

Sunday PM

3-Minute Elevator Pitch  
Competition for Graduate  
Students

3MEP1

Salon 3

3-Minute Elevator Pitch  
Competition

Organizer(s) - Zukui Li  
Chair(s) - Zukui Li

This is the preliminary round; the final round will be held on Tuesday evening, beginning at 18:20.

If a participant is not present at the scheduled time, the next participant will be asked to speak so the schedule may change during the duration of the preliminary competition.

**13:00 0001** *Polymer Retention in Porous Media: A Microfluidic Approach*  
\***Zargartalebi M.** <Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>, Narang R., Patrick J., Hejazi S.H., Azaiez J., Sanati-Nezhad A.

**13:05 0002** *Valorisation of Chicken Feathers: New Approach for Use In Speciality Paper Production* \***Yimer T.T.** <Discipline of Chemical Engineering, University of KwaZulu-Natal, Durban, South Africa; Ethiopian Institute of Textile and Fashion Technology, Bahir Dar, Ethiopia>, Bruce S., Deresh R., Viren C.

**13:10 0003** *Characterizing Adsorbents for Humid Post-Combustion Carbon Capture*  
**Wilkins N.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, \***Rajendran A.**

**13:15 0004** *Application of a Mathematical Model for Describing the Flocculation Process of Oil Sands Tailings Treatment*  
**Vajihinejad V.** <University of Alberta, Department of Chemical and Materials Engineering>, \***Soares J.B.P.**

**13:20 0005** *Valorisation of Chicken Feathers: Application in Paper Production*  
**Tesfaye T.** <Discipline of Chemical Engineering, University of KwaZulu-Natal, Durban, South Africa; Ethiopian Institute of Textile and Fashion Technology, Bahir Dar, Ethiopia>, Bruce S., Deresh R., Viren C.

**13:25 0006** *Computational Fluid Dynamics of Viscous Fingering in Supercritical Fluid Chromatography*  
**Subraveti S.G.** <Department of Chemical and Materials Engineering, University of Alberta, 9211-116 St., Edmonton, AB T6G1H9>, Nikriyuk P., Rajendran A.

**13:30 0007** *PEDOT:PSS Nano-Gels For Highly Electrically Conductive Silver/Epoxy Composite Adhesives*  
**Si P.** <Department of Chemical Engineering, University of Waterloo; Waterloo Institute of Nanotechnology, University of Waterloo; Institute for Polymer Research, University of Waterloo>, Chen L., Trinidad J., Lee B., Zhao B.

**13:35 0008** *Treatment of Oil-Sand Produced Water using Electrocoagulation*  
**Shu T.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB T2N 1N4>, Hojaghan B., Yasri N., Nightingale M., Roberts E.P.L.

**13:40 0009** *Designing and Scheduling of Upgrading Plants under Uncertainty*  
**Shahandeh H.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Li Z.

**13:45 0010** *Safety Aspects of Floating LNG: Preliminary Inherent Safer Design Selection of Liquefaction Process*  
**Shah D.** <Department of Chemical Engineering, University of Alberta, Edmonton, AB>, \***Lefsrud L.M.**

**13:50 0011** *Hierarchical Porous Materials to the Rescue or How to Utilize Hierarchy of Porosity to Maximize Catalytic Activity*  
\***Sadeghi M.** <McGill University>, \***Gostick J.T.**

**13:55 0012** *Decision Making Policy: Resilience towards the Uncertain*  
**Rahal S.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, \***Li Z.**

**14:00 0013** *Evaluation of Diamine Appended Metal-Organic Frameworks for Post-Combustion CO<sub>2</sub> Capture*  
**Pai K.N.** <University of Alberta>, \***Rajendran A.**

**14:05 0014** *Nanoparticle Technology for Oil Sands Application*  
\***Nafie G.** <University of Calgary, 2500 University Dr. NW, Calgary, AB T2N 1N4>, Vitale G., \***Nassar N.**

**14:10 0015** *Using New Developed Adsorbents Made of Biomaterial for Removal of Antibiotics*  
\***Movasaghi Z.** <Department of, Chemical and Biological Engineering, University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N A9>, \***Niu C.H., Yan B.**

**14:15 0016** *Strategic Planning of SAGD Reservoir Development under Uncertainty*  
**Motamed Nasab F.** <University of Alberta, Department of Chemical and Materials Engineering>, \***Li Z, Shahandeh H.**

**14:20 0017** *Refinement of Chitinase from Entomopathogenic Fungi (Beauveria bassiana) with Multistage Membrane Filtration*  
\***Mondal S.** <Department of Chemical Engineering, Jadavpur University, Kolkata, India>, \***Datta S.**

**14:25 0018** *Polymerization in Supercritical CO<sub>2</sub>*  
**López-Domínguez P.** <Facultad de Química, Departamento de Ingeniería Química, Universidad Nacional Autónoma de México, 04510, México D.F., México>

**14:30 0019** *Green Chemistry: High Conductivity of Polyhydroxybutyrate Composites Assisted by Well-Dispersed Reduced Graphene Oxide*  
**Li D.** <Department of Chemical and Materials Engineering, University of Alberta>, \***Elias A.**

**14:35 0020** *Data Mining Driven Design of a Low-Cost Canadian Ore for the Development of Cost-Effective Carbon Capture Process*  
**Khakpoor N.** <University of Calgary, Calgary, AB T2N 1N4>, Siegler H.D.H., Mahinpey N.

**14:40 0021** *Identification of Cause-Effect Relationships from Small Data in Multi-Variable Processes*  
**Kathari S.** <Systems and Control Group, Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai - 600036, India>, \***Tangirala A.K.**

**14:45 0022** *Towards the Development of a Biorefinery Operator Training Simulator for Automatic Standard Operating Procedure Adaptation*  
**Isimite J.O.** <Department of Biochemical Engineering, University College London, Gordon St., London, WC1H 0AH UK>, Baganz F., \***Volker V.C.**

**14:50 0023** *From Seaweed to Jet Fuel*  
**Harris J.** <Department of Chemical Engineering, Queen's University>, \***Champagne P., Jessop P.G.**

**14:55 0024** *Leveraging Data to Make Chemical Process Industries More Profitable*  
\***Garg A.** <Department of Chemical Engineering, McMaster University, 1280 Main St. W, Hamilton, ON L8S 4L8>, **Mhaskar P.**

**15:00 0025** *Optimizing the Applications of Water-Soluble Polymers in Environmental Remediation*  
**Ezenwajiaku I.H.** <Department of Chemical Engineering, Queen's University, Kingston, ON K7L 3N6>, \***Hutchinson R.A.**

**15:05 0026** *Biochar: A Sustainable Solution for Waste Management in Prince Edward Island*  
**Dahal R.** <School of Sustainable Design Engineering, University of Prince Edward Island, PEI>, \***Acharya B.**

**15:10 0027** *Microstructured Flow Chemistry for Oxidation of Molecules from Biomass using Gold as Catalyst*  
**Behravesht E.E.** <Åbo Akademi University, Finland>

**15:15 0028** *How Does Granular Segregation Influence Heat Transfer in a Rotary Kiln?*  
\***Beaulieu C.** <Ecole Polytechnique Montreal, Montreal, QC H3C 3A7>, Vidal D., Chaouki J., Bertrand F.

**15:20 0029** *Comparison of Different Mixing Methods in Solid-Liquid Separation of Oil Sands Tailings* **Bazoubandi B.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Asare E., Samuel A., Afacan A., \*Soares J.B.P.

**15:25 0030** *Disclose the Mystery of Oil Recovery* **Bazazi P.** <Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>, \*Hejazi S.H., Sanati-Nezhad A.

**15:30 0031** *Improving Organic Waste Conversion using Non-Biological Conductive Materials* **Barua S.** <Department of Civil and Environmental Engineering, University of Alberta, 9211-116 St. NW, Edmonton, AB T6G 1H9>

**15:35 0032** *Minimization of End Product Inhibition using a Two Step Sequential Enzymatic Hydrolysis Approach* **Baksi S.** <Department of Chemical Engineering, Jadavpur University, Kolkata, India>, \*Sarkar U.

**15:40 0033** *Mitigation and Bioconversion of Methane using Methane-Consuming Bacteria* **Bakhtiari F.** <Department of Chemical and Material Engineering, University of Alberta, Edmonton, AB T6G 2R3>, \*Stein L.Y., \*Sauvageau D.

**15:45 0034** *Anemia Management in Chronic Kidney Disease using Zone Model Predictive Control* **Bajwa N.** <University of Alberta>, McAllister J., Li Z., Liu J.

**15:50 0035** *A Smart Pipeline Leak Detection and Localization System Based on the Kantorovich Distance* \***Arifin B.M.S.** <CME Department, University of Alberta, Edmonton, AB>, \*Li Z.

**15:55 0036** *Simultaneous Gross Error Detection and Data Reconciliation* \***Alghardashi H.** <Department of Chemical and Materials Engineering University of Alberta, Edmonton, AB T6G 1R1>, \*Huang B.

**16:00 0037** *Investigating the Mechanistic Steps involved in the Long Chain Branch Formation Process in Polyolefins made with Metallocene Catalysts* **Albeladi A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2G6, >

**16:05 0038** *CO<sub>2</sub> Capture with Ionic Liquids* \***Aghaie M.** <Memorial University>, \*Zendejboudi S.

**16:10 0039** *Life Cycle Greenhouse Gas Assessment of Canola-Derived Renewable Jet Fuel in Western Canada* **Zemanek D.** <Queen's University, Department of Civil Engineering>, Champagne P., Mabee W.

**16:15** End of Session

Monday AM

Plenary

PLEN Hall B

Plenary

Organizer(s) - João Soares and Arvind Rajendran  
Chair(s) - Shaffiq Jaffer

08:20 Introductory Remarks

Plenary Lecture presented by Arun Majumdar, Stanford University

**08:30 0040** *Navigating the Turbulence of the Global Energy System* **Majumdar A.** <Department of Mechanical Engineering, Precourt Institute for Energy, Stanford University, >

09:30 Coffee Break

09:50 End of Session

Honourary Symposia

HCB1 Salon 15/16

Symposium in Memory of Khaled Belkacemi - A Journey across Food & Chemical Engineering Dyad

Organizer(s) - Faiçal Larachi and Cristina Ratti  
Chair(s) - Faiçal Larachi and Cristina Ratti

Keynote Lecture presented by Nicolas Abatzoglou, Université de Sherbrooke

**09:50 0041** *The NanoF-PoRes Project: NanoFilaments from Polymeric Residues* \***Abatzoglou N.** <Université de Sherbrooke>, Gitzhofer F., Blanchard J.

**10:30 0042** *Studies of Chemical Reactions on Metal and Metal Carbide Surfaces* **Lemay J.-C.** <Département de chimie, Université Laval>, Dong Y., Zeng Y., \*McBreen P.H.

**10:50 0043** *Synthesis of a New Generation of Agro-Surfactants via Catalytic Metathesis in Green Solvents* Chorfa N., \***Hamoudi S.** <Department of Soil Sciences & Agri-Food Engineering, Université Laval>, Arul J., \*Belkacemi K.

**11:10 0044** *Shrinkage during Drying of Cellular Foods* \***Ratti C.** <Université Laval, Département des sols et de génie agroalimentaire>

**11:30 0045** *Phytotoxicity of Rare Earth Elements on Edible Plants* Rezaee A., Hale B., **Santos R.M.** <University of Guelph, School of Engineering>, \*Chiang Y.W.

11:50 End of Session

HOP1 Salon 2

Honourary Symposium in Recognition of Archie Hamielec, Harmon Ray and Charles Cozewith for Outstanding Contributions in Polymer Reaction Engineering

Organizer(s) - Jeff Brinen, Robin Hutchinson, João Soares and Shiping Zhu  
Chair(s) - João Soares and Jeff Brinen

**09:50 0046** *An Integrated Product Design and Control Framework Applied to Polymer Nanocomposite Manufacturing* \***Ogunnaik B.** <University of Delaware, USA>, Wetzel M., Gou Q.

**10:10 0047** *Modeling of Polymer Processes for Art and Industry* \***Iedema P.D.** <Universiteit van Amsterdam, Van 't Hoff Institute for Molecular Science, Science Park 904, 1098 XH Amsterdam, The Netherlands>

**10:30 0048** *Modeling of High Temperature Radical Polymerization through Statistical Data Mining* **Debling J.** <BASF Corporation>, \*Task K.

**10:50 0049** *Understanding Condensed Mode Cooling for Gas Phase PE Production* \***McKenna T.F.L.** <Université de Lyon, C2P2-UMR 5265 France>

**11:10 0050** *Model-Based Reactor Design to Control Hyperbranched Polymer Architecture* \***Tobita H.** <Department of Materials Science and Engineering, University of Fukui, Japan>

**11:30 0051** *Predicting  $M_w$  and Branching Levels for Self-Condensing Vinyl Copolymerization in a CSTR* **Buren B.D.** <Queen's University>, Zhao Y.R., Puskas J.E., \*McAuley K.B.

11:50 End of Session

HOM1 Salon 3

Honourary Symposium in Recognition of Jacob Masliyah for Outstanding Contributions in Heavy Oil Processing

Organizer(s) - Qingxia (Chad) Liu, Zhenghe Xu, Sean Sanders and Shawn Taylor  
Chair(s) - Qingxia (Chad) Liu and Zhenghe Xu

**09:50 0052** *Recent Innovations in Oil Sands Engineering: Contributions from NSERC-IRC in Oil Sands Engineering* **Xu Z.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>

**Keynote Lecture presented by Krishnaswamy Nandakumar, Louisiana State University**

**10:10 0053** *Enabling Process Innovation through Computation* **Nandakumar K.** <Cain Department of Chemical Engineering, Louisiana State University, Baton Rouge, LA 70803 USA., >

**Keynote Lecture presented by Philip J. Lenart, ExxonMobil Upstream Research Company**

**10:50 0054** *Using Data Analytics Techniques in Process Model Development for Heavy Oil Processing* **Lenart P.J.** <ExxonMobil Upstream Research Company>

**11:30 0055** *Molecular Models for Formation of Asphaltene Colloids* **Gray M.R.** <University of Alberta>, Yarranton H.W.

**11:50** End of Session

## Biotechnology and Biomedical Engineering

### BIO1 Salon 6

#### BIO1

Organizer(s) - Todd Hoare, Hyo-Jick Choi, Ravin Narain and Dominic Sauvageau  
Chair(s) - Todd Hoare and Hyo-Jick Choi

**Award in Design and Industrial Practice Lecture presented by David Beckman, Zeton Inc.**

**09:50 0056** *Scaling Up Bioenergy and Biochemical Process Technology* **Beckman D.** <Zeton Inc., Burlington, ON>

**10:30 0057** *System Identification of Galdieria sulphuraria in a CSTR for the Optimization of Nitrogenous Biomass Production* **Cameron E.T.** <University of Alberta>, McCaffrey W.C.

**10:50 0058** *Tailored Enzyme Supports for the Pretreatment of FFA-Containing Oils in the Production of Biodiesel* **Roebuck K.** <Department of Chemical and Biological Engineering, University of Ottawa, Ottawa, ON K1N 6N5>, Tremblay A.Y., Zhou J., Meng X.

**11:10 0059** *Reduced Red Mud as Catalyst for Cracking of Biomass Tar Model Compound* **Wu Z., Zhang Z., Ellis N.** <Department of Chemical and Biological Engineering, The University of British Columbia>, Bi X.T., Grace J.R.

**11:30 0060** *From Batch to Cycling Strategy-Improvement in Bioethanol Productivity* **Wang J.** <Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB T6G 2P5>, Chae M., Bressler D.C., Sauvageau D.

