On the Influence of the Environmental Factors on Corrosion Behavior of 15Cr Stainless Steel Using Box-Behnken Design** Jun Song (McGill University)	
3:10 PM- 3:30 PM	**3D Printed Metamaterials of Dual/Negative Poisson's Ratio Behaviors Induced by Hierarchical Architecture** Junfeng Xiao (Western University); Dongqing Zhang (Western University)	**Investigating n-Heptane Spray Characteristics Inside the Ignition Quality Tester (IQT™) Chamber through Temperature Variation Measurements** Osama Hirouad (Carleton University); Osama Hirouad (Carleton University); Edgar Matida (Carleton University); Dave Gardner (Advanced Engine Technology Ltd.); Luc Merand (Advanced Engine Technology Ltd.); Omar Ramadan (Advanced Engine Technology Ltd.); Aaron Wilcox (Advanced Engine Technology Ltd.); Garry Hatcher (Advanced Engine Technology Ltd.)	**Experimental Measurements of Thermal Distribution of Belt Drive System Application to Vehicle Front Engine Accessory Drives** Xingchen Liu (University of Toronto); Kamran Behdinan (University of Toronto)	**Prosthetic Foot Design – A Simplified Analytical Approach** Stephanie Gibbons (Memorial University); Sam Nakhla (Memorial University); Adam Dubowski (Memorial University)	**3D-Printed Sulfur Cathode for Lithium Sulfur Batteries** Audje Gao (Western University); Xueliang Sun (Western University)	**Experimental Measurements of Cough Airflow in the Far-Field** N. Dudaitis (Western University); A. Mohamed (Western University); E. Savory (Western University); S. Mubareka (Sunnybrook Research Institute)	**Measuring Dynamic Contact Angles of a Droplet on Inclined Hydrophobic Surfaces with Irregular Roughness** Kewei Shi (Memorial University); Ali Ouan (Memorial University); Kristin Poduska (Memorial University)	**Electroadhesive Carbon Nanotube Surfaces** Michael Boulter (Western University); Changhong Cao (Massachusetts Institute of Technology); Nigamaa Nayakanti (Massachusetts Institute of Technology); Sneha Kim (Massachusetts Institute of Technology); Seyedeh Mobasheri Tehrani Moureian (Massachusetts Institute of Technology); A. Julio Hart (Massachusetts Institute of Technology)	**Impact of Fibre Modification on the Properties of Natural Fibre Composites** Nabeel Syed (University of Ontario Institute of Technology); Lilakanth (University of Ontario Institute of Technology); Ghaus Rizvi (University of Ontario Institute of Technology); Reenon Pop-Iliev (University of Ontario Institute of Technology)	**Manipulating the Architecture of Beams for High Toughness and Strength** Ahmed Dabaq (McGill University); Francois Barthelat (McGill University)
3:30 PM- 3:50 PM	**Topology Optimization for Layered Material** Daniel Pepler (University of Toronto); Craig Steeves (University of Toronto)	**Utilizing Geothermal Looping for Thermal Regulation of an Aquaculture Pond** Mitchell Kunka (University of Western Ontario); Christopher DeGrossi (Western University); Kamran Siddiqui (Western University)	**The Motion of a Curling Rock: Predictions using Ice Topography** Megan Balkovin (Western University); Jeffrey Wood (Western University))	**Detailed Finite Element Analysis of Prosthetic Foot** Amanda Ricketts (Memorial University); Sam Nakhla (Memorial University)	**Novel Cell Configurations for High-Performance Supersodic Na-O$_2$ Batteries** Xiaoting Lin (Western University); Xueliang Sun (Western University)	**On the Aerodynamic Performance of Tail Devices for Drag Reduction of Road Heavy Vehicles** Mohammad Saeedi (Amirkabir University of Technology); Ali Tavakoli (Lakehead University); Alexander Denny (Transtex-LLC); Kefu Liu (Lakehead University)	**Darcy's Law for Moving Packed Beds** Pedro Ibarra (University of Toronto); Markus Bussmann (University of Toronto); Stephen Whitaker (University of California at Davis)	**A Novel Continuous Electrophoretic PH Elution Separation Technique** Jeff Farrener (University of Waterloo)	**Thermal and Dynamic Mechanical Analysis of Biochar Filled Glassfiber Polymer Composite and Hemp-fiber Polymer Composite** Raj Dahal (University of Ontario Institute of Technology); Ashraf Bakhshaei (Acharya University of Prince-Edward Island)	**Development of Component Test for Motorcoach Roof Emergency Exit under Rollover Conditions** Patrick Grolmegne (University of Manitoba); Anton Kuznetsov (University of Manitoba); Igor Teltchev (University of Manitoba)
