

# Technical Program

June 14 (concrete-solidification version)

We would like to take this opportunity to thank and welcome everyone to Energy and Sustainability 2018. Your effort, participation, and papers covering a wide spectrum of topics by experts from China, India, Tunisia, Saudi Arabia, Iran, California, Tennessee, Alberta (Edmonton & Calgary), and Ontario have finally paid off!

It would be an amiss if we do not take this opportunity to thank our generous sponsors once again. The currently delivered sponsors include:

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We hope that you have a wonderful time in the Southernmost city of Canada, and we look forward to welcoming you back for a similar conference (Energy & Resources for Tomorrow, June 20-21, 2019; see [www.eart2019.ca](http://www.eart2019.ca)) next year.

Sincerely,  
EAS2018 Committee

## Website

Please refer to <https://eas2018.ca/> for updates and details.

The banquet on Thursday June 21 will include wine, hors d'oeuvres, soup, salad, entree and dessert. Please advise us of any dietary restriction, special needs, etc. by emailing to [TELab@uwindsor.ca](mailto:TELab@uwindsor.ca)

\* = Registered Presenter (if your presentation/paper is not listed, it is probably pending on your registration, please do so with your credit card at <https://webapps.uwindsor.ca/conferences/TandE/index.php> Remember to save the receipt as you checkout.) **Please limit your presentation to 14 minutes**, leaving 3 minutes for discussion.

✓ = Presentation only; ✓ = Full Paper under review; ✓ = Revised Paper received.

<b>Thursday, June 21</b>		
08:00–08:30	<b>Centre of Engineering Innovation (CEI) Atrium</b> Breakfast & Registration Package Pickup	
08:30–08:40	<b>Welcome and Opening Remarks (Room 1102 CEI)</b> Rupp Carriveau, Provost, VP Research, Dean of Engineering	
08:40–09:20	<b>Plenary Lecture #1 (Room 1102 CEI)</b> ✓GS-0 Energy Resource Recoverability and Geoexchange Systems R.A. Schincariol*, S.E. Dehkordi, University of Western Ontario	
<b>Geothermal &amp; Storage, Room 1102. Co-Chairs: R.A. Schincariol &amp; T. Bolisetti</b>		
09:20–09:37	✓GS-1 Performance of geoexchange systems in tight building clusters R.M. Drydale*, R.A. Schincariol, University of Western Ontario	
09:37–09:55	✓GS-2 Effects of varying pipe materials on the performance of vertical borehole heat exchangers H. Pakoohinejad*, T. Bolisetti, S. Reitsma, D.S-K. Ting, University of Windsor, Geosource Energy Inc.	
09:55–10:12	✓GS-3 Benefits and Challenges Associated with Distribution Connected Energy Storage in Ontario’s Market S. Ray*, Essex Energy Corporation	
10:12–10:25	<a href="#">Essex Energy Coffee Break (Room 1102 CEI)</a>	
	<b>Water &amp; Energy, Room 1102.</b> <b>Co-Chairs: D.H. Wood &amp; N. Biswas</b>	<b>Combustion &amp; Fuel, Room 1101.</b> <b>Co-Chairs: S. Ray &amp; O. Jianu</b>
10:25–10:42	✓WE-1 Development of Crossflow Hydro-turbines for Remote Power Production R.C. Adhikari, D.H. Wood*, University of Calgary	✓CF-1 Energy and greenhouse gas emissions performances of bitumen extraction: solvent-based electromagnetic heating process M. Safaei*, A.O. Oni, E.D. Gemechu, A. Kumar, University of Alberta
10:42–11:00	✓WE-2 Numerical modeling to assess the performance of multipurpose fixed breakwater for wave energy conversion, M.J. Ketabdari, M. Safarkhani, F. Khorasani*, Amirkabir University of Technology, Ferdowsi University of Mashhad	✓CF-2 Investigation of Dissolution of Cuprous Chloride in Aqueous Hydrochloric Acid Solution with Application to Hydrogen Production Technologies J.J. Shah*, M.A. Rosen, O.A. Jianu, University of Ontario Institute of Technology, University of Windsor
11:00–11:17	✓WE-3 Tubular Pumping Systems for South-to-North Water Diversion Project Y. Jin*, J. Wu, D.S-K. Ting, J. Stagner, Yangzhou University, University of Windsor	✓CF-3 Combustion characteristics and emissions of direct injection neat n-butanol in a compression ignition engine Z. Yang*, X. Han, S. Yu, S. Dev, G. Reader, D.S-K. Ting, M. Zheng, University of Windsor
11:17–11:35	✓WE-4 Energy Management and Conservation in Water Utilities through Short-term Forecasting M.H. Bata*, R. Carriveau, D.S.-K. Ting, University of Windsor	✓CF-4 Preliminary Simulation Study of Flow Field around a Spark Plug under Ambient and Engine Conditions, N. Sandhu*, S. Dev, D. Purohit, Z. Yang, M. Zheng, D. Ting, University of Windsor
11:35–11:52	✓WE-5 Sustainable Solution for Remediation of Sewage Contaminated Lake in India D. Verburg* & R. Seth, University of Windsor	✓CF-5 Compact CPV – Sustainable Approach for Efficient Solar Energy Capture with Hybrid Concentrated Photovoltaic Thermal (CPVT) System and Hydrogen Production, M. Burhan*, M.W. Shahzad, K.C. Ng, King Abdullah University of Science & Technology
12:00–13:00	Lunch & <a href="#">Poster Display</a>	