**11:50** End of Session

## Carbon Reduction and Utilization

### CCU1 Salon 13/14

#### CCU1

Organizer(s) - Rajender Gupta, Charles de Lannoy and Arvind Rajendran

**09:50 0061** *The Effect of NO<sub>x</sub> Gases on the High Pressure Cryogenic Carbon Capture Efficiency: A Theoretical Study* **Shams A.** <Research and Development Department, Sigma Storage Energy Inc., Montreal, QC H3K 1G6>, Department of Chemical Engineering, McGill University, Montreal, QC H3A 0C5>, Boudreault R.

**10:10 0062** *Indirect Ocean Capture: Pilot Scale Demonstration of a New Negative Emissions Technology* **de Lannoy C.-F.** <McMaster University, Chemical Engineering>, Eisaman M., Jose A., Karnitz S., DeVaul R., Cooper K., Rivest J.

**10:30 0063** *Mathematical Modeling of CO<sub>2</sub> Removal from Flue Gas using Micron-Size Water Droplets* **McAuley K.B.** <Queen's University, Kingston, ON K7L 3N6, >, Tran N.

**10:50 0064** *Feasibility Study of CO<sub>2</sub> Conversion to Syngas by Reverse Water Gas Shift Reaction* **Rezaei E.** <Department of Chemical Engineering, Lakehead University, Thunder Bay, ON>

**11:10 0065** *Transition Metal Carbides as Highly-Selective Catalysts for CO<sub>2</sub> Conversion to Syngas via Reverse Water Gas Shift Reaction* **Khan F.M., Simakov D.S.A.** <University of Waterloo>

**11:30 0066** *Enhanced CO<sub>2</sub> Hydrogenation to Methanol with Tertiary Catalysts Cu/g-C<sub>3</sub>N<sub>4</sub>-Modified ZnO/Al<sub>2</sub>O<sub>3</sub>* **Lu Q.** <Department of Chemical and Petroleum Engineering, University of Calgary, AB>, Deng K., Hu B., Hong X.

**11:50** End of Session

## Chemical Engineering Fundamentals

### FUN1 Salon 5

#### FUN1

Organizer(s) - Dimitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - Samir Mushrif and Dave Sharp

**Keynote Lecture presented by Martin Graebner, Air-Liquide GmbH**

**09:50 0067** *Industrial Research and Development for Partial Oxidation Processes* **Graebner M.** <Air Liquide Forschung und Entwicklung GmbH, Frankfurt Research and Technology Center (FRTC), Gwinnerstraße 27-33, 60388 Frankfurt am Main, Germany>

**10:30 0068** *An Integrated Experimental and Theoretical Approach to Investigate the Interplay of Reaction and Transport within Biomass Particle during Fast Pyrolysis* **Ansari K.B.** <School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore>, Mushrif S.H.

**10:50 0069** *Extension of Gravimetric and ZLC Techniques for Determination Surface Barrier Effects on Carbon Molecular Sieves* **Shirani B.** <Department of Chemical Engineering, University of New Brunswick, Fredericton, NB E3B 5A3>, Han X., Eic M.

**11:10 0070** *3D Simulation of Natural Convection in Liquid Storage Tanks* **Pletnyov F.M.** <University of Calgary>, Jeje A.A.

**11:30 0071** *Three-Dimensional Modelling of Open Sea Aeration Systems using the Euler-Euler Method in OpenFOAM* **Totten J.** <Department of Process Engineering and Applied Science, Dalhousie University, Halifax, NS B3H 4R2>, Donaldson A., Haelssig J.

**11:50** End of Session

## Conventional and Unconventional Energy Sources

### ENR1 Salon 9

#### ENR1

Organizer(s) - Bruce Peachey and Japan Trivedi  
Chair(s) - Lesley James and Bruce Peachey

**09:50 0072** *Experimental Measurement of Diffusivity Coefficient of Gaseous Solvents in Bitumen: Modeling and Experimental Studies* **Khalifi M.** <University of Calgary>, Sabet N., Zirrahi M., Hassanzadeh H., Abedi J.

**10:10 0073** *Solvent Property Optimization to Improve the Solvent-Aided Thermal Recovery Processes* **Zirrahi A.** <University of Calgary>, Zirrahi M., <sup>§</sup>Hassanzadeh H., <sup>§</sup>Abedi J.

**10:30 0074** *Phase Behaviour Study of Propane-Bitumen and Butane-Bitumen at High Temperatures* **Haddadnia A.** <University of Calgary>, Zirrahi M., <sup>§</sup>Hassanzadeh H., <sup>§</sup>Abedi J.

**10:50 0075** *A Generalized Thermodynamic Model to Predict Propane Solubility in Bitumen* **Azinfar B.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB>, Haddadnia A., Zirrahi M., <sup>§</sup>Hassanzadeh H., <sup>§</sup>Abedi J.

**11:10 0076** *Nonaqueous Recovery of Bitumen from Oil Sands: Computational Modeling Insights into Solvent Retention in Tailings* **Stoyanov S.R.** <Natural Resources Canada, CanmetENERGY in Devon, Devon, AB T9G 1A8; Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, <sup>§</sup>Xu Y.

**11:30 0077** *Pore-Scale Modelling of Bitumen Transient Dissolution in Heated Solvent* **Bayestehparvin B.** <University of Calgary>, <sup>§</sup>Abedi J., Farouq Ali S.M.

**11:50** End of Session

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### Environmental Engineering and Waste Management / Oil Spill Recovery

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#### ENV1 Salon 8

##### ENV1

Organizer(s) - Bing Chen, Bipro Dhar, Madhumita Ray and Stanislav Stoyanov  
Chair(s) - Madjid Mohseni and Madhumita Ray

**09:50 0078** *Desalination of Brackish Water by Capacitive Deionization (CDI): The Effect of Continuous Operation on the Performance of Activated Carbon Electrodes (ACEs)* **Serrano A.** <University of British Columbia, Vancouver, BC V6T 1Z3>, Wilkinson D., <sup>§</sup>Mohseni M.

**10:10 0079** *Study of Al(III) in Groundwater using Chemometric Methods* **Popugaeva D.** <Department of Chemical and Biochemical Engineering, The University of Western Ontario, London, ON N6A 5B9>, Kreymann K., <sup>§</sup>Ray A.K.

**10:30 0080** *Synthesis of Iron and Cellulose Based Nanostructures for Soil and Groundwater Remediation* **Ruiz-Caldas M.X.** <McMaster University, Hamilton, ON>

**10:50 0081** *Magnetic Nanomaterial for the Adsorptive Removal of Organic Drugs from Wastewater* **Alnajjar M.** <University of Calgary, Calgary, AB T2N 1N4, >, <sup>§</sup>Nassar N., Vitale G.

**11:10 0082** *Capacitive Deionization with Activated Carbon Electrodes for Desalination of Brackish Water* **Chung M.** <The University of British Columbia, Department of Chemical and Biological Engineering>, Wilkinson D., Mohseni M.

**11:30 0083** *Highly Hydrophobic Ceramic Membranes for High-Temperature Oil-Water Applications* **Siddiqui S.W.** <InnoTech ALBERTA, 250 Karl Clark Road, Edmonton, AB T6N 1E4>, Sarkar P., Amiri T., Etsell T.H.

**11:50** End of Session

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### Industrial Multiphase Flow

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#### MUL1 Salon 1

##### MUL1

Organizer(s) - Sean Sanders and Ryan Spelay  
Chair(s) - Sean Sanders and Ryan Spelay

**Keynote Lecture presented by Kevin Reid, Syncrude Canada Ltd.**

**09:50 0084** *Step Change Improvements in Bitumen Production Performance through the Use of CFD* **Reid K.** <Syncrude Canada Ltd>

**10:30** TBA

**10:50** TBA

**11:10 0085** *Yield Stress Measurements of Bimodal Suspensions* **Olayode A.E.** <University of Alberta, Department of Chemical and Materials Engineering>, Sarker N.R., <sup>§</sup>Sanders R.S., Spelay R.B.

**11:30 0086** *Flocculant-Dosed Clay Aggregate Restructuring in Laminar Pipeline Transport* **Sun Y.** <University of Alberta, Edmonton, AB T6G 2R3>, Breaky D., Sanders R.S.

**11:50** End of Session

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### Macromolecular Sciences and Engineering

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#### POL1 Salon 12

##### POL1

Organizer(s) - Phillip Choi, João Soares and Boxin Zhao  
Chair(s) - Phillip Choi and Hongbo Zeng

**Keynote Lecture presented by Eric Vignola, NOVA Chemicals**

**09:50 0087** *Creating a More Sustainable Future through Polymer Chemistry and Engineering* **Vignola E.** <NOVA Chemicals Corp>

**10:30 0088** *Simulation of Morphology Evolution of Polyurethane Foams* **Ferkl P., Krskova I., <sup>§</sup>Kosek J.** <University of Chemistry and Technology Prague, 166 28 Prague 6, Czech Republic>

**10:50 0089** *Synthesis of Hydrophobically-Modified Cationic Polyelectrolytes for Dewatering of Oils Sands Tailings* **Gumfekar S.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Guo X., <sup>§</sup>Soares J.B.P.

**11:10 0090** *Multifunctional Polymeric Films Prepared by a Facile and Covalently Bonded Layer-by-Layer Deposition Process* **Huang J.** <Department of Chemical and Materials Engineering, University of Alberta>, Qiu X., Yan B., Xie L., <sup>§</sup>Zeng H.

**11:30** End of Session

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### Nanotechnology

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#### NAN1 Salon 7

##### NAN1

Organizer(s) - Hyun-Joong Chung, Anastasia Elias and Zeinab Hosseinidoust  
Chair(s) - Zeinab Hosseinidoust and Michael Pope

**Keynote Lecture presented by Frank Gu, University of Waterloo**

**09:50 0091** *Nano-Scaled Solutions to Address Challenges in Chemical Engineering* **Gu F.** <Department of Chemical Engineering, University of Waterloo>, Liu S., Leshuk T., Chen P.

**10:30 0092** *Green Chemistry: High Conductivity of Polyhydroxybutyrate Composites Assisted by Well-Dispersed Reduced Graphene Oxide* **Li D.** <Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Ghosh D., Pope M.A., Elias A.

**10:50 0093** *Effect of Background Ions on the Morphological and Electrochemical Properties of Polyampholyte Hydrogels* **Charaya H.** <Department of Chemical and Materials Engineering, University of Alberta>, Li X., Jen N., <sup>§</sup>Chung H.-J.

**11:10 0094** *Fabrication of Cellulose/Ag Nanocomposites* **Chen L.** <Department of Chemical Engineering, Waterloo Institute for Nanotechnology, Institute of Polymer Research, University of Waterloo, 200 University Ave. W, Waterloo, ON N2L 3G1>, Zhao B.

**11:30 0095** *Modulating Phase Transition Temperature of Polyampholyte Hydrogel for Optically Tunable Coating in Smart Window Application* **La T.-G.** <Department of Chemical and Materials Engineering, University of Alberta; Institute for Reconstructive Sciences in Medicine (iRSM), Misericordia Community Hospital, Edmonton, AB; Department of Communication Sciences and Disorders, University of Alberta>, Li X., \*Chung H.-J.

**11:50** End of Session

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### Process Safety and Risk Management

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#### PSM1 Salon 10

##### PSM1

Organizer(s) - Lianne Lefsrud, Norman Nibber and Gord Winkel  
Chair(s) - John Cocchio and Neil Anderson

**09:50** Minerva Case Finalist #1

**10:20** Minerva Case Finalist #2

**10:50** Minerva Case Finalist #3

**11:20 0096** *Making Safety Real: Taking Risk Management to the Next Level* \***Winkel G.** <Lynch School of Engineering Safety and Risk Management, University of Alberta>

**11:50** End of Session

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### Reaction Engineering and Catalysis

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#### RXN1 Salon 11

##### RXN1

Organizer(s) - Bob Hayes, Natalia Semagina and David Simakov  
Chair(s) - Hui Wang and Jinwen Chen

**09:50 0097** *Single Pass, Highly-Selective Thermocatalytic Upgrading of Landfill Gas into Renewable Natural Gas over the Highly Active and Stable, Ultra-Low Loading Ru/Al<sub>2</sub>O<sub>3</sub> Catalyst* Zhuang Y., \***Simakov D.S.A.** <University of Waterloo>

**10:10 0098** *Surface Investigation of Tungstophosphoric Acid (H<sub>3</sub>PW<sub>12</sub>O<sub>40</sub>) Supported on Ordered Mesoporous Aluminosilicates for Biodiesel Synthesis* **Kurhade A.** <Catalysis and Reaction Engineering Laboratories, Department of Chemical Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, Hu Y., \***Dalai A.K.**

**10:30 0099** *Bubbling and Fluidization Behaviour of Binary Mixtures involving Biomass Particles in Bubbling Fluidized Beds* **Emiola-Sadiq T.** <University of Saskatchewan>, Elgalad Z., \*Zhang L.F., Dalai A.K.

**10:50 0100** *Bio-Oil Reforming over a Mining Residue Functionalized with Nickel as Catalyst: Ni-UGSO* **Bali A.** <Department of Chemical and Biotechnological Engineering, Université de Sherbrooke, Sherbrooke, QC J1K 2R1>, Blanchard J., Chamoumi M., \***Abatzoglou N.**

**11:10 0101** *Preparation of Eco-Friendly Lubricant Basestocks from Canola Biodiesel Derived Estolides via Epoxidation Route* **Borugadda V.B.** <Catalysis and Chemical Reaction Engineering Laboratories, Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, \***Dalai A.K.**

**11:30 0102** *Synthesis and Performance Evaluation of Coal Fly Ash and Waste Brine-Derived Solid Sodalite Catalyst for Biodiesel Production using Animal Fat* \***Aniokete T.C.** <School of Chemical and Metallurgical Engineering, Faculty of Engineering and the Built Environment, University of the Witwatersrand, Wits 2050, Johannesburg, South Africa>, Daramola M.O.

**11:50** End of Session

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### Systems and Control

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#### SYS1 Salon 4

##### SYS1

Organizer(s) - Stevan Dubljevic, Zukui Li and Jinfeng Liu  
Chair(s) - Vinay Prasad and Prashant Mhaskar

**D. G. Fisher Award Lecture presented by Kim McAuley, Queen's University**

**09:50 0103** *Modeling of Chemical Processes: Challenges and Opportunities* \***McAuley K.B.** <Department of Chemical Engineering, Queen's University, Kingston, ON>

**10:30 0104** *Modelling and Optimization of Biodegradation of Naphthenic Acids in Oil Sands Processed Water* **Thirumalaivasan S.** <Department of Chemicals and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Balaberda A., Ulrich A., \***Prasad V.**

**10:50 0105** *Subspace Identification for Modeling Irregular Measurements in Batch Processes* \***Garg A.** <Department of Chemical Engineering, McMaster University, 1280 Main St. W, Hamilton, ON L8S 4L8>, \***Mhaskar P.**

**11:10 0106** *Proxy Modelling of Pore Pressure in SAGD Process: A Data Mining Approach* **Ganesh A.** <Department of Chemical and Materials Engineering, University of Alberta>, \***Prasad V.**, \***Chalaturnyk R.J.**, Xiong J.

**11:30 0107** *Design of a Novel Diesel Cloud Point Soft Sensor using Single Event Kinetics for Pt/H-ZSM5 Catalysts* **Neto E.T.** <Department of Process Engineering, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, \***Imtiaz S.A.**, Ahmed S.

**11:50** End of Session

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### Monday PM

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#### Plenary

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#### PLEN Hall B

##### Plenary

Organizer(s) - João Soares and Arvind Rajendran  
Chair(s) - João Soares

**Plenary Session - Panel Discussion**

**13:30** Panel Discussion on the Present and Future of Energy

**Joy Romero (Chair), CNRL**

**Anne Downey, Athabasca Oil Corporation**

**Fraser Forbes, University of Alberta**

**Murray Gray, Alberta Innovates and University of Alberta**

**Arun Majumdar, Stanford University**

**14:30** End of Session

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### Honourary Symposia

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#### HCB2 Salon 15/16

**Symposium in Memory of Khaled Belkacemi - A Journey across Food & Chemical Engineering Dyad**

Organizer(s) - Faiçal Larachi and Cristina Ratti  
Chair(s) - Faiçal Larachi and Cristina Ratti

**14:30 0108** *Simultaneous Effect of Particle Size and Solid Concentration on Hydrodynamics of Slurry Bubble Columns* \***Chaouki J.** <Department of Chemical Engineering, Ecole Polytechnique de Montreal, Montreal, QC>, \***Lakhdissi E.M.**, Guy C.