3:50 PM- 4:10 PM	**Anisotropy in Mechanical Properties of a Wire Arc Additive Manufactured Low-Carbon Low-Alloy Steel** Mahya Ghaffari (Memorial University); Alireza Vahedi Nemani (Memorial University); Morvan Rolleszat (Memorial University); Ali Nasiri (Memorial University)	**The Effect of Couple Layout on Thermoelectric Generator Performance** Xi Wang (University of Windsor); Paul Henshaw (University of Windsor); David Ting (University of Windsor)	**An Experimental Cooling Tower Model for Performance Evaluation and 2D Airflow Measurement** Lisa Clarke (University of Western Ontario); Jeffrey Wood (University of Alberta); Morris Flynn (University of Alberta); Brad Vickers (International Cooling Tower)	**A Novel Approach of Predicting Deep Brain Response Following Traumatic Brain Injury** Yanir Levy (Western University); Kewei Bian (Western University); Hooje Mao (Western University)	**Highly Efficient Protection by Atomic Layer Deposition/Molecular Layer Deposition for Lithium and Sodium Metal Anode** Yang Zhao (Western University); Xueliang Sun (Western University)	**On the Aerodynamic Performance of Tail Devices for Drag Reduction of Road Heavy Vehicles** Mohammad Saeedi (Amirkabir University of Technology); Ali Tavakoli (Lakehead University); Alexander Denny (Transtex-LLC); Kefu Liu (Lakehead University)	**Darcy's Law for Moving Packed Beds** Pedro Ibarra (University of Toronto); Markus Bussmann (University of Toronto); Stephen Whitaker (University of California at Davis)	**A Novel Continuous Electrophoretic PH Elution Separation Technique** Jeff Farrener (University of Waterloo)	**Thermal and Dynamic Mechanical Analysis of Biochar Filled Glassfiber Polymer Composite and Hemp-fiber Polymer Composite** Raj Dahal (University of Ontario Institute of Technology); Ashraf Bakhshaei (Acharya University of Prince-Edward Island)	**Development of Component Test for Motorcoach Roof Emergency Exit under Rollover Conditions** Patrick Grolmegne (University of Manitoba); Anton Kuznetsov (University of Manitoba); Igor Teltchev (University of Manitoba)
4:10 PM- 4:30 PM	**Post-Printing Heat Treatment of a Wire Arc Additively Manufactured Low-Carbon Low-Alloy Steel** Alireza Vahedi Nemani (Memorial University); Mahya Ghaffari (Memorial University); Morvan Rolleszat (Memorial University); Ali Nasiri (Memorial University)	**Design and Modeling of MRF Impact Base Frequency Enhancement for a Piezoelectric Energy Generator** Sylvester Ojetola (University of Ontario Institute of Technology); Haghani Azargabali (University of Ontario Institute of Technology); Martin Agelin-Chaab (University of Ontario Institute of Technology); Egidijus Dragalinas (Kaunas University of Technology); Vytautas Jonnas (Kaunas University of Technology)	**Review and Data Consolidation of Ranque-Hilsch Vortex Tube** Mark Parker (Western University); Anthony Straatman (Western University)	**A New Way to Link Animal Head Kinematics to Human Head Motion** Lihong Lu (Western University); Kewei Bian (Western University); Hooje Mao (Western University)	**Highly Efficient Protection by Atomic Layer Deposition/Molecular Layer Deposition for Lithium and Sodium Metal Anode** Yang Zhao (Western University); Xueliang Sun (Western University)	**Can we limit the passenger exposure to airborne contaminants in commercial aircraft cabins during the climb leg?** Hossam Elmaghraby (University of Guelph); Yi Wai Chiang (University of Guelph); Amir Allabadi (University of Guelph)	**A Study on Vortex Dynamics in Laminar-Turbulent Transition by a Point Cloud Method** Kazuo Matsuura (Shime University)		**Work of Fracture in Non-Crimp Fabric Carbon Fiber Reinforced Epoxy Composites** Aadiljia Sunaker (University of Toronto); Ying Tian (Western University); John Montesano (University of Waterloo); Jeffrey Wood (Western University)	**The Fracture Toughness of Biletic-Plastic 3D Nanolattices** Rahul Chouler (University of Toronto); Chandra Veer Singh (University of Toronto)