**Thursday, June 21**

<b>Thursday, June 21</b>		
	<b>Electrified Mobility, Room 1102. Co-Chairs: M. MacKew &amp; N. Kar</b>	<b>Energy &amp; Building, Room 1101. Co-Chairs: J.H. Perkins &amp; A.R. Vasel-Be-Hagh</b>
13:00–13:17	✓EM-1 The State of Charge Estimation of LiFePO4 Power Battery Based on Dynamic Bayesian Network M. Zhu*, W. Hu, N.C. Kar, University of Windsor	✓EB-1 Sustainability and Energy Services: A Framework for Discussion J.H. Perkins*, The Evergreen State College
13:17–13:35	✓EM-2 Review of Recent Progresses on Gallium Nitride Transistor in Power Conversion Applications J. Tian*, C. Lai, N.C. Kar, University of Windsor	✓EB-2 Performance Analysis on a Pressure Equalized Spandrel Back-pan Configuration in a Curtain Wall Façade D.T. Gordon*, Erie Architectural Products
13:35–13:52	✓EM-3 LPTN and FEA Modeling for Thermal Characterization of an Interior Permanent Magnet Synchronous Motor (IPMSM) for Electric Vehicle Application F. Ahmed*, E. Ghosh, S. Mukundan, H. Dhulipati, N.C. Kar, University of Windsor	✓EB-3 Assessing the accuracy of 2-dimensional thermal simulations for curtain wall condensation analysis J. Branston*, C. Taylor, Erie Architectural Products
13:52–14:10	✓EM-4 The Future of Electric Vehicles S. Hart <sup>‡</sup> , Windsor-Essex Electric Vehicle Association	✓EB-4 The prospect of active solar thermal façade S.Z. Miry, T. Bolisetti*, D. S-K. Ting, D. Stronks, University of Windsor, Erie Architectural Products
14:10–14:27	✓EM-5 Custom Electric Conversions for Performance Vehicles S. Anis*, OnPoint Dyno and Mountain Pass Performance	✓EB-5 Energy Performance of a Naturally-Ventilated Double-Skin Façade for an Office Building J. Aman*, D.S-K. Ting, T. Bolisetti, D. Stronks, University of Windsor, Erie Architectural Products
14:27–14:40	<a href="#">MacKew Law Coffee Break (Room 1102 CEI)</a>	
	<b>Fuel Cell &amp; Wind, Room 1102. Co-Chairs: K. Jiao &amp; L. Miller</b>	
14:40–14:57	✓FC-1 Multi-component multi-phase lattice Boltzmann modeling of droplet motion in 3D flow channel of fuel cell Y. Hou*, H. Deng, Q. Du, K. Jiao, Tianjin University	
14:57–15:15	✓FC-2 Modeling of proton exchange membrane fuel cell system considering various auxiliary subsystems Z. Yang*, Z. Liu, L. Fan, Q. Du, K. Jiao, Tianjin University	
15:15–15:32	Wind-1 Hybrid Fluid-Aeolipile Design for a Bladeless Wind-Turbine C.W. Van Neste, S.M. Mahajan, A. Vasel-Be-Hagh*, Tennessee Tech University	
15:32–15:50	✓Wind-2 Enhancing Hybrid Vertical Axis Wind Turbine Performance using Winglets, Y. Bahri*, M. Ghiss, H. Troudi, D.S-K.Ting, University of Sousse, University of Windsor	
15:50–16:07	✓Wind-3 Investigation of noise generation through wind and turbine blade interaction M. Nijhawan*, O.A. Jianu, University of Windsor	
16:07–16:25	✓Wind-4 Wind turbine blades SCADA ranking inferred wear (SRIW) J. Shen*, R. Francis, L. Miller-Branovacki, R. Carriveau, D.S.K. Ting, University of Windsor	
16:25–16:42	OCE	
Bus 5:00 pm	Bus leaves CEI, University of Windsor for Viewpointe Estate Winery	
18:00–20:00	Banquet	
Bus 8:30 pm	Bus returns to CEI, & then, hotels (Caesars Windsor, TownePlace Suites by Marriott)	