**14:50 0109** *Modeling Biomass Gasification in a Fluidized CREC Riser Simulator* \*<sup>§</sup>de Lasa H., **Kuhn Bastos A.** <Chemical Reactor Engineering Centre, University of Western Ontario, London, ON N6A 5B9>, Giron A., Mazumder A

**15:10 0110** *Multi-Criteria Decision Making Tool for Assessment of Biorefinery Strategies* \*<sup>§</sup>**Benali M.** <CanmetENERGY of Natural Resources Canada>, Jeaidi J., Mansoornejad B., Ajao O., Gilani B., Ghavidel Mehr N.

**15:30 0111** *Kinetic Modeling of Blueberry Anthocyanins Oxidation with a Free Radical Initiator 2,2'-Azobis(2-Amidinopropane)* **Chorfa N.** <Department of Soil Sciences and Agri-Food Engineering, Paul-Comtois Building, Laval University, Québec, QC G1V 0A6>, <sup>§</sup>Savard S., <sup>§</sup>Belkacemi K.

**15:50 0112** *Supercritical Fluid Processing of Food Bioactives: From Extraction to Novel Delivery Systems* **Temelli F.** <Department of Agricultural, Food and Nutritional Science, University of Alberta, Edmonton, AB T6G 2P5>

**16:10** End of Session

**HOP2**

**Salon 2**

**Honourary Symposium in Recognition of Archie Hamielec, Harmon Ray and Charles Cozewith for Outstanding Contributions in Polymer Reaction Engineering**

Organizer(s) - Jeff Brinen, Robin Hutchinson, João Soares and Shiping Zhu  
Chair(s) - Joe Schork and Christian Paulik

**14:30 0113** *Polyethylene Furanoate by Ring-Opening Polymerization* Fleckenstein P., Rosenboom J.-G., Storti G., **Morbideilli M.** <ETH Zurich, Vladimir-Prelog-Weg 1, 8093 Zurich, Switzerland>

**14:50 0114** *Modeling of RAFT Homo- and Copolymerization of Vinyl/Divinyl Monomers in Supercritical Carbon Dioxide* López-Domínguez P., Hernández-Ortiz J.C., <sup>§</sup>**Vivaldo-Lima E.** <Facultad de Química, Departamento de Ingeniería Química, Universidad Nacional Autónoma de México, 04510, Ciudad de México, México>

**15:10 0115** *How Research Training in Polymer Reaction Engineering Benefited a Research Career in Advanced Pharmaceuticals and Drug Delivery* \*<sup>§</sup>**Wu X.Y.** <Leslie Dan Faculty of Pharmacy, University of Toronto, 144 College St., Toronto, ON M5S 3M2>

**15:30 0116** *Control of Polymer Chain Architectures in the Polymer Industry via Polymer Reaction Engineering* **Zhang M.** <Axalta Coating Systems>, Grady M.

**15:50 0117** *Nascent Growth of  $\alpha$ -Olefin Polymers with  $rac$ -Et(ind)<sub>2</sub>ZrCl<sub>2</sub>/MAO Catalyst on Unfolded Silica Support* **Choi K.Y.** <Department of Chemical and Biomolecular Engineering, University of Maryland, College Park, MD 20742 USA>, Tran D., Yang W.

**16:10** Coffee Break

**16:30 0118** *The Influence of (Macro)monomer Functionality on Reactivity in Radical (Co)polymerization* **Hutchinson R.A.** <Department of Chemical Engineering, Queen's University, Kingston, ON K7L 3N6>, Rooney T.R.

**16:50 0119** *Design and Manufacturing of PARALOID Edge Coatings* \*<sup>§</sup>**Beigzadeh D.** <The Dow Chemical Company>, Grzesiak N., Tambling T.M.

**17:10 0120** *Application of Artificial Neural Networks in Ethylene/1-Olefin Copolymerization* \*<sup>§</sup>**Anantawaraskul S.** <Center of Excellence on Petrochemical and Materials Technology, Department of Chemical Engineering, Faculty of Engineering, Kasetsart University, Bangkok 10900, Thailand ; Center for Advanced Studies in Nanotechnology and Its Applications in Chemical, Food and Agricultural Industries, Kasetsart University, Bangkok 10900, Thailand>, Charoenpanich T., Soares J.B.P.

**17:30 0121** *High Temperature Radical Polymerization: From Inception to Commercial Practice* **Campbell D.** <BASF Corporation, Advanced Materials and Systems Research>, Debling J.

**17:50** End of Session

**HOM2**

**Salon 3**

**Honourary Symposium in Recognition of Jacob Masliyah for Outstanding Contributions in Heavy Oil Processing**

Organizer(s) - Qingxia (Chad) Liu, Zhenghe Xu, Sean Sanders and Shawn Taylor  
Chair(s) - Andrea Sedgwick and Zhenghe Xu

**Keynote Lecture presented by Vince Wallwork, Canadian Natural**

**14:30 0122** *Canadian Naturals In-Pit Process* **Wallwork V.** <Canadian Natural>

**15:10 0123** *Secondary Process Aids for Extraction Performance Enhancement: A Major Technical Breakthrough in Bitumen Extraction* \*<sup>§</sup>**Long J.** <Research and Development, Syncrude Canada Ltd., Edmonton, AB T6N 1H4>, Hoskins S., Gu Y.

**15:30 0124** *The Recovery of Solvent from Oil Sands Froth Treatment Tailings Slurries* **Moran K.** <Titanium Corporation, 1400 - 10025 106 St. NW, Edmonton, AB T5J 1G4>

**15:50 0125** *Experimental Investigation of Asphaltene-Induced Formation Damage in Porous Media* **Taylor S.D.** <Schlumberger-Doll Research>, <sup>§</sup>Mohammadzadeh O., Eskin D., Ratulowski J.

**16:10** Coffee Break

**16:30 0126** *A Novel Green Collector for Coal Flotation* \*<sup>§</sup>**Liu J.** <Nalco Water, an Ecolab Company>

**16:50 0127** *First Quantification of <2 $\mu$ m Clays and <0.2 $\mu$ m Ultrafines in Commercial Streams of Naphthenic Froth Treatment Process* \*<sup>§</sup>**Mercier P.H.J.** <National Research Council Canada>, Couillard M., Tyo D.D., Zborowski A., Patarachao B., Kingston D.M., Kung J., McCracken T., Ng S.

**17:10 0128** *Role of Mineral Flotation Separation Technology in Improving Bitumen Extraction Recovery from Mined Athabasca Oil Sands* \*<sup>§</sup>**Zhou J.** <Heavy Oil and Oil Sands, InnoTech Alberta Inc., Edmonton, AB>, Li H., Chow R.

**17:30** End of Session

**Biotechnology and Biomedical Engineering**

**BIO2**

**Salon 15/16**

**BIO2**

Organizer(s) - Todd Hoare, Hyo-Jick Choi, Ravin Narain and Dominic Sauvageau  
Chair(s) - Dominic Sauvageau and Todd Hoare

**16:30 0129** *Ionic Liquid/SBA-15 Biodiesel Production Based Process: Process Design and Economic Analysis* \*<sup>§</sup>**Ibrahim H., Alawad I., Deedwania A.** <Process Systems Engineering, University of Regina, 3737 Wascana Pkwy., Regina, SK S4S 0A2>

**16:50 0130** *Production of Jet Fuel through Hydroprocessing of Canola Oil over Bimetallic Supported CuFe Catalysts* **Ayandiran A.A.** <Catalysis and Reaction Engineering Laboratories, Department of Chemical Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, Arun N., Dalai A.K.

**17:10 0131** *Towards the Development of a Biorefinery Operator Training Simulator for Automatic Standard Operating Procedure Adaptation* **Isimite J.O.** <Department of Biochemical Engineering, University College London, Gordon Street, London, WC1H 0AH UK>, Baganz F., <sup>§</sup>Volker V.C.

**17:30 0132** *Supercritical Water Gasification of Waste Food Residues for Hydrogen Production* **Nanda S.** <Lassonde School of Engineering, York University, Toronto, ON>, Dalai A.K., <sup>§</sup>Kozinski J.A., Naik S.N.

17:50 End of Session

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**Carbon Reduction and Utilization**

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**CCU2 Salon 13/14**

**CCU2**

Organizer(s) - Rajender Gupta, Charles de Lannoy and Arvind Rajendran

**Keynote Lecture presented by George K.H. Shimizu, University of Calgary**

**14:30 0133** *Carbon Capture by Metal Organic Framework (MOF) Solid Sorbents* \***Shimizu G.K.H.** <Department of Chemistry, University of Calgary>

**15:10 0134** *Designing Water Stable Metal Organic Frameworks for Carbon Capture* **Lin J.-B.** <Department of Chemistry, University of Calgary>, **Gelfand B.**, **Hyunh R.**, **Dwyer P.**, **Taylor J.**, **Mah R.**, \***Shimizu G.K.H.**

**15:30 0135** *Characterizing Humid Post-Combustion Carbon Capture Using Zeolite 13X* **Wilkins N.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, \***Rajendran A.**

**15:50 0136** *Modeling CO<sub>2</sub> Adsorption on PEI-Functionalized SBA-15: Kinetics and Semi-Empirical Equilibrium Model* **Dey R.** <Department of Chemical Engineering, Indian Institute of Technology (ISM) Dhanbad, Dhanbad-826004, India>, \***Samanta A.**

**16:10 Coffee Break**

**16:30 0137** *Hydrothermally Stable, Amine-Grafted MCM-41 for CO<sub>2</sub> Capture via Incorporation of Aluminum into the Structure of the Support* \***Jahandar Lashaki M.** <Department of Chemistry and Biomolecular Sciences, University of Ottawa, Ottawa, ON K1N 6N5>, **Ziaei-Azad H.**, \***Sayari A.**

**16:50 0138** *Post-Combustion CO<sub>2</sub> Capture using Solid Sorbents with Multicyclic Study* **Pudasainee D.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, **Sandhu N.K.**, **Liu Z.**, **Mittal N.**, **Zhao A.**, \***Gupta R.**

**17:10 0139** *Evaluation of Diamine Appended Metal-Organic Frameworks for Post-Combustion CO<sub>2</sub> Capture* \***Pai K.N.** <University of Alberta>, **Baboolal J.**, **Sharp D.**, \***Rajendran A.**

**17:30 0140** *CO<sub>2</sub> Enrichment in Ambient Air by Temperature Swing Adsorption and its Applications for Stimulating Plant Growth in Greenhouses* **Bao J.** <College of Chemical Engineering, Fuzhou University, China>, \***Bi X.T.**

17:50 End of Session

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**Chemical Engineering Fundamentals**

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**FUN2 Salon 5**

**FUN2**

Organizer(s) - Dmitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - John Shaw and Neda Nazemifard

**14:30 0141** *Membrane Fouling Mitigation by Air Back Pulsing in Dairy Wastewater Ultrafiltration* \***Ashtari M.** <Department of Chemical Engineering, Ryerson University, Toronto, ON>, \***Doan H.**, **Lohi A.**

**14:50 0142** *Preparation and Characterization of Clinoptilolite Membranes for Natural Gas Mixture Separations* **Kennedy D.A.** <Department of Chemical and Biological Engineering, University of Ottawa>, **Omar T.**, \***Tezel F.H.**

**15:10 0143** *Water Adsorption Properties of Flax Shives and their Potential for Natural Gas Dehydration* **Ghanbari S.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK>, \***Niu C.H.**

**15:30 0144** *Synthesis and Characterization of Graphene-Based Polyethersulfone Nano-Composite Membrane* **Karkooti A.** <Department of Chemical and Material Engineering, University of Alberta>, **Sadrzadeh M.**, \***Nazemifard N.**

**15:50 0145** *Process Intensification of Nepeta cataria Essential Oil Extraction* \***Galli F.** <Polytechnique Montreal, 2900 Boul. Edouard Monpetit, Montreal, QC, >, **Patience N.A.**, \***Patience G.S.**, **Boffito D.C.**

**16:10 Coffee Break**

**16:30 0146** *Dynamic Testing of FO Membranes* **Bai D.** <University of Ottawa>, **Asempour F.**, \***Kruczek B.**

**16:50 0147** *Rheology of Reconstituted Safaniya Vacuum Residue Based on Physical and Chemical Separation* **Becerra M.J.** <University of Alberta>, **Linden N.**, **Escobar N.**, \***Shaw J.M.**

**17:10 0148** *Crude Glycerol Purification by Combined Physico-Chemical and Semi-Continuous Membrane Filtration* **Chol C.G.** <Department of Chemical and Biological Engineering, University of Saskatchewan, SK S7N 5A9>, **Dhabhai R.**, \***Dalai A.K.**

**17:30 0149** *Gas Separations with Mixed Matrix Membranes Composed of Polyimide Matrimid with ZIF 8, Silicalite and SAPO 34* **Carter D.** <Department of Chemical and Biological Engineering, University of Ottawa, Ottawa, ON>, \***Tezel F.H.**, **Kruczek B.**, **Kalipcilar H.**

17:50 End of Session

**FUN3 Salon 8**

**FUN3**

Organizer(s) - Dmitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - Petr Nikrityuk and Vinay Prasad

**16:30 0150** *Bubble Pressure Measurement and Prediction for n-Alkane + Naphthenic Hydrocarbon Binary Mixtures* **Ahitan S.** <Department of Chemical and Materials Engineering, University of Alberta>, \***Shaw J.M.**

**16:50 0151** *Development of New Models for Determination of Asphaltene Precipitation: Connectionist Tools towards Equations of State* **Alimohammadi S.** <Faculty of Engineering and Applied Science, Memorial University, St. John's, NL>, \***Zendehboudi S.**

**17:10 0152** *On Cubic EOS Interaction Parameter Estimation for Long Chain n-Alkane + Aromatic and Naphthenic Binary Mixtures* **Ahitan S.** <Department of Chemical and Materials Engineering, University of Alberta>, **Luo M.**, **McLaughlin J.**, \***Shaw J.M.**

**17:30 0153** *Transport Properties of Cellulose Nanofibrils for Biodegradable Food Packaging Applications* \***Kislitsin V.Y.** <University of Alberta>

17:50 End of Session

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**Colloids and Interfacial Sciences**

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**COL1 Salon 6**

**COL1**

Organizer(s) - Edgar Acosta, Janet A.W. Elliott and Hongbo Zeng  
Chair(s) - Janet A.W. Elliott and Edgar Acosta

**14:30 0154** *Mapping Nanoscale Heterogeneity of Hydrophobicity on Mineral Surfaces Using Atomic Force Microscopy* **Xie L.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9, >, **Zhang H.**, **Liu Q.**, **Liu Q.**, \***Zeng H.**

**14:50 0155** *Probing Coagulation and Fouling in Colloidal Dispersions with Viscosity Measurements: in-silico Proof of Concept* **Kroupa M.**, **Vonka M.**, **Soos M.**, \***Kosek J.** <University of Chemistry and Technology Prague, 166 28 Prague 6, Czech Republic>

**15:10 0156** *Interactions between Water Droplets and Self-Assembled Octadecyltrichlorosaline Coating with Thermal Treatment* **Zhang L.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, de Haas T., Bao B., \*Zeng H.

**15:30 0157** *Photonic Force Microscopy Measurement of Droplet-Droplet Interactions* **Pilapil B.K.** <Department of Chemical and Petroleum Engineering, University of Calgary, 2500 University Dr. NW, Calgary, AB T2N1N4>, Derakhshandeh M., Sisler J., Stephenson T., \*Bryant S.L., \*Trifkovic M.