5:00 PM - 7:30 PM	**Various Tours**

June 4, 2019 (Tuesday)

8:00 AM - 4:00 PM	**Conference Registration (Anti Chakra Engineering Building Atrium)**
8:30 AM - 9:30 AM	**Plenary Session (Ivey BMO Auditorium): "Advances in Numerical Modelling of Flow, Heat, and Mass Transfer in Heterogeneous Media" Marcelo de Lemos (Instituto Tecnológico de Aeronáutica)**
9:30 AM - 10:00 AM	**Coffee Break**

	Session A-3 (Advanced Manufacturing II)	Session B-3 (Robotics, Mechatronics, Automation I)	Session C-3 (Biomechanics II)	Session D-3 (Environmental Engineering I)	Session E-3 (Energy Materials III)	Session F-3 (Heat Transfer II)	Session G-3 (Fluid Mechanics IV)	Session H-3 (Transportation Systems I)	Session J-3 (Materials Engineering III)	Session K-3 (Solid Mechanics III)
	Room: ACEB 1400	Room: ECB 2440	Room: SEB 1056	Room: SEB 1058	Room: ACEB 1450	Room: SEB 2099	Room: SEB 2100	Room: ACEB 2435	Room: ACEB 1415	Room: ACEB 1420
10:00 AM- 10:20 AM	**Implementations and Applications of Elliptical Vibration Microfibers-Cutting** Nikolai Farrus (Western University); O. Remus Tutunea-Fatan (Western University); Nicolas Mélkon (National Research Council of Canada); Eugueni Bordatchev (National Research Council of Canada)	**Nonlinear Model Predictive Control of Path Following by Waterbot's Autonomous Car** Mohammad Hassanpour (University of Waterloo); John McPhee (University of Waterloo); Krzysztof Czarnecki (University of Waterloo)	**Comparing Fixation Constructs for Scapula Insufficiency Fractures Following Reverse Shoulder Arthroplasty** Jason Lockhart (Western University); Dvaid Ashtal (Western University); G. Daniel Langdon (Western University); James Johnson (Western University); George Athwal (St. Joseph's Health Care Foundation); Francis Ting (St. Joseph's Health Care Foundation)	**An Airborne Thermal Imaging Methodology for Mapping Land Surface Temperature (LST) with a High Spatiotemporal Resolution** Ryan Bartley (University of Guelph); Mohammad Bigdeligan (University of Guelph); Amir Ababaid (University of Guelph)	**Computational Design of 2D Nanomaterials for Sustainable Energy** **(Keynote Presentation)** Chandra Veer Singh (University of Toronto)	**Numerical simulation of heat transfer and insulation performance of honeycomb structure** Hao Liu (University of Guelph); Sayda Tarsim (University of Guelph); William Lubitz (University of Guelph)	**A New Multivariate Correlation for Liquid/Liquid Separation** Mirwais E. (Memorial University); Kevin Pope (Memorial University); Ali Ouan (Memorial University)	**Multibody Dynamics in Julia** Bruce Minaker (University of Windsor)	**Additive Manufacturing of Aluminum Alloys: Opportunities for Extreme Environments** **(Keynote Presentation)** Mohsen Mohammadi (University of New Brunswick)	**Non-Fourier Heat Conduction and Heat Wave Interference in CNT Reinforced Composites** **(Keynote Presentation)** Zengtao Chen (University of Alberta)
10:20 AM- 10:40 AM	**Application of EWMA Control Chart on Volumetric Errors Change Recognition** Kanglin Xing (Polytechnique Montréal); Rene Mayer (Polytechnique Montréal); Achille Sofiane (Polytechnique Montréal)	**Model Predictive Control, Identification and Implementation Design for a Pneudraut: A Microcontroller-Based Architecture** Ricardo Bautista Quintero (University of New Brunswick); Rickey Dubay (University of New Brunswick)	**Design of a Biaxial Mechanobioreactor for Engineering Pediatric Aortic Valves** Edwin Wong (University of Toronto); Craig Simmons (University of Toronto)	**A Novel Option for City Water Recycle with Carbon Capture** Bashnu Acharya (University of Prince Edward Island); Prabir Basu (Dalhousie University); Akash Kulashreshtha (Dalhousie University)		**Performance Evaluation of Siding Materials Subjected to Radiant Heat Loads** Eder Villa Gomez (University of Alberta); Rasim Rehal (FPInnovations); Andri McDonald (University of Alberta)	**Influence of Trailing Edge Flap Pitching on Dynamic Stall in Pitching Airfoils** Farid Samara (University of Windsor); David Johnson (University of Waterloo)	**SDP-Based Energy Management Strategy with Lithium Plating Prevention for PHEVs** Siqiang Wang (University of Ontario Institute of Technology); Xianke Lin (University of Ontario Institute of Technology)		