<sup>‡</sup>Sean is founder and chair of the Windsor-Essex Electric Vehicle Association (WEEVA) and a Member of the Board at EV Society, of which WEEVA is a chapter. These organizations represent thousands of electric vehicle owners and aims to support and accelerate the adoption of electric vehicles in Ontario. Sean is an IT Professional and has been driving an electric car since early 2013.

<b>Friday, June 22</b>		
08:00–08:30	<b>Centre of Engineering Innovation (CEI) Atrium</b> Breakfast & Registration Package Pickup	
08:30–08:40	<b>Book Draw &amp; Remarks (Room 1102 CEI)</b> Rupp Carriveau	
08:40–09:20	<b>Plenary Lecture #2 (Room 1102 CEI)</b> ✓SE-0 Energy and Sustainability: Policy, Politics and Practice G.T. Reader*, University of Windsor	
	<b>Water &amp; Energy II, Room 1102.</b> Co-Chairs: W. Lubitz & N. Biswas	<b>Sustainable Energy, Room 1101.</b> Co-Chairs: J.M. McKellar & R. Carriveau
09:20–09:37	✓WE-6 Investigating energy losses within Archimedes screw generators using computational fluid dynamics S. Simmons, W. Lubitz*, University of Guelph	SE-1 Urban Residential Carbon Emission and Urban Sustainable Development: Building Energy Efficiency Perspective, J. Jiang*, Institute of Quantitative and Technical Economics, Chinese Academy of Social Sciences
09:37–09:55	✓WE-7 Sewer Water Heat Recovery with a Heat Pump C. Chow*, J. Duquette, Carleton University	✓SE-2 Integrating Sustainability Thinking into Technical Curricula, J.M. McKellar*, D. Hoorweg, H.A. Gabbar, A. Tokuhiko, University of Ontario Institute of Technology
09:55–10:12	✓WE-8 Numerical simulations of two-degree-of-freedom vortex induced vibrations (VIV) energy harvester, H. Kong*, V. Roussinova, V. Stoilov, University of Windsor	✓SE-3 Influential Energy System Variables – Identifying Impacts and Planning for Change L. Miller*, R. Carriveau, University of Windsor
10:12–10:25	<a href="#"><u>UOIT Coffee Break (Room 1102 CEI)</u></a>	
	<b>SNP Session – Thermal, Storage &amp; Grid, Room 1102. Co-Chairs: S. Suresh &amp; F. Li</b>	
10:25–10:42	✓TSG-1 A mathematical evaluation of influencing parameters of thermal interface materials for thermoelectric generator in waste heat power generation K. Karthick, G.C. Joy, S. Suresh*, D.S-K. Ting, National Institute of Technology, Bharat Heavy Electricals Limited, University of Windsor	
10:42–11:00	✓TSG-2 Assessing the Impacts of Electric Vehicle Battery Charging on Distribution Transformers and on Distribution Systems D. Alame*, M.A. Azzouz, N.C. Kar, University of Windsor	
11:00–11:17	✓TSG-3 A review of energy storage technologies Z. Wang, W. Xiong, Z. Wang, R. Carriveau*, D.S-K. Ting, Dalian Maritime University, University of Windsor	
11:17–11:35	TSG-4 Transient Thermodynamic Modeling of an UWCAES Plant: Conventional versus Advanced Exergy Analysis R. Carriveau*, M. Ebrahimi, D.S.-K. Ting, A. McGillis, University of Windsor, Hydrostor Inc.	
11:35–11:52	✓SNP Classification of the 7 Types of Energy Losses, Examples of Each, and How to Attack Them J. Lewis*, SNP Technical Services Inc	
12:00–13:00	<a href="#"><u>SNP Technical Services Inc Lunch (BBQ)</u></a>	