**15:50 0158** *Molecular Dynamics Study of Dissolution of Kaolinite Basal Surfaces in Alkali Media: Effect of Aqueous Medium Impurities* **Naderi Khorshidi Z.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, \*Choi P., Liu Q.

**16:10 Coffee Break**

**16:30 0159** *Use of the Hydrophilic-Lipophilic Difference (HLD) and Net-Average Curvature (NAC) to Predict the Solubilization Phase Boundary of Ternary Phase Diagrams and Design Fully Dilutable Microemulsions* \***Acosta E.** <University of Toronto, Department of Chemical Engineering and Applied Chemistry>, Nouraei M., Lin S.

**16:50 0160** *Mechanism and Conditions of Oil-Water Interfacial Tension Reduction by Hydrophilic Silica Nanoparticles for Enhanced Oil Recovery Implications* **Jafari S.** <Memorial University, St. John's, NL A1B 3X9>, \*James L.A.

**17:10 0161** *Understanding the Behavior of Oil in Water Pickering Emulsions Stabilized by Cellulose Nanocrystals with Varying Extent of De-sulphation* **Pandey A.** <Department of Chemical and Petroleum Engineering, University of Calgary>, Derakhshandeh M., Selin E., Bryant S.L., \*Trifkovic M.

**17:30 0162** *A Molecular Dynamics Study on Contact Angle and Line Tension of Galena and Sphalerite* **Hosseini Anvari M.** <Department of Chemical and Materials Engineering, University of Alberta>, \*Liu Q., Xu Z., \*Choi P.

**17:50 0163** *Tailoring the Pore Architecture and Surface Chemistry of Hydrothermally Synthesized Graphene Oxide Sponges: Role of Synthesis Parameters and Chemical Functionalization* **Yousefi N.** <Department of Chemical Engineering, McGill University, Montreal, QC>, Wei K., \*Tufenkji N.

**18:10** End of Session

**Conventional and Unconventional Energy Sources**

**ENR2 Salon 9**

**ENR2**

Organizer(s) - Bruce Peachey and Japan Trivedi  
Chair(s) - Bruce Peachey and Juliana Leung

**14:30 0164** *A Techno-Economic Comparison of Centralized and Distributed Mobile Pyrolysis Systems for the Production of Bio-Oil from Hardwood* **Patel M.** <Faculty of Engineering, Department of Mechanical Engineering, 10-263 Donadeo Innovation Centre for Engineering, 9211 116 St. NW, University of Alberta, Edmonton, AB T6G 1H9>, Oyedun A., \*Kumar A.

**14:50 0165** *Screening of Co-Pyrolysis Additives to Enhance Pyrolysis Oil and Char Quality* \***Krutof A.** <Department of Process Engineering, Faculty of Engineering and Applied Sciences, Memorial University of Newfoundland>, \*Hawboldt K.A.

**15:10 0166** *Study on the Quality of Oat Hull Fuel Pellets using Bio-Additives* **Abedi A.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK>, \*Dalai A.K.

**15:30 0167** *Utilizing Leagacy Underground Mines as Municipal Infrastructure* \***Peachey B.R.** <New Paradigm Engineering Ltd., Edmonton, AB>, Theriault Y

**15:50 0168** *Mathematical Model of Spontaneous Combustion of Bio-Fuel from Sewage Sludge* \***Nogami H.** <Tohoku University, Sendai 9808577 Japan>, Ueda A., Nishizaka Y., Sotozaki H., Kawai H.

**16:10 Coffee Break**

**16:30 0169** *Synthesis of Biodegradable Alkoxides from Canola Biodiesel: Physico-Chemical Characterization and Optimization Study* **Borugadda V.B.** <Catalysis and Chemical Reaction Engineering Laboratories, Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, Somidi A.K.R., \*Dalai A.K.

**16:50 0170** *Well-to-Wake Life Cycle Assessment of Canola-Derived Hydroprocessed Renewable Jet Fuel in Western Canada* **Zemanek D.** <Department of Civil Engineering, Queen's University; Department of Geography and Planning, Queen's University>, \*Champagne P., \*Mabee W.

**17:10 0171** *Production of Biojet Fuel Precursors from Cellulose using Biphasic Reactions and High Pressure CO<sub>2</sub>* **Harris J.** <Queen's University, Department of Chemical Engineering; Queen's University, Department of Chemistry>, Yao J., Lee R., Jessop P., \*Champagne P.

**17:30 0172** *The Effect of Various Working Fluids on Heat Extraction in Enhanced Geothermal Systems (EGS): A Simulation Based Analysis* \***Rahmanifard H.** <University of Calgary>, \*Plaksina T.

**17:50** End of Session

**Environmental Engineering and Waste Management / Oil Spill Recovery**

**ENV2 Salon 8**

**ENV2**

Organizer(s) - Bing Chen, Bipro Dhar, Madhumita Ray and Stanislav Stoyanov  
Chair(s) - Edward Roberts and Madhumita Ray

**Keynote Lecture presented by D. Grant Allen, University of Toronto**

**14:30 0173** *Challenges and Opportunities for Processing Biosludge from Wastewater Treatment Systems in the Pulp and Paper Industry* **Allen D.G.** <Department of Chemical Engineering and Applied Chemistry, University of Toronto>, Bonilla S., Meyer T., Shi Y., Ghazisaidi H., Ya J., Tran H.

**15:10 0174** *Coagulation Performance for the Removal of Six Algae and Algal Organic Matter for Drinking Water Treatment* **Zhao Z.M.** <Department of Chemical and Biochemical Engineering, University of Western Ontario, London, ON N6A 5B9>, Gomaa H., \*Ray M.B.

**15:30 0175** *Distribution of Micropollutants in Wastewater for Recycled Aluminum and Ferric Coagulants* **Chakraborty T.** <University of Western Ontario, London, ON>, Balusani D., Nakhla G., \*Ray M.B.

**15:50 0176** *Treatment of Oil-Sand Produced Water using Electrocoagulation* **Shu T.** <Department of Chemical and Petroleum Engineering at University of Calgary, Calgary, AB>, Hojaghan B., Yasri N., Nightingale M., \*Roberts E.P.L.

**16:10** End of Session

**Industrial Multiphase Flow**

**MUL2 Salon 1**

**MUL2**

Organizer(s) - Sean Sanders and Ryan Spelay  
Chair(s) - Jason Schaan and David Breakey



**14:30 0177** *Nanoparticles Displacements in Porous Media of Different Pore Geometries* \***Zargartalebi M.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB T2N 1N4>, **Azaiez J.**

**14:50 0178** *Eulerian-Eulerian Modeling of Fluidized Beds: Validation and Parameter Studies* **Shi H.** <Department of Mechanical Engineering, University of Alberta, Edmonton, AB>, \***Komrakova A.E.**, \***Nikrityuk P.**

**15:10 0179** *Physical Boundary Conditions for Two-Phase Flow Simulations: Use of Control Feedback* \***Agnaou M.** <University of Waterloo>, **Treeratanaphitak T.**, **Mowla A.**, **Ioannidis M.**, **Abukhdeir N.M.**, **Budman H.**

**15:30 0180** *Simulation of Two-Phase Multiphase Flow Behaviour of a Toroid Wear Tester using Computational Fluid Dynamics* \***Adedeji O.E.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, \***Sanders R.S.**

**15:50 0181** *Comparative Study of Viscous Fingering Phenomenon and Oil Recovery in Carbon Dioxide and Nitrogen Gas Injection* \***Hokmabadi K.** <Faculty of Engineering and Applied Science, Memorial University, St. John's, NL>, \***James L.A.**

## 16:10 Coffee Break

**16:30 0182** *Measuring Agricultural Residue and Woodchips Biomass Slurry Flows Critical Velocity in Pipelines using High-Frequency Impedance Approach* **Vaezi M.** <Faculty of Engineering, Department of Mechanical Engineering, 10-263 Donadeo Innovation Centre for Engineering, 9211 116 St. NW, University of Alberta, Edmonton, AB T6G 1H9>, **Verma S.**, \***Kumar A.**

**16:50 0183** *Comparing Slurry Friction and Erosion in Toroid Wear Tester (TWT)* \***Zhang L.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, \***Breakey D.**, **Sarker N.R.**, **Sanders R.S.**

**17:10 0184** *Investigation of the Transport of Fines in Porous Media using a Refractive Index Matching Technique* **Sabbagh R.** <Optical Diagnostics Group, Department of Mechanical Engineering, University of Alberta, Edmonton, AB>, **Ansari S.**, \***Nobes D.S.**

**17:30 0185** *Novel Drag Reducing Agents for Oil Sands Industry* **Mogul M.** <SNF HC, Riceboro, Georgia, USA>, **Tizzotti M.**, \***Dang-Vu T.**

**17:50** End of Session

## Macromolecular Sciences and Engineering

## POL2 Salon 12

### POL2

Organizer(s) - Phillip Choi, João Soares and Boxin Zhao  
Chair(s) - Phillip Choi and Milana Trifkovic

**Award Lecture for Best Graduate Student Paper Published in The Canadian Journal of Chemical Engineering presented by Chaimongkol Saengow, Queen's University**

**14:30 0186** *Exact Solutions for Oscillatory Shear Sweep Behaviors of Complex Fluids from the Oldroyd 8-Constant Framework* \***Saengow C.** <Polymers Research Group, Chemical Engineering Department, Queen's University, Kingston, ON K7L 2N9>, \***Giacomin A.J.**

**15:10 0187** *Effects of Free Surfaces, Interfaces and Nanoscale Confinement on the Glass Transition Temperature of Polymer Thin Films, Nanotubes and Nanospheres* \***Torkelson J.M.** <Chem. and Biol. Eng. Dept., Northwestern University, Evanston, IL 60208 USA; Materials Science and Eng. Dept., Northwestern University, Evanston, IL 60208 USA>, **Tan A.**, **Chen L.**

**15:30 0188** *Reptation through Free Volume Redistribution* **Wong C.P.J.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, \***Zhou Y.**, \***Choi P.**

**15:50 0189** *Coarsening Mechanism of Cocontinuous Polymer Blends via Confocal Rheology* **Sokanhandi P.**, **Shah R.** <Department of Chemical and Petroleum Engineering, University of Calgary>, **Ansari M.**, **Bryant S.L.**, \***Trifkovic M.**

## 16:10 Coffee Break

**16:30 0190** *Force Spectroscopy of Quadruple H-Bonded Dimers in Water: Cooperative Effect between Hydrogen Bonding and Hydrophobic Interactions* \***Chen J.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, **Wu M.**, **Thundat T.**, \***Zeng H.**

**16:50 0191** *Laser-Induced Graphene: Bio-Mass Derived Polymer Precursors and New Electrochemical Device Architectures* **Yilman D.**, **Lau I.**, **Chan N.**, **Pope M.A.** <University of Waterloo>

**17:10 0192** *Diffraction-Based Degradation Sensor for Polymer Thin Films* **Anbukarasu P.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, **Martínez-Tobón D.I.**, **Sauvageau D.**, **Elias A.**

**17:30 0193** *Bimodal High-Density Polyethylene: Influence of the Stereoregularity of the Copolymer Fraction on the Environmental Stress Crack Resistance* \***Fisch A.G.** <Universidade Luterana do Brasil (ULBRA), Chemical Engineering Department>, **Cardoso M.N.**

**17:50** End of Session

## Nanotechnology

## NAN2 Salon 7

### NAN2

Organizer(s) - Hyun-Joong Chung, Anastasia Elias and Zeinab Hosseinidou  
Chair(s) - Hyun-Joong Chung and Anastasia Elias

**14:30 0194** *Flexible, Stretchable and Healable Electronics* \***Cicoira F.** <Polytechnique Montréal>

**14:50 0195** *Flexible, Multilayered Printed Circuit Boards and Sensors for Surface Electromyogram* **Qiu S.** <Department of Chemical and Materials Engineering, University of Alberta>, **La T.-G.**, **Scott D.K.**, **Shi S.**, \***Chung H.-J.**, \***Rieger J.**

**15:10 0196** *Potassium Ion Selective Electrode* \***Tran N.T.T.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AT6G, 2V4>, **Qiu S.**, \***Chung H.-J.**

**15:30 0197** *Langmuir Films and Uniform, Large Area, Transparent Coatings of Chemically Exfoliated MoS<sub>2</sub> Single Layers* **Zhang Y.**, **Xu L.**, **Walker W.**, **Tittle C.**, **Backhouse C.**, \***Pope M.A.** <University of Waterloo>

**15:50 0198** *New Approaches to Integrate the Porous Membrane into Microfluidic Devices* **Han S.Y.** <Department of Chemical Engineering, Ryerson University, 350 Victoria St., Toronto, ON M5B 2K3; Keenan Research Centre for Biomedical Science, St. Michael's Hospital, 30 Bond St., Toronto, ON M5B 1W8; Institute for Biomedical Engineering, Science and Technology (iBEST), A partnership between Ryerson University and St. Michael's Hospital, 30 Bond Street, Toronto, ON M5B 1W8>, \***Hwang D.K.**

## 16:10 Coffee Break

**16:30 0199** *Mucus Permeating Nanocarriers for the Delivery of Biopharmaceuticals* **Bourganis V.**, **Karamanidou Th.**, **Kammona O.**, \***Kiparissides C.** <Department of Chemical Engineering, AUTH, Thessaloniki, Greece; Chemical Process & Energy Resources Institute, CERTH>

**16:50 0200** *Pharmaceutical Nanotechnology to Overcome the Bottleneck of Cancer Radiotherapy* <sup>§</sup>Wu X.Y. <Leslie Dan Faculty of Pharmacy, University of Toronto, 144 College St., Toronto, ON M5S 3M2>

**17:10 0201** *Reorientation Dynamics of Confined Liquid Crystal Domains* Fred F., <sup>§</sup>Abukhdeir N.M. <Department of Chemical Engineering, University of Waterloo, Waterloo, ON; Department of Physics and Astronomy, University of Waterloo, Waterloo, ON; Waterloo Institute for Nanotechnology, University of Waterloo, Waterloo, ON>

**17:30 0202** *Production and Characterization of Yarn Spun Directly from Carbon Nanotube Bundles* <sup>\*</sup>Aberefa O. <School of Chemical and Metallurgical Engineering, University of the Witwatersrand, Johannesburg, South Africa>, Daramola M.O., Iyuke S., Madhi S., Bedasie K.

**17:50** End of Session

### Process Safety and Risk Management

#### PSM2 Salon 10

##### PSM2

Organizer(s) - Lianne Lefsrud, Norman Nibber and Gord Winkel  
Chair(s) - Melanie Wilson and Munira Umme

**14:30 0203** *Creating a Positive Safety Culture and Continuous Improvement in Alberta's Construction Industry* Lefsrud L.M. <University of Alberta>, <sup>\*</sup>Pennetta de Oliveira L., <sup>§</sup>Caldera A., <sup>\*</sup>Esmaeeli N., Farjoo A.

**15:00 0204** *Risk According to a Matrix* Dancey J.J. <Baker Engineering and Risk Consulting, Inc>

**15:30 0205** *The New Updated International Standard IEC 61511:2016 Ed. 2 (Key Changes)* Pacanins G. <ACM Facility Safety, >

#### 16:00 Coffee Break

**16:30 0206** *PHA Risk Reduction Optimization for Implementing Recommendations* Mukherjee R.K.M. <ACM Facility Safety>

**17:30 0207** *You Be the Barrier: Bowties to Assess Hazards and Analyze Incidents due to Human Error* <sup>§</sup>Viloria E., Herd J. <Enbridge>, <sup>\*</sup>Uy R.L.

**18:00** End of Session

### Reaction Engineering and Catalysis

#### RXN2 Salon 11

#### RXN2

Organizer(s) - Bob Hayes, Natalia Semagina and David Simakov  
Chair(s) - Josephine Hill and Ya-Huei (Cathy) Chin

**14:30 0208** *Advanced Photo-Oxidation Process over Mn-TiO<sub>2</sub> for Water Treatment* Stucchi M., Galli F. <Polytechnique Montréal, Chemical Engineering, Montréal, QC H3T 1J4>, Elfiad A., <sup>§</sup>Boffito D.C.