10:40 AM- 11:00 AM	**Orthogonal Machining of Pure Magnesium-Silica Syntactic Foam** Abdulla Alhussein (American University of Sharjah); Sathish Kannan (American University of Sharjah); Salman Pervaiz (American University of Sharjah)	**A Point Cloud Generation Scheme** Shawei Qiu (Western University); Mehrdad Keramati (Western University)	**Energy Loss of Aortic Wall in Aneurysms Predicts Tissue Delamination** Edwin Wong (University of Toronto); Mingi Tang (University of Toronto); Craig Simmons (University of Toronto); Jennifer Chung (University of Toronto); Thomas Forbes (University of Toronto); Jagdish Butany (University of Toronto); Marat Ouzounian (University of Toronto)	**Sea Lettuce to Biocarbon and Biogas with Recovery of Nutrients** Ankita Shrestha (University of Prince-Edward Island); Bishnu Acharya (University of Prince-Edward Island)	**Interface Engineering of Sulfide Electrolyte-Based All-Solid-State Lithium Batteries** Changhong Wang (Western University); Xueliang Sun (Western University)	**Thermal Characteristics of Steel and Composite Risers for Flow Assurance** Samrar Ali (Memorial University); Sam Nakhla (Memorial University)	**System Simulation of Engine Cooling Water Jacket** Elie Mezouzi (University of Windsor); Shankar Natarajan (PCA Canada Inc.); Ronald Barron (University of Windsor); Ram Balachandar (University of Windsor)	**A Fault-Tolerant Steering Control Algorithm Using MPC for Driving Safety of All-Terrain Cranes** Kwang-seok Oh (University of Ontario Institute of Technology); Jahn Seo (University of Ontario Institute of Technology)	**Microstructural Evolution of Adiabatic Shear Bands in AZ31 Magnesium Alloy During High Strain Rate Impact** Francis Tetteh (York university); Solomon Boakye-Yiadom (York University)	**Investigating the Accuracy of Various Many-Body Potentials in Estimating Mechanical Properties of a Nanoscale Aluminum** Sabir Sultedi (Memorial University); Sam Nakhla (Memorial University)
11:00 AM- 11:20 AM	**Finite Element Modeling of Fracture in Ceramic Micro-Particles During Composite Coldspray Process** Rohan Chakraborty (McGill University); Jun Song (McGill University)	**Noise and Thermal Drift Reduction in MEMS Gyroscopes With Predictive Error Modeling and Compensation Techniques** Matthew Shumson (University of Windsor); Mohammed Jalal Ahamed (University of Windsor)	**Mechanical Properties of the Bicipital Aponeurosis** Emmanuel Chan (University of Guelph); Michele Oliver (University of Guelph); Karen Gordon (University of Guelph); Anne Agur (University of Toronto)	**A Vertical Diffusion Model to Predict Profiles of Temperature within the Lower Atmospheric Surface Layer: Simple or Complicated?** Mohsen Moradi (University of Guelph); Mary Kizilsavas (University of Guelph); Amir Nazem (University of Guelph); Md. Rafiuzzaman (University of Guelph); William Lubitz (University of Guelph); Amir Ababaid (University of Guelph); Benjamin Dyer (McMaster University); E. Scott Krayenhoff (University of Guelph)	**High Performance 3D Li Metal Anodes Enabled by Lithiophilic Cu Nanowire Networks** Keegan Adair (Western University); Xueliang Sun (Western University)	**Thermal Management of the Hotspot on the Spray Cooled Electronic Chip Using Jet Impingement** Yuktang Xia (The University of British Columbia); Ri Li (The University of British Columbia)	**A Numerical Investigation on the Fundamentally Different Mechanisms of Circular Hydraulic Jump for High and Low Viscosity Liquids** Yunpeng Wang (Western University); Roger Khayat (Western University)	**3D Random-Road Implementation in Motionview® Full Car Simulation