**Friday, June 22**

<b>Greenhouse &amp; Farms, Room 1102. Co-Chairs: J. Taylor &amp; P. Henshaw</b>	
13:00–13:17	GF-1 Net Zero Electricity Dairy Farms: Techno-Economical Assessment Leading to Sustainable Energy Policies in Iran A.M. Nikbakht*, H.J. Sarnavi, N. Aste, F. Leonforte, Urmia University, Politecnico di Milano University
13:17–13:35	✓GF-2 Evaluation of the thermal performance prediction of a greenhouse using a transient simulation Z. Naghibi*, R. Carriveau, D.S-K. Ting, University of Windsor
13:35–13:52	✓GF-3 Effects of lighting on microclimate and energy balance in greenhouse vegetable production X. Hao, Y. Zhang, C. Little, S. Khosla, Harrow Research & Development Centre, Agriculture & Agri-Food Canada, Ontario Ministry of Agriculture, Food & Rural Affairs
13:52–14:10	✓GF-4 Effect of Mean Ground Temperature Increase on Greenhouse Heating Loads Lucas Semple*, Under Sun Acres Inc
14:10–14:27	✓GF-5 Predicting the interior conditions in a high tunnel greenhouse S. Ghose, W. Lubitz*, University of Guelph
14:27–14:40	<a href="#"><u>OGVG Coffee Break (Room 1102 CEI)</u></a>
<b>Solar &amp; Energy, Room 1102. Co-Chairs: P.G. O'Brien &amp; R. Seth</b>	
14:40–14:57	✓S-1 The Design of Solar Spectrum Splitters for Biofuel and Concentrated PV Electricity Cogeneration Systems N. Talebzadeh, M. Rostami, P.G. O'Brien*, York University
14:57–15:15	✓S-2 The influence of square rib attach angle on the heat convection from a surrogate PV panel Y. Yang*, A. Ahmed, D.S-K. Ting, S. Ray, University of Windsor, Essex Energy
15:15–15:32	✓S-3 Advanced Exergy Analysis of a Nanofluid-based Flat Plate Solar Collector J. Aman*, P. Henshaw, D.S-K. Ting, University of Windsor
15:32–15:50	✓S-4 Analysis of Solar PV Output Performance in Iqaluit, Nunavut, Canada A. Singh*, P. Henshaw, D.S-K. Ting, University of Windsor
15:50–16:07	S-5 Determination of Energy consumption in Drying of Tomato Juice with Ohmic Heating Method A. Hosseinpour*, F. Nargesi, Urmia University
16:07–16:25	✓S-6 Ag-reduced graphene oxide-TiO <sub>2</sub> nanorods thin-film photocatalyst for degrading organic hazardous pollutants under visible light conditions T. Peng*, J. Lalman, F. Arefi-Khonsari, University of Windsor, Sorbonne University
See you next year!	