**14:50 0209** *Spray-Dried Micro-Sized TiO<sub>2</sub>/WO<sub>3</sub> Heterostructure for Photocatalytic Applications* Khan H. <Department of Chemical Engineering, Polytechnique Montréal, C.P. 6079, Succ. CV, Montréal, QC H3C 3A7>, Rigamonti M.G., Stucchi M., Patience G.S., Boffito D.C.

**15:10 0210** *Ozone-Assisted Catalytic Oxidation of a Binary Mixture of Volatile Organic Compounds in Air* Aghbolaghy M. <University of Saskatchewan, Saskatoon, SK>, Chen N., <sup>\*</sup>Soltan J.

**15:30 0211** *Catalytic Oxidation of Acetone by Ozone over Alumina Supported Cobalt-Manganese Catalysts* Ghavami M. <Department of Chemical & Biological Engineering, University of Saskatchewan, Saskatoon, SK>, Aghbolaghy M., Chen N., <sup>\*</sup>Soltan J.

**15:50 0212** *Catalytic Ozonation of Ibuprofen with Fe-Substituted MCM-41* <sup>§</sup>Jeirani Z. <Department of Chemical and Biological Engineering, University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5A9>, <sup>\*</sup>Soltan J.

#### 16:10 Coffee Break

**16:30 0213** *Multiscale Modeling of the Flow Inside of an Automotive Catalytic Converter* <sup>§</sup>Cornejo I. <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB; Department of Chemical and Environmental Engineering, Santa Maria University, Valparaiso, Chile>, Nikrityuk P., Hayes R.E.

**16:50 0214** *CH<sub>4</sub> Oxidation Catalysts Evaluated in a Monolith Reactor* Almohamadi H. <Department of Chemical and Biological Engineering, University of British Columbia, 2360 East Mall, Vancouver, BC V6T 1Z3>, <sup>§</sup>Smith K.J.

**17:10 0215** *Towards Earth-Abundant Elements in Methane Combustion Catalysis* Nassiri H. <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Hayes R.E., <sup>\*</sup>Semagina N.

**17:30 0216** *Highly Stable Silica Encapsulated Emission Control Catalysts for Lean Methane Combustion* Habibi A.H. <University of Alberta, Edmonton, AB>, Hayes R.E., <sup>§</sup>Semagina N.

**17:50** End of Session

### Systems and Control

#### SYS2 Salon 4

##### SYS2

Organizer(s) - Stevan Dubljevic, Zukui Li and Jinfeng Liu  
Chair(s) - Zukui Li, Luis Richardez-Sandoval and Xiaodong Xu

**14:30 0217** *Monitoring and Estimation of Column Flotation* Azhin M. <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, Popli K., Afacan A., Liu Q., <sup>\*</sup>Prasad V.

**14:50 0218** *Simultaneous Data Reconciliation and Gross Error Detection Based on Maximum Likelihood Estimation using EM Algorithm* <sup>§</sup>Alighardashi H. <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1R1>, Magbool Jan N., <sup>\*</sup>Huang B.

**15:10 0219** *A Smart Pipeline Leak Detection and Localization System Based on the Kantorovich Distance* Arifin B.M.S. <Department of Chemical and Materials Engineering, University of Alberta>, <sup>\*</sup>Li Z., <sup>§</sup>Shah S.L.

**15:30 0220** *A Robust Multivariate Fault Detection Scheme for Process Monitoring* Rashidi B. <Department of Electrical and Computer Engineering, University of Alberta, Edmonton, AB>, <sup>§</sup>Zhao Q., Meenakshi S., Saha S.

**15:50 0221** *Real Time Monitoring of Feed Frame Powders and Tablets using Near Infrared Spectroscopy* Dalvi H. <Université de Sherbrooke, Pfizer Industrial Research Chair, Sherbrooke, QC>, <sup>§</sup>Gosselin R., <sup>\*</sup>Abatzoglou N., Guay J.-M., Langlet A.

#### 16:10 Coffee Break

**16:30 0222** *Anemia Management in Chronic Kidney Disease using Zone Model Predictive Control* Bajwa N. <Department of Chemical and Materials Engineering, University of Alberta>, <sup>§</sup>Liu J., Li Z.

**16:50 0223** *Optimal Crystal Size Control through a Plug Flow Crystallizer Configured with Recycle* Xu X. <University of Alberta, Department of Chemical and Materials Engineering>, Yuan Y., <sup>\*</sup>Dubljevic S.

**17:10 0224** *Multi Input Multi Output Model Predictive Control for Steam-Assisted Gravity Drainage (SAGD)* Purkayastha S.N. <University of Calgary>, Gates I.D., <sup>§</sup>Trifkovic M.

**17:30 0225** *Dynamic Optimization and Control of a CO<sub>2</sub> Absorber Column for Post-Combustion CO<sub>2</sub> Capture* **Cerrillo Briones I.** <Department of Chemical Engineering, University of Waterloo, Waterloo, ON N2L 3G1>, **Ricardez-Sandoval L.**

**17:50** End of Session

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**Special**

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**SPEC Salon 4**

**Special**

Organizer(s) - João Soares and Arvind Rajendran  
Chair(s) - Eddy Isaacs

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**Special Event**

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**18:10** Fireside Chat with Michael Crothers, President and Country Chair, Shell

Facilitator, Eddy Isaacs, University of Alberta

**19:10** End of Session

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**Posters**

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**POS Hall C**

**Posters**

Organizer(s) - Arvind Rajendran

From **17:50** until **19:50**

**0226** *Macromolecular Engineering towards Smart Materials* **Abraham S.** <IngenuityLab, chemical and Materials Engineering Department, University of Alberta, Edmonton, AB>, **Montemagno C.**, **Gray M.R.**, **Mathews A.S.**, **Kollarigowda R.H.**, **Kumar S.**, **Ma G.**

**0227** *Mathematical Modeling and Scale-Up of Size Exclusion Chromatography for the Fractionation of Polymers* **Afacan G.** <University of Alberta, Department of Chemical and Materials Engineering, 9211 - 116 St., Edmonton, AB T6G 1H9>, **Rajendran A.**, **Soares J.B.P.**

**0228** *Drying Air using Oat Hulls Based Adsorbents* **Aghababaei A.** <Department of Chemical and Biological Engineering, University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5A9>, **Niu C.H.**, **Ghanbari S.**

**0229** *Comparative Study of a Set of Controller for Dynamic Positioning in Harsh Environments* **Imtiaz S.A.**, **Ahmed S.** <Memorial University of Newfoundland>, **Jayasiri A.**

**0230** *Decomposition of m-Aminophenol in Water using Advanced Oxidation Unit combined with Zeolite* **Akimoto M.** <Department of Chemical, Energy and Environmental Engineering, Faculty of Environmental and Urban Engineering, Kansai University, Japan>, **Araki S.**, **Yamamoto H.**

**0231** *The Effect of Solvent Viscosity on the Solution Polymerization of Ethylene with a Constrained Geometry Catalyst on Polymer Molecular Weight and Long Chain Branching* **Albeladi A.** <Department of Chemical and Materials Engineering, University of Alberta>, **Soares J.B.P.**

**0232** *Synthesis and Characterization of Conductive Polyaniline in Various Nanostructures* **Al-Dulaimi A.** <MICET, Universiti Kuala Lumpur, Lot 1988, Taboh Naning 78000 Alor Gajah, Melaka, Malaysia>

**0233** *Non-Equilibrium Interphase Mass Transfer during Solvent-Aided Thermal Processes: Theoretical and Modelling Considerations* **Al-Gawfi A.** <University of Calgary>, **Hassanzadeh H.**, **Abedi J.**

**0234** *In-situ Synthesis of NiO Nanoparticles in Reservoir Oils for in-situ Upgrading* **Amrollahi B. A.** <University of Calgary; University of Tehran>, **Hosseinpour N.**, **Nassar N.**, **Marei N.**, **Bahramian A.**, **Vatani A.**, **Hassan A.**

**0235** *Employing Multifaceted Teaching and Learning Components to Foster CEAB Graduate Attribute Development* **Anderson N.E.** <Lynch School of Engineering Safety and Risk Management, University of Alberta, Edmonton, AB>; **Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>**, **Cocchio J.R.**, **Watson E.**, **Lefsrud L.M.**, **Li L.**

**0236** *Synthesis and Performance Evaluation of Coal Fly Ash Derived Solid Sodalite Catalyst for Biodiesel Production* **Aniokete T.C.** <School of Chemical and Metallurgical Engineering, Faculty of Engineering and the Built Environment, University of the Witwatersrand, Wits 2050, Johannesburg, South Africa>, **Daramola M.O.**

**0237** *Hydrodesulfurization of Selected Sulfur-Containing Model Systems using Iron-Based Slurry-Dispersed Catalyst* **Antiwi Peparah B.** <University of Alberta, >, **McCaffrey W.C.**

**0238** *Lifetime Prediction of Durable Hydrophobic Poly(dimethylsiloxane)-NanoZnO Coatings under Corrosion in Simulated Marine Environment* **Arukalam I.O.** <Institute of Metal Research, Chinese Academy of Sciences, No. 62 Wencui Road, 110016, Shenyang, China>; **Department of Polymer and Textile Engineering, Federal University of Technology, P.M.B. 1526 Owerri, Nigeria>**, **Oguzie E.E.**, **Ying L.**

**0239** *Evaluation of Zeolite-Based Catalysts for Biodiesel Production from Waste Cooking Oil* **Aslam R.** <Institute of Chemical Engineering & Technology, University of the Punjab, Lahore, Pakistan>

**0240** *Bioconversion of Single Carbon Substrates in Fed-Batch Cultures* **Bakhtiari F.** <University of Alberta, Edmonton, AB T6G 2R3>, **Sauvageau D.**

**0241** *Application of Statistical Design of Experiments for Optimization of As(V) Biosorption by Immobilized Bacterial Biomass* **Banerjee S.** <Biosensor laboratory, Department of Polymer Science and Technology, University of Calcutta, India>, **Banerjee A.**, **Sarkar P.**

**0242** *Application of Surface-Modified Cellulose Nanocrystals for Enhanced Oil Recovery* **Bhatt V.** <Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>, **Bazazi P.**, **Sanati-Nezhad A.**, **Hejazi S.H.**

**0243** *Conductive Polyethylene/Polypropylene Blend Nanocomposites: Effect of Master Batch on Phase Morphology and Electrical Properties* **Borhot A.** <University of Calgary, 2500 University Dr. NW, Calgary, AB T2N 1N4>, **Otero I.**, **Sundraraj U.**

**0244** *Comparative Analysis of the Infection Dynamics and Genomics of Six Virulent Bacteriophages of the Foodborne Pathogen Escherichia coli O157:H7* **Cabral e Pacheco B.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, **Stanford K.**, **McAllister T.A.**, **Niu Y.D.**, **Sauvageau D.**, **Elias A.**

**0245** *Correlation of Polymer Mechanical Properties with Polymer Primary Structures using the Primary Structural Parameter (PSP2) Approach* **Caldera A.** <University of Alberta, Edmonton, AB T6G 1H9>, **Soares J.B.P.**, **DesLauriers P.**

**0246** *Characterization of Thermal and Mechanical Properties of Polyhydroxybutyrate (PHB) Processed via Fused Deposition Modelling (FDM) and Direct-Write Printing* **Caputo J.V.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, **Elias A.**, **Sauvageau D.**

**0247** *Investigation of the Anisotropic Surface Characteristics of Kaolinite by Atomic Force Microscopy* **Chang J.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, **Xu Z.**, **Liu Q.**

- 0248** *Coupling of Fermentation with Pervaporation: A Membrane Bioreactor System* Jain A., Dalai A.K., **Chaurasia S.P.** <Dept. of Chem. Eng., Banasthali University, Rajasthan 304022, India; Dept. of Chem. Eng., Malaviya National Institute of Technology Jaipur, JLN Marg, Jaipur 302017, India>
- 0249** *To Evaluate Effect of Immobilization of Distiller's Yeast Cells with Pine Cone Support by Microencapsulation Method for Ethanol Yield and Sugar Consumption* Oza A., **Chaurasia S.P.** <Department of Chemical Engineering, Malaviya National Institute of Technology, Jaipur, India>, Dalai A.K.
- 0250** *Optimization and Modeling of Hemicellulose Oligomers Production from Pulp Mill Residues for Use as Pulp Strength Additives* **Chen J.** <Department of Chemical and Biological Engineering, University of British Columbia>, Chang X.F., Beatson R.P., \*Trajano H.L.
- 0251** *Enhanced Adsorption of Asphaltenes on Kaolinite Induced by Thermal Treatment* **Chen Q.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Gray M.R., Liu Q.
- 0252** *Application of Fast Responsive CO<sub>2</sub>-Switchable Microemulsions in Drill Cuttings Treatment* **Chen X.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, \*Xu Z., Sun D.
- 0253** *Adhesion Interactions between Clathrate Hydrates and Electrolyte Solutions by Integrated Thin Film Drainage Apparatus (ITFDA)* **Chen Z.H.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, \*Xu Z.
- 0254** *Study of Sand Filtration for Removal of Pollen from Swimming Pools* Bradley B., **Creber S.** <Royal Military College of Canada>
- 0255** *Investigation of the Relationships between Microscopic Structures of Ice and Macroscopic Properties for Load Bearing* McNeil K., Carreira A., Beddoe R., **Creber S.** <Royal Military College of Canada>
- 0256** *Clinical Data from Near-Infrared Imaging of Traumatic Brain Injuries* Riley J., **Creber S.** <Royal Military College of Canada>
- 0257** *Synthesis and Flocculation Testing of Amylopectin Grafted Hydrolyzed Poly(methyl acrylate) (AP-g-H-PMA) in Dewatering of Oil Sands Mature Fine Tailings* **Davey S.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Bazoubandi B., Botha L., \*Soares J.B.P.
- 0258** *Interaction of Oil with Model Sediment and Field Sediment for Oil Spill Response* **De Crisci A.G.** <CanmetENERGY-Devon, Natural Resources Canada>, Utting N., Pawlowicz J., Utting D., \*Stoyanov S.R.
- 0259** *A 2D Heterogeneous Numerical Model for Auto-Thermal Reforming of Crude Glycerol in a Packed Bed Reactor* \*Ibrahim H., Williams J., **Deedwania A.** <Process Systems Engineering, University of Regina, 3737 Wascana Pkwy., Regina, SK S4S 0A2>
- 0260** *Synthesis of Ionic Liquid Grafted on SBA-15 as Heterogeneous Catalyst for Esterification of Oleic Acid to Biodiesel using Ethanol* \*Ibrahim H., **Deedwania A.** <Process Systems Engineering, University of Regina, 3737 Wascana Pkwy., Regina, SK S4S 0A2>
- 0261** *Catalytic Hydrothermal Conversion of Camelina sativa Straw for Production of Bio-Gasoline Range Liquid Biofuel* \*Ibrahim H., Akande A., **Deedwania A.** <Process Systems Engineering, University of Regina, 3737 Wascana Pkwy., Regina, SK, S4S 0A2>
- 0262** *Stability Signature of Oil-in-Water Emulsions Stabilized by Silica Nanoparticles* **Derakhshandeh M.** <Department of Chemical and Petroleum Engineering, University of Calgary, 2500 University Dr. NW, Calgary, AB>, Pilapil B.K., Workman B., Bryant S.L., \*Trifkovic M.
- 0263** *High Performance Nanocomposites from Ti<sub>3</sub>SiC<sub>2</sub> MAX Phase and Phthalonitrile Resin* \***Derradji M.** <Institute of Composite Materials, Key Laboratory of Superlight Material and Surface Technology of Ministry of Education, College of Materials Science and Chemical Engineering, Harbin Engineering University, Harbin 150001, China>
- 0264** *Which Crudes Have the Lowest GHG Emission Intensity? A Discussion on Perspective* **Di Lullo G.** <Faculty of Engineering, Department of Mechanical Engineering, 10-263 Donadeo Innovation Centre for Engineering, 9211 116 St. NW, University of Alberta, Edmonton, AB T6G 1H9>, Oni A.O., \*Kumar A.
- 0265** *Oil Soluble Polymer Flocculants for the Removal of Fine Solids in Organic Media* **Dixon D.V.** <Department of Chemical and Materials Engineering, University of Alberta; CanmetENERGY, Natural Resources Canada, Devon, AB>, \*Stoyanov S.R., \*Xu Y., Soares J.B.P., Zeng H.
- 0266** *Photodegradation of Bisphenol A using Singlet Molecular Oxygen as Advanced Oxidation Process* \***Doria G.M.** <Group GDCON, University of Antioquia, Ave. 67 #53 - 108, Medellín, Antioquia, Colombia>, Soltan J., Peñuela G., Valencia G.C.
- 0267** *Improving the Solid Fuel Properties of Coconut Shell via Microwave-Assisted Hydrothermal Carbonization* \***Elaigwu S.E.** <Department of Chemistry, University of Hull, Cottingham Road, Hull, HU6 7RX UK; Department of Chemistry, University of Ilorin, PMB 1515, Ilorin, Kwara State, Nigeria>, Greenway G.M.
- 0268** *Optimization of Zeaxanthin Production by Immobilized Flavobacterium sp. Cells in Fluidized Bed Bioreactor* \*Valdez-Bustos N., **Escamilla-Silva E.M.** <Instituto Tecnológico de Celaya, Departamento de Ingeniería Química, Ave. Tecnológico y Antonio García Cubas S/N. C.P. 38010. Celaya Gto. México>
- 0269** *Evaluation of Adsorption Efficiency of Hydrophobic Silica Adsorbents using Hansen Solubility Parameters* **Fuziwaru N.** <Department of Chemical Energy and Environmental Engineering, Faculty of Environmental and Urban Engineering, Kansai University, Japan>, \*Yamamoto H.
- 0270** *Solvent-Free Ultrasound Synthesis of Bio-Lubricant Diesters* \*Patience N.A., **Galli F.** <Polytechnique Montreal, 2900 Boul. Edouard Montpetit, Montreal, QC, >, \*Boffito D.C.
- 0271** *Characterization of Starch/Sodium Montmorillonite Composite (Starch/Na-MMT) and its Application for Removal of Cobalt (II) and Nickel (II) Ions from Aqueous Solutions* **García-Padilla A.** <Chemical Engineering, University of Cartagena, Cartagena, Colombia>, Moreno-Sader K., Acevedo-Morantes M., Realpe-Jimenez A., Soares J.B.P.
- 0272** *Upscaling of Pore-Level Porous Media Images using Quadtree Decomposition* \***Gholinezhad S.** <Chemical and Petroleum Engineering Department, University of Calgary>, Mohammadmoradi P., \*Kantzas A.
- 0273** *Dye-Sensitization: A New Facet of Solar Photocatalysis* **Ghosh M.** <University of Western Ontario, London, ON>, Chowdhury P., Ray A.K.
- 0274** *Supercritical Carbon Dioxide Pretreatment of Flax Fibers for Enzymatic Production of Lignocellulosics Nanofibrils* Nlandu H., \*Belkacemi K., Elkoun S., Robert M., Chorfa N., \***Hamoudi S.** <Department of Soil Sciences & Agri-Food Engineering, Université Laval>
- 0275** *Separation of Zr and Hf from K<sub>2</sub>Zr(Hf)F<sub>6</sub> using Fractional Crystallization* **Hayashi T.** <Department of Chemical, Energy and Environmental Engineering, Faculty of Environmental and Urban Engineering, Kansai University, Japan>, \*Yamamoto H.
- 0276** *Custom-Built Wetting Properties in Microchips with Geomaterials by using Layer-by-Layer (LbL) Assembly Technology* Zhao T., \*Zhang Y., Sanati-Nezhad A., \***Hejazi S.H.** <Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>

- 0277** *Evaluation of Physical Property for Zeolite Surface using the Hansen Solubility Parameter* **Hirao K.** <Department of Chemical, Energy and Environmental Engineering, Faculty of Environmental and Urban Engineering, Kansai University, Japan>, \*Yamamoto H.
- 0278** *Oxidation Kinetics of Asphaltene-Born Coke Residue over in-situ and ex-situ Prepared NiO Nanoparticles* **Amrollahi B. A., \*Hosseinpour N.** <Institute of Petroleum Engineering, College of Engineering, University of Tehran, P.O. Box: 11155/4563, Tehran, Iran>, **Nassar N., Marei N., Bahramian A., Vatani A., Hassan A.**
- 0279** *Effects of the Concentration and Flowrate of Silica Nanofluids on Ultimate Oil Recovery in Micromodels* **Bahaloo N., \*Hosseinpour N.** <Institute of Petroleum Engineering, College of Engineering, University of Tehran, P.O. Box: 11155/4563, Tehran, Iran>, **Rasaei M.**
- 0280** *Asphaltene Aggregation Control in Reservoir Oils by Metal Oxides Nanoparticles* **Igder M., \*Hosseinpour N.** <Institute of Petroleum Engineering, College of Engineering, University of Tehran, P.O. Box: 11155/4563, Tehran, Iran>, **Bahramian A.**
- 0281** *Asphaltene Deposition under Shear Stress at Different Temperatures* **Fazl Ali A., \*Hosseinpour N.** <Institute of Petroleum Engineering, College of Engineering, University of Tehran, P.O. Box: 11155/4563, Tehran, Iran>, **Bahramian A., Javadi A.**
- 0282** *Effects of Silica Nanoparticles on Water-Heavy Oil IFT and Elasticity in Nanofluid Injection EOR Processes* **Salehi Forooz M., \*Hosseinpour N.** <Institute of Petroleum Engineering, College of Engineering, University of Tehran, P.O. Box: 11155/4563, Tehran, Iran>, **Bahramian A.**
- 0283** *Formation Damage Associated with Nanofluid Injection in Glass Micromodel* **Mohammadalinejad P., \*Hosseinpour N.** <Institute of Petroleum Engineering, College of Engineering, University of Tehran, P.O. Box: 11155/4563, Tehran, Iran>, **Rasaei M.**
- 0284** *Butanol/Water Adsorption on Oat Hulls and Site Energy Distribution Analysis* **Huang Q.** <Department of Chemical Engineering, University of Saskatchewan>, **Niu C.H., \*Dalai A.K.**
- 0285** *Synthesis, Characterization and  $NH_3/N_2$  Gas Permeation Study of Nano Composite Membranes* **\*Hussain A.** <School of Chemical and Materials Engineering (SCME), National University of Sciences and Technology (NUST), H-12 Islamabad, Pakistan, >
- 0286** *Determination of Zn and Al Parameters of Molecular Group Contribution Method for Hansen Solubility Parameter* **Imai S.** <Department of Chemical, Energy and Environmental Engineering, Faculty of Environmental and Urban Engineering, Kansai University, Japan>, \*Yamamoto H.
- 0287** *Evaluating the Hydrothermal Stability of Amine-Tethered, Large-Pore SBA-15 Silica during Cyclic  $CO_2$  Capture* **\*Jahandar Lashaki M.** <Centre for Catalysis Research and Biomolecular Sciences, University of Ottawa, Ottawa, ON K1N 6N5>, **Ziaei-Azad H., \*Sayari A.**
- 0288** *The Impact of the Support Pore Size and Intrawall Pore Volume on the  $CO_2$  Capture Performance of Triamine-Grafted SBA-15 Silica* **\*Jahandar Lashaki M.** <Centre for Catalysis Research and Innovation, Department of Chemistry and Biomolecular Sciences, University of Ottawa, Ottawa, ON K1N 6N5>, \*Sayari A.
- 0289** *Synthesis of Copper Oxide/Alumina Composite Aerogel as an Oxygen Carrier for Chemical Looping Combustion of Methane* **\*Karami D.** <Department of Chemical and Petroleum Engineering, University of Calgary>, \*Mahinpey N.
- 0290** *Laboratory Studies on Gasification of Subbituminous Coal in an Underground Coal Gasification (UCG) Reactor* **Khan M.M.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, **Trivedi J., Liu Q., \*Gupta R.**
- 0291** *Carbon Molecular Sieves for Binary Permeation of  $N_2/CH_4$  and  $CO_2/CH_4$  Gas Pairs* **\*Khan S.** <Khalifa University of Science & Technology (The Petroleum Institute Campus), Abu Dhabi, UAE>
- 0292** *Polymerization of 1-Hexene using Binuclear LTM Catalysts* **\*Khoshsefat M.** <Department of Catalyst, Iran Polymer and Petrochemical Institute (IPPI), P.O. Box 14965/115, Tehran, Iran>, **Dechal A., Ahmadjo S., Mortazavi M.M., Zohuri G.H.**
- 0293** *Novel Binuclear Ni-Based FI Catalysts for Polymerization of 1-Hexene* **\*Khoshsefat M.** <Department of Catalyst, Iran Polymer and Petrochemical Institute, Tehran, Iran>, **Ahmadjo S., Mortazavi M.M., Zohuri G.H.**
- 0294** *Fabrication of Superhydrophobic and Superoleophilic Cellulose Biomembrane for Oil/Water Separation* **Kollarigowda R.H.** <Ingenuity Lab, 11421 Saskatchewan Drive Northwest, Edmonton, AIB T6G 2M9; Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, \*Abraham S., \*Montemagno C., Gray M.R.
- 0295** *Thermodynamics of Sorption in Polyolefins* **Podivinska M., Krajakova L., Chmelar J., \*Kosek J.** <University of Chemistry and Technology Prague, 166 28 Prague 6, Czech Republic>
- 0296** *Nanoparticle Stabilized Solvent-Based Emulsion for Enhanced Heavy Oil Recovery* **\*Kumar G.** <Enhanced Oil Recovery Laboratory, Department of Ocean Engineering, Indian Institute of Technology, Madras, India>, **Kakati A., Mani E., \*Sangwai J.**
- 0297** *Extraction-Distillation Hybrid Process for Enhanced Butandiol Separation from Biomass Derived Mixture* **Harvianto G.R., Junaid H., Hong J., Koo K.-K., \*Lee M.Y.** <Yeungnam University, Korea>, **Woo T.W.**
- 0298** *Fabrication and Characterization of Biodegradable Electronic Elements Based on Poly(3-hydroxybutyrate) (PHB) and Graphite-Nanoplatelet (GNP) Composites* **Caputo J.V., Lopera-Valle A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, **Anbukarasu P., Sauvageau D., Elias A.**
- 0299** *Modeling of ATRP Polymerization via Kinetic Monte Carlo and the Method of Moments* **López-Domínguez P.** <Departamento de Ingeniería Química, Facultad de Química, Universidad Nacional Autónoma de México, 04510, Ciudad de México, México>, \*Vivaldo-Lima E.
- 0300** *Enhancement of Oil Sands Extraction using  $CO_2$ -Responsive Supra-Amphiphiles* **Lu Y.** <University of Alberta>, **Sun D., \*Xu Z.**
- 0301** *Free Energies of Adhesion of Model Bitumen Compounds on Clay Minerals* **\*Mane J.** <CanmetENERGY, Natural Resources Canada, 1 Oil Patch Dr., Devon, AB>, \*Stoyanov S.R.
- 0302** *Hydrodynamic Interactions involving Drops and Bubbles* **Manica R.** <Department of Chemical and Materials Engineering, University of Alberta>, **Liu Q., Xu Z.**
- 0303** *Experimental Studies on Cold Flow Properties Improvement of Hexadecane by Catalytic Hydrodewaxing Reaction* **Mehfuz O.** <Process Engineering, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, \*Imtiazi S.A.
- 0304** *EMI Shielding Effectiveness of CNT/NiNW Polystyrene Hybrid Nanocomposites* **Mende Anjaneyalu A.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, **Shayesteh A., \*Sundararaj U.**
- 0305** *Modeling Interactions between Monomer Units of Common Polymer Blends: A Quantum Chemical Density Functional Theory (DFT) Approach* **Mitra A.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, **Trifkovic M., \*Ponnurangam S.**

**0306** *Ionic Liquid Incorporation into Zeolitic Imidazolate Framework (ZIF-8) as Efficient Sorbents for CO<sub>2</sub> Capture*

**Mohamedali M.** <Clean Energy Technology Research Institute (CETRI), and Process Systems Engineering, University of Regina, 3737 Wascana Pkwy., Regina, SK, S4S 0A2>, <sup>\*</sup>Henni A., Ibrahim H.

**0307** *Simulation Study of CO<sub>2</sub>*

*Hydrogenation on a Two-Reactor Configuration* Punia R., Sarma S.K., Acharya C.K., **Mohan R.** <Department of Chemical Engineering, I.I.T. Delhi, New Delhi - 110016, India>

**0308** *Dynamics of Biopesticide Activity of Beauveria bassiana with Enriched Chitinase using a Green Route* **Mondal S.** <Chemical Engineering Department, Jadavpur University, Kolkata-32, India>, <sup>\*</sup>Datta S.

**0309** *The Impact of Selecting the Appropriate Probit for Hydrogen Sulphide (H<sub>2</sub>S) when Conducting a Quantitative Risk Assessment (QRA)* **Montgomery D.** <Atkins Consulting Canada Ltd>

**0310** *Mechanical and Thermal Properties of High Density Polyethylene/Cellulose Nanocrystal Composites Prepared by in-situ Polymerization and by Melt-Blending Extrusion* **Moran D.A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2G6, >, Gaffer A., <sup>\*</sup>Soares J.B.P.

**0311** *Evaluation of Removal of Heavy Metals Water Pollutants using Polyacrylamide/Sodium Montmorillonite Nanocomposite (PAM/Na-MMT)* **Moreno-Sader K.** <Chemical Engineering, University of Cartagena>, Garcia-Padilla A., Acevedo-Morantes M., Realpe-Jimenez A., Soares J.B.P.

**0312** *Role of Cations and Clay Particle Sizes on the Flocculation of Mature Fine Tailings using an Anionic Hydrolyzed Polyacrylamide Polymer* Gaikwad R., **Motta F.L.** <Department of Chemical and Materials Engineering, University of Alberta>, Botha L., Soares J.B.P.

**0313** *Bridge Method for Site-Wide Energy Analysis and its Application in the Pulp and Paper Industry* **Moussavi A.** <Process Design Engineering Group, Department of Chemical Engineering, Ecole Polytechnique de Montreal, P.O. Box 6079, Station Centre-Ville, Montreal, QC H3C 3A7>, Bonhivers J.-C., <sup>\*</sup>Stuart P.R.

**0314** *Removal of Ciprofloxacin from Aqueous Solution using Oat Hulls Based Adsorbents* <sup>\*</sup>**Movasaghi Z.** <Department of Chemical and Biological Engineering, University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5A9>, Yan B., <sup>\*</sup>Niu C.H.

**0315** *Investigating Hydrocracking of Waste Plastic Mixture using Mesoporous Beta Catalysts* <sup>\*</sup>**Munir D.** <Institute of Chemical Engineering and Technology, University of the Punjab Lahore, Pakistan>, Usman M.R.

**0316** *Effectiveness of OHS Convictions and Sentencing for Improving Alberta Workplace Safety* **Munira U.A.** <Department of Chemical and Materials Engineering, University of Alberta>, Eckert H., Gehman J., <sup>\*</sup>Lefsrud L.M.

**0317** *Negatively-Templated Multiscale Porous Polymer Monoliths for Bioseparations* **Muzzin N.** <McMaster University, 1280 Main St. W, Hamilton, ON L8S 4L8>, Johnson K., <sup>\*</sup>Hoare T., Latulippe D.

**0318** *Transport through Bulk-Liquid Membrane by using Electroenhanced-Ions* <sup>\*</sup>**Nasirian A.** <Department of Chemistry, Faculty of Basic Science, Islamic Azad University, Shahreza, Iran>, Ghiasvand A.R.

**0319** *Electrochemical Coating of a Poly(aniline/Polypyrrole)/Graphene Oxide Nanocomposite Film on a Platinized Stainless Steel Fiber for Solid-Phase Microextraction of Aliphatic Aldehydes in Fragrant Rice Samples* <sup>\*</sup>**Nasirian A.** <Department of Chemistry, Shahreza Branch, Islamic Azad University, Iran>, Ghiasvand A.R.

**0320** *Transport of Iron Ions by Combining of the Bulk-Liquid Membrane and Electromembrane Extraction Methods* <sup>\*</sup>**Nasirian A.** <Department of Chemistry, Shahreza Branch, Islamic Azad University, Iran>

**0321** *Using Headspace Solid-Phase Microextraction Coupled to Gas Chromatography for Quality Control of Fragrant Rice by Screening of Hexanal* <sup>\*</sup>**Nasirian A.** <Department of Chemistry, Shahreza Branch, Islamic Azad University, Iran>, Ghiasvand A.R.

**0322** *Extraction of Trace Amounts Cd<sup>2+</sup> in Real Samples with Dispersive Liquid-Liquid Microextraction and Measurement by Graphite Furnace Atomic Absorption Spectrometry (DLLME-GFAAS) Methods* <sup>\*</sup>**Nasirian A.** <Department of Chemistry, Shahreza Branch, Islamic Azad University, Iran>

**0323** *Dispersive Liquid-Liquid Microextraction of Trace Amounts of Pb<sup>2+</sup> using 8-Hydroxyquinoline* <sup>\*</sup>**Nasirian A.** <Department of Chemistry, Shahreza Branch, Islamic Azad University, Shahreza, Iran>

**0324** *Modification of TiO<sub>2</sub> to Enhance Photocatalytic Degradation of Organics in Aqueous Solution via Metal Doping, Non-Metal Doping and Combining of Two Photocatalysts* **Nasirian M.** <Graduate Programs in Environmental Applied Science and Management, Ryerson University, 350 Victoria St., Toronto, ON M5B 2K3>, Lin Y.P., <sup>\*</sup>Mehrvar M.

**0325** *Applications of Thermoresponsive Hybrid Polymer in Oil Sands Mining* **Ng J.** <University of Alberta>, <sup>\*</sup>Liu Q., <sup>\*</sup>Xu Z.

**0326** *Effect of Scaling Up on Flocculation Performance using Amylopectin Grafted Polymers in Dewatering of Oil Sands Mature Fine Tailings* **Nguyen B.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Bazoubandi B., Botha L., <sup>\*</sup>Soares J.B.P.

**0327** *Process Characterization of Water Stable Metal Organic Frameworks (MOFs) for Post-Combustion CO<sub>2</sub> Capture* **Nguyen T.T.T.** <Department of Chemical and Materials Engineering, University of Alberta>, Taylor J., <sup>\*</sup>Rajendran A.

**0328** *Regeneration of Phosphoric Acid from Phosphate Waste Discarded from Fertilizer Manufacturing Process* **Nishiguchi K.** <Department of Chemical Energy and Environmental Engineering, Faculty of Environmental and Urban Engineering, Kansai University, Japan>, <sup>\*</sup>Yamamoto H.

**0329** *Creating QRA Scenarios* **Odeluga I.** <Department of Chemical and Materials Engineering, University of Alberta>, Sharma V., <sup>\*</sup>Lefsrud L.M.

**0330** *A Generalized Cascade Algorithm Modelled on ASPEN HYSYS Optimizes Natural Gas Processing* <sup>\*</sup>**Okeke E.O.** <Mercogas, Nigeria>

**0331** *Effect of External Forces as Assisted Technique in Block Freeze Concentration to Elaboration of Concentrated Solutions* <sup>\*</sup>**Orellana-Palma P.A.** <Department of Food Engineering, Universidad del Bio-Bio, Av. Andrés Bello s/n, Casilla 447, Chillán, Chile>, Petzold G.

**0332** *Game Based Learning for Process Safety* **Ormerod G.** <Risktec Solutions; Institution of Chemical Engineers (UK)>

**0333** *Synthesis and Characterisation of Zeolite NaY Catalyst using Lawani Benin River Nigeria Kaolin as a Precursor for Silicon and Alumina* <sup>\*</sup>**Osayi J.I.** <Department of Chemical Engineering, Vaal University of Technology, South Africa>, Iyuke S., Daramola M.O., Osifo P., Van der Walt I.J., Ogbeide S.E.

**0334** *The Need to Ensure Climate Science is Based on Valid Mass and Energy Balances* <sup>\*</sup>**Peachey B.R.** <New Paradigm Engineering Ltd., Edmonton, AB>

**0335** *In-situ Oil Sands Technology Needs and Opportunities Change as Recovery Progresses* <sup>\*</sup>**Peachey B.R.** <New Paradigm Engineering Ltd., Edmonton>

**0336** *Direct Contact Steam Generation: Design Options for Oil Sands Applications* <sup>\*</sup>**Peachey B.R.** <New Paradigm Engineering Ltd>, Godin M.

**0337 Ion Removal from Bitumen Penaloza I.** <University of Alberta, Edmonton, AB T6G 2R3, >, <sup>§</sup>de Klerk A.

**0338 TIRF Tomography to Study Bitumen-Clay Association in Oil Sands Tailings** <sup>†</sup>Shende S., <sup>§</sup>Nazemifard N., <sup>†</sup>Pendharker S. <University of Alberta, Department of Electrical and Computer Engineering>, Jacob Z.

**0339 Economical Superiority of Two-Compartment Processing versus One-Compartment Processing for Production of Recombinant Products** **Pourmohammadbagher M.** <University of Alberta, Edmonton, AB T6G 1H9>, Abdollahi M., <sup>†</sup>Jazini M..

**0340 Toward Quantitative Measurement of Clay Content in Water: Enthalpic End Point Detection for the Methylene Blue Test** <sup>†</sup>**Pourmohammadbagher A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, Shaw J.M.

**0341 Optimal Scheduling of a Bitumen Upgrader Facility for Steam-Assisted Gravity Drainage (SAGD)** **Purkayastha S.N.** <University of Calgary>, Gates I.D., <sup>†</sup>Trifkovic M.

**0342 Using X-Ray Radiographic Imaging Technique to Understand Liquid Water Transport Phenomena in Proton Exchange Membrane (PEM) Fuel Cells** **Rahimian Esfahani P.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, Battrell L., Anderson R., Zhu N., Johnson E., <sup>†</sup>Zhang L.F.

**0343 Hydrogen Production through Supercritical Water Gasification of Bitumen** **Rana R.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK>, Nanda S., <sup>†</sup>Dalai A.K., <sup>§</sup>Kozinski J.A.

**0344 Effect of Reynolds Number on Jet Flow out of a High Aspect Ratio Rectangular Slot using Stereo-PIV** **Rasimarzabadi F.** <Department of Mechanical Engineering, University of Alberta, Edmonton, AB>, Mendez C., <sup>†</sup>Nobes D.S.

**0345 Thermodynamic Properties of Aqueous Solutions of Glycols, Alkanolamines and Blends and Hybrid of Alkanolamines: Experimental Measurements and Modelling using Redlich-Kister (RK) Equation, Prigogine-Flory-Patterson (PFP) Theory and Extended Real Associated Solution (ERAS) Models** **Razavi S.** <Thermodynamics Research Unit, School of Engineering, University of KwaZulu-Natal, Howard College Campus, King George V, Avenue, Durban 4041, South Africa>, Mohammadi A.H.

**0346 Estimating the Bulk Density of Polyolefin Particles Made in Industrial Reactors via Monte Carlo Simulation** **Romero J.** <Department of Chemical and Materials Engineering, University of Alberta>, <sup>§</sup>Soares J.B.P.

**0347 Improved Efficiency Bitumen Extraction Process using Petroleum Diesel** **Russell D.** <University of Alberta, Edmonton, AB T6G 1H9>, <sup>§</sup>Xu Z., Liu Q.

**0348 Effect of Solvent Additives on Liquid-Liquid Equilibrium of n-Butane-Athabasca Bitumen** **Sadeghi H.** <University of Calgary>, Zirrahi M., <sup>§</sup>Hassanzadeh H.

**0349 Separation of Troilite and Ferronickel** **Sandhu J.** <Department of Materials Science & Engineering, University of Toronto, Toronto, ON M5S 3E4>, Wang J., <sup>§</sup>Bobicki E.

**0350 Coal Carbonization in a Lab-Scale Horizontal Tube Furnace and Characterization** **Santhanakrishnan A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, Basher S.T., Pudasainee D., Kurian V., <sup>§</sup>Gupta R.

**0351 Numerical Studies of Crude Oil Batches Mixing in a Long Channel** <sup>†</sup>**Sepehr H.** <Department of Chemical and Material Engineering, University of Alberta, Edmonton, AB>, Nikrityuk P., Breakey D., Sanders R.S.

**0352 Application of ZnO-Ag and WO<sub>3</sub>-Ag as a Photocatalyst for Dye Removal of Colored Wastewater: A Comparison Study** <sup>†</sup>**Shfae N.** <Chemistry Department, Islamic Azad University (Tehran North Branch), Iran>, Motiee F., <sup>§</sup>Olya M.E.

**0353 CO<sub>2</sub> Capturing from Exhaust of Diesel Generators by Liquefaction in Low Ambient Temperature** <sup>†</sup>**Shams A.** <Research and Development Department, Sigma Storage Energy Inc., Montreal, QC H3K 1G6; Department of Chemical Engineering, McGill University, Montreal, QC H3A 0C5>, Nazafiyazdi M., Boudreault R.

**0354 Interactions between Foulants and Liner Materials** <sup>§</sup>**Shi X.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Gong L., Wang J., Li J., Leitch M., Luo J., <sup>†</sup>Zeng H.

**0355 PEDOT:PSS Nano-Gels for Highly Electrically Conductive Silver/Epoxy Composite Adhesives** **Si P.** <Department of Chemical Engineering, University of Waterloo; Waterloo Institute of Nanotechnology, University of Waterloo; Institute for Polymer Research, University of Waterloo>, Chen L., Trinidad J., Lee B., <sup>†</sup>Zhao B.

**0356 Viscosity Reduction of Athabasca Bitumen during Visbreaking: Effect of Solvents, Shear Rates and Solids** **Sivaramakrishnan K.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, <sup>§</sup>Prasad V., <sup>†</sup>de Klerk A.

**0357 The Effects of Rare and Alkaline Earth Metal Zirconates on Ca-Based Sorbents for CO<sub>2</sub> Capture Processes at Elevated Temperatures** **Soleimanisalim A.H.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB>, Karami D., <sup>§</sup>Mahinpey N.

**0358 Modification of Alumina as a Support for Metal Oxide Oxygen Carriers using Core-Shell Technique** **Soleimanisalim A.H.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB>, Karami D., <sup>§</sup>Mahinpey N.

**0359 Degradation of Thiabendazole Systemic Fungicide by Homogeneous Modified Fenton Reaction using Fe<sup>2+</sup>-Glutamate Complex as Catalyst** <sup>§</sup>Mena L., Balladares O., Munoz F., **Soltan J.** <University of Saskatchewan>

**0360 Application of Adsorption on Granular Activated Carbons for the Removal of Lincomycin from Water** <sup>§</sup>Balladares O., <sup>†</sup>**Soltan J.** <University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5A9>

**0361 Simplified Model: Post-Combustion Adsorbent Screening** **Subramanian Balashankar V.** <Department of Chemical and Materials Engineering, University of Alberta, 9211-116 St. NW, Edmonton, AB T6G 1H9>, De Pauw R., Rajagopalan A.K., Avila A.M., <sup>†</sup>Rajendran A.

**0362 PMMA:PS/MWCNT Blend Nanocomposites: Effect of MWCNT Loading and Blend Components Ratio on Morphology, Electrical Conductivity and Electromagnetic Interference Shielding** **Sultana S.** <University of Calgary>, Otero I., Arjmand M., <sup>§</sup>Sundararaj U.

**0363 Optimization of Chemical Composition of Acids and Inhibitors for Descaling Heat Exchangers** **Tahir M.S.** <University of Gujrat, Department of Chemical Engineering, Gujrat, Pakistan>, Hassan A., Sagir M., Hanan A.

**0364 Combustion of Various Coal Slurry Compositions by using Computational Fluid Dynamics** <sup>†</sup>**Tahir M.S.** <Department of Chemical Engineering, University of Gujrat>, Alam M., Sagir M.

**0365 Identification of Output-Error (OE) Models using QZ Algorithm** **Maurya D., Tangirala A.K.** <Systems & Control Group, Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai - 600036 India>, Narasimhan S.S.

0366 *Impact of Substrates on Development of Industrial Process for Methylophilus* **Tays C.** <University of Alberta, Edmonton, AB>, Stein L.Y., Sauvageau D.

0367 *Mesoporous Silica Copper Catalysts for Methanol Steam Reforming* **Thurgood C.** <Department of Chemistry/Chemical Engineering, Royal Military College, Kingston, ON>, Scott J., Peppley B.

0368 *Chemical Looping Combustion of Methane with Nickel Oxide in a Fluidized Bed: Rigorous Process Simulation Approach* **Mostafavi E., Huang H., Roux M., Tijani M.M.** <University of Calgary>, \*Mahinpey N.

0369 *Development of Small Scale Spontaneous Combustion Test for Bio-Fuel from Sewage Sludge* **Ueda A.** <Tsukushima Kikai Co. Ltd., Tokyo 1040053 Japan>, \*Nogami H., Nishizaka Y., Sotozaki H., Kawai H.

0370 *Optimization Process and Assessment of Protective Capacity of Microencapsulated Bifidobacterium longum BAA-999 as Probiotic Enhancement* **Valadez N.** <Facultad de Química, Universidad Autónoma de Querétaro, Cerro de las campanas, Qro., 76010 Querétaro, México>, \*Ramos M., \*Escamilla-Silva E.M.

0371 *Design of an IMC-Based Data-Driven Performance-Adaptive Controller* **Wakitani S.** <Hiroshima University, Hiroshima, Japan>, \*Yamamoto T.

0372 *Fermentation Production of Legionaminic Acid in Recombinant E. coli* **Wang R.J.** <Department of Chemical and Biological Engineering, University of Ottawa>

0373 *Deep Reinforcement Learning-Based Controllers for Process Control* **Wang Y.** <University of Alberta, Edmonton, AB T6G 1H9>, \*Velswamy K., \*Huang B.

0374 *Understanding the Wettability of Calcite as a function of Cleavage Plane* **Wani O.B** <Khalifa University of Science and Technology (The PI Campus), Abu Dhabi, UAE>, \*Alhassan S.M., Lia C.Y., Chiesa M.

0375 *Comparison of Electronic and Physicochemical Properties between Imidazolium-Based and Pyridinium-Based Ionic Liquids* **Wu C.** <Department of Chemical and Petroleum Engineering, University of Calgary, >, De Visscher A., \*Gates I.D.

0376 *Study of the Roles of Process Aids in Bitumen Liberation by Quartz Crystal Microbalance with Dissipation (QCM-D)* **Xiang B.** <University of Alberta, Edmonton, AB T6G 2R3>, Liu Q., Long J.

0377 *Probing Molecular Interactions between PEGylated Chitosan and Plasmid DNA using a Surface Forces Apparatus* **Xiang L.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Gong L., \*Zeng H.

0378 *Adsorption of Antibiotics from Aqueous Solutions on Heterogeneous Adsorbents Based on Barley Straw* **Yan B.** <School of Environment and Sustainability, University of Saskatchewan, 117 Science Place, Saskatoon, SK S7N 5C8>, \*Niu C.H.

0379 *Valorisation of Chicken Feathers Barb in Yarn Production and Technical Textile Application* **Yimer T.T.** <Discipline of Chemical Engineering, University of KwaZulu-Natal, Durban, South Africa, ; Ethiopian Institute of Textile and Fashion Technology, Bahir Dar, Ethiopia, >, Sithole B.B., Ramjugernath D.

0380 *Polymer at Interface: Single-Molecule Adhesion Force of Stimuli-Responsive Polymer on Hydrophobic Surfaces in Aqueous Solution* **Yuechao Y.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Liu Q., Xu Z.

0381 *Flipping Material and Energy Balances using Team-Based Learning* **Zaid-Alkailani S.** <University of British Columbia, Faculty of Applied Science, Department of Chemical and Biological Engineering>, Chiew V., Lim S., Ngai J., Lo T., \*Verrett J.

0382 *Cobalt Catalyst Grown Carbon Nanotube/Poly(vinylidene fluoride) Nanocomposites: Effect of Synthesis Temperature on Morphology, Electrical Conductivity and Electromagnetic Interference Shielding* **Zamani Keteklahijani Y.** <University of Calgary>, \*Sundararaj U., \*Arjmand M.

0383 *Model Reduction and Subsystem Decomposition for Wastewater Treatment Plants* **Zhang A.** <Department of Chemical and Materials Engineering, University of Alberta>, Yin X., \*Liu J.

0384 *Pelletisation and Characterization of Biosorbents* **Zhou J.** <Department of Chemical and Biological Engineering, University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5N9>, Huang Q., \*Niu C.H.

0385 *Gallium Modified USY Zeolites as an Effective Co-Support for Ultra-Deep Hydrodesulfurization Catalysts on Inferior Diesels: Its High Isomerization Selectivity* **Zhou W.** <State Key Laboratory of Heavy Oil Processing, China University of Petroleum, Beijing 102249, PR China>, \*Zhou Y., Wei Q.

Tuesday AM

Plenary

PLEN

Hall B

Plenary

Organizer(s) - João Soares and Arvind Rajendran  
Chair(s) - Arvind Rajendran

Plenary Lecture presented by Massimo Morbidelli, ETH Zurich

08:30 0386 *From Polymer Colloids to Structured Materials* **Morbidelli M.** <ETH Zurich, Vladimir-Prelog-Weg 1, 8093 Zurich, Switzerland>

09:30 Coffee Break

09:50 End of Session

Honourary Symposia

HOP3

Salon 2

Honourary Symposium in Recognition of Archie Hamielec, Harmon Ray and Charles Cozewith for Outstanding Contributions in Polymer Reaction Engineering

Organizer(s) - Jeff Brinen, Robin Hutchinson, João Soares and Shiping Zhu  
Chair(s) - Tim Mckenna and Mike Cunningham

09:50 0387 *Kinetics of the Prebiotic Depsipeptide Formation from Ester-Amide Exchange Reaction* **Yu S.S., Schork F.J.** <Georgia Institute of Technology>, Grover M.A., \*Hud N.V., Fernandez F.M., Krishnamurthy R., Forsythe J.G.

10:10 0388 *Multi-scale, Multi-phase Modelling of a Slurry-Phase Catalytic Ziegler-Natta Ethylene- $\alpha$ -Olefins Polymerization Continuous Process* **Pladis P., Baltas A., Kiparissides C.** <Chemical Process & Energy Resources Institute, CERTH; Department of Chemical Engineering, AUTH, Thessaloniki, Greece>

10:30 0389 *Experimental and Modeling Investigation of Electrostatic Charging of Polyethylene Powders* **Kosek J.** <University of Chemistry and Technology Prague, 166 28 Prague 6, Czech Republic>, Konopka L., Jantac S.

10:50 0390 *Automatic Control of Free Radical Polymerization Reactions* **Reed W.F.** <Tulane University>, McAfee T, Leonard N, Montgomery R.D., Siqueira J, Jarand C, Zekoski T, Drenski M.

11:10 0391 *Industrial Applications of Polymerization Reaction Engineering: The Contributions of Charles C. Cozewith* **Brinen J.L.** <ExxonMobil Chemical Company, Baytown, TX 77522-5200 USA>

11:30 0392 *High-Pressure Polymerization Process Technology: Modeling and Control of Polymeric Micro-Structure plus Safety Considerations* **Busch M.** <TU Darmstadt, Alarich-Weiss-Strasse 8, D-64560 Darmstadt, Germany>



11:50 End of Session

**HOS1 Salon 3**

**Honourary Symposium in Recognition of Sirish Shah for Outstanding Contributions in Systems and Control**

Organizer(s) - Bhusan Gopalunni and Biao Huang  
Chair(s) - Fan Yang and Jannatun Nahar

09:50 0393 *Process Design and Diagnostics using Advanced Physics and Data Enabled Models* \***Nandakumar K.** <Cain Department of Chemical Engineering, Louisiana State University, Baton Rouge, LA 70803 USA., >

10:10 0394 *Chattering Alarm Reduction Techniques* \***Brown K.** <ISA 18 - Alarm Management>

10:30 0395 *A Data-Driven Method to Detect Alarm Flood Patterns from Historical Alarm Data* \***Hu W.** <Department of Electrical & Computer Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Chen T.

10:50 0396 *Pattern Mining for Industrial Alarm Floods* \***Yang F.** <Department of Automation, Tsinghua University, Beijing 100084, China>, Guo C., Huang D., Xiao D.

11:10 0397 *Irrigation Scheduling for Water Conservation* **Nahar J.** <Department of Chemical and Materials Engineering, University of Alberta>, \***Liu J.**, **Shah S.L.**

11:30 End of Session

**HOW1 Salon 11**

**Honourary Symposium in Recognition of Sieghard E Wanke for Outstanding Contributions in Chemical Reaction Engineering**

Organizer(s) - Robert Hayes  
Chair(s) - Robert Hayes and Natalia Semagina

09:50 0398 *Sieg Wanke - A Leader in Catalyst Research* **Hayes R.E.** <University of Alberta>

**Keynote Lecture presented by Kevin J. Smith, University of British Columbia**

10:10 0399 *Stability of Pd Catalysts for Low Temperature Methane Oxidation Relevant to Natural Gas Vehicle Emission Control* \***Smith K.J.** <Department of Chemical and Biological Engineering, University of British Columbia, Vancouver, BC>

10:50 0400 *Structural Dynamics of Pd-Pt Clusters during Methane Oxidation Catalysis* Nie H., Geng H., Howe J., \***Chin Y.-H.** <Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, ON M5S 3E5>

11:10 0401 *Ageing Studies of Mixed Pt and Pd Catalysts for the Combustion of Lean Methane Mixtures* Istratescu G.M., \***Hayes R.E.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>

11:30 0402 *Intrinsic and Observed Synergism in Bimetallic Catalysis* Shen J., Scott R.W.J., Hayes R.E., Nassiri H., Mansouri A., Ziaei-Azad H., \***Semagina N.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>

11:50 End of Session

**Biotechnology and Biomedical Engineering**

**BIO3 Salon 12**

**BIO3**  
Organizer(s) - Todd Hoare, Hyo-Jick Choi, Ravin Narain and Dominic Sauvageau  
Chair(s) - Ravin Narain and Dominic Sauvageau

**Keynote Lecture presented by Elizabeth Gillies, Western University**

09:50 0403 *Stimuli-Responsive Polymers with Amplified Responses to Stimuli: Development and Applications for Controlled Drug Release* \***Gillies E.R.** <Department of Chemical and Biochemical Engineering, The University of Western Ontario, London, ON; Department of Chemistry, The University of Western Ontario, London, ON; Centre for Advanced Materials and Biomaterials Research, London, ON>

10:10 0404 *Connecting Microstructure and Rheological Properties of Poly(oligoethylene glycol methacrylate) Hydrogels for Biomedical Applications* **Malone R.** <University of Calgary, 2500 University Dr. NW, Calgary, AB T2N 1N4>, **Paron E.**, **Hoare T.**, \***Trifkovic M.**

10:30 0405 *Engineering Responsive and Biomimetic Hydrogels for Biomedical Therapeutic and Diagnostic Applications (BIOGEL)* Tsanaktsidou E., Kammona O., \***Kiparissides C.** <Chemical Process & Energy Resources Institute, CERTH; Department of Chemical Engineering, AUTH, Thessaloniki, Greece>

10:50 0406 *Overcoming Inhibition through Sequential Hydrolysis of Cedras deodara Wood Dust: A Novel Approach* \***Baksi S.** <Chemical Engineering Department, Jadavpur University, Kolkata-32, India>, \***Sarkar U.**

11:10 End of Session

**Chemical Engineering Education**

**EDU1 Salon 15/16**

**EDU1**  
Organizer(s) - Marnie Jamieson, Suzanne Kresta and Michel Perrier  
Chair(s) - Marnie Jamieson and Suzanne Kresta

**Keynote Lecture presented by Greg Evans, University of Toronto**

09:50 0407 *Moving Entropy and Elements from Chaos to Connections: Teaching Chemical Engineering in Turbulent Times* \***Evans G.J.** <Department of Chemical Engineering and Applied Chemistry, University of Toronto>

10:30 0408 *The Currency of Chemical Engineering Fluid Mechanics* **Lowry B.J.** <Department of Chemical Engineering, University of New Brunswick, Fredericton, NB E3B 5A3>

10:50 0409 *Design of a 4th-Year Chemical Engineering Problem-Based Lab Course to Promote the Development of Autonomy, Problem-Solving, Troubleshooting and Communication Skills* \***Potvin G.** <Department of Chemical and Biological Engineering, University of British Columbia>

11:10 0410 *Pump-pipeline System Design Cases for Introductory, Undergraduate Fluid Mechanics Courses* \***Sanders R.S.** <NSERC Industrial Research Chair in Pipeline Transport Processes, Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>

11:30 End of Session

**Chemical Engineering Fundamentals**

**FUN4 Salon 8**

**FUN4**  
Organizer(s) - Dimitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - David Nobes and Petr Nikrityuk

**09:50 0411** *Quantifying Air Bubble Characteristics Rising through a Mini-Slot inside a Rectangular Flow Channel using Shadow Image Velocimetry* **Soltani H.** <Optical Diagnostics Group, Department of Mechanical Engineering, University of Alberta, Edmonton, AB>, Sabbagh R., \*Nobes D.S.

**10:10 0412** *A New Model Determines Water Droplet Diameter in Water/Oil Emulsion Systems* **\*Goodarzi F.** <Faculty of Engineering and Applied Science, Memorial University, St. John's, NL>, \*Zendehboudi S.

**10:30 0413** *Phase-Bounded Finite Element Method for Two-Fluid Incompressible Flow Systems* **Treeratanaphitak T.** <Department of Chemical Engineering, University of Waterloo>, \*Abukhdeir N.M.

**10:50 0414** *A New Lattice-Boltzmann Method for the Simulation of Rarefied Flows in Complex Porous Media* **Tucny J.-M.** <École Polytechnique de Montréal, Montréal, QC H3C 3A7>, Vidal D., \*Bertrand F.

**11:10 0415** *Computational Fluid Dynamics Study of Viscous Fingering in Supercritical Fluid Chromatography* **Subraveti S.G.** <Department of Chemical and Materials Engineering, University of Alberta, 9211-116 St., Edmonton, AB T6G 1H9>, Nikrityuk P., \*Rajendran A.

**11:30 0416** *Interfacial Instabilities of Shear-Thinning/Newtonian Flow Displacements in Hele-Shaw Cells* **\*Lee Y.H.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB>, Azaiez J.

**11:50** End of Session

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## Colloids and Interfacial Sciences

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**COL2**

**Salon 6**

**COL2**

Organizer(s) - Edgar Acosta, Janet A.W. Elliott and Hongbo Zeng  
Chair(s) - Janet A.W. Elliott and Hongbo Zeng

**Keynote Lecture presented by Françoise Winnik, Université de Montréal**

**09:50 0417** *Colloids and Interface Science: Traditions and Perspectives* **Winnik F.M.** <Department of Chemistry, University of Montreal, Montreal QC, Department of Chemistry and Faculty of Pharmacy, University of Helsinki, Helsinki, Finland; Centre for Materials Nanoarchitectonics, NIMS, 1-1-Namiki, Tsukuba, Ibaraki, Japan>

**10:30 0418** *A Quantitative Approach for Producing Oil-Induced Wormlike Micelles, and their Use in Nanoparticle Stabilization* **\*Acosta E.** <University of Toronto, Department of Chemical Engineering and Applied Chemistry>, Choi F.

**10:50 0419** *Probing Molecular Interactions of Bitumen-Coated Mineral Solids in Organic Solvents* **Liu J.** <University of Alberta, Edmonton, AB T6G 2R3>, Cui X., Tan X., Liu Q., \*Zeng H.

**11:10 0420** *Modeling the Surface Tension of Binary Aqueous Mixtures as a Function of Composition and Temperature* **Shardt N.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, \*Elliott J.A.W.

**11:30 0421** *Electrophoretic Deposition for Defect Repair in Ceramic Membranes for Oil-Water Applications* **\*Siddiqui S.W.** <InnoTech ALBERTA, 250 Karl Clark Road, Edmonton, AB T6N 1E4>, Sarkar P.

**11:50** End of Session

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## Conventional and Unconventional Energy Sources

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**ENR3**

**Salon 9**

**ENR3**

Organizer(s) - Bruce Peachey and Japan Trivedi  
Chair(s) - Ali Telmadarreie and Japan Trivedi

**Keynote Lecture presented by Soheil Asgarpour, Petroleum Technology Alliance Canada**

**09:50 0422** *Clean Resource Innovation Network* **Asgarpour S.** <Petroleum Technology Alliance Canada>

**10:30 0423** *Pore-Scale Investigation of the Effect of Alkaline Additives on Recovery Factor and Flow Behaviour in SAGD Process* **\*Etemad S.** <University of Calgary, Calgary, AB, >, Behrang A., \*Kantzas A.

**10:50 0424** *Uncertainty Analysis Applied to SAGD Reservoirs* **\*Hajipour S.** <Process Ecology Inc., Calgary, AB>, \*Alva-Argaez A., Khoshkbarchi M.

**11:10 0425** *Experimental k-value, Density and Viscosity Data of Pentane-Athabasca Bitumen-Methane System with Application of ES-SAGD Process* **Zirrahi M.** <University of Calgary>, Haddadnia A., \*Hassanzadeh H., \*Abedi J.

**11:30 0426** *Flow of Viscous Fluid through a Rectangular Slot in the Presence of Porous Media at the Inlet* **Yusuf Y.** <Department of Mechanical Engineering, University of Alberta, Edmonton, AB>, Sabbagh R., Baldygin A., \*Nobes D.S.

**11:50** End of Session

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## Electrochemistry and Electrochemical Engineering

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**ELC1**

**Salon 5**

**ELC1**

Organizer(s) - Partha Sarkar

**Keynote Lecture presented by Venkataraman Thangadurai, University of Calgary**

**09:50 0427** *Electrolyte and Electrode Materials for Solid Oxide Fuel Cells* **\*Thangadurai V.** <Department of Chemistry, University of Calgary, 2500 University Dr. NW, Calgary, AB T2N 1N4>, Singh K., Cao C., Abubaker A.A.

**10:30 0428** *Trapping and Redistribution of Sulfur Weimarn Sols in Graphene/Polyethyleneimine Networks for Ultra-Stable, High Loading, Sulfur Cathodes with Low Self-Discharge* **Ghosh D., Gad M., Lau I., \*Pope M.A.** <University of Waterloo>

**10:50 0429** *Estimating the Properties of Thin Porous Materials using Indentation Dynamic Mechanical Analysis* **\*Unno J.** <McGill University>, \*Gostick J.T., Leask R.L.

**11:10 0430** *Tetragonal Zirconia as Next Generation Support for Dry Reforming Solid Oxide Fuel Cell* **Amiri T.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AIB T6G 1H9>, Hanifi A.R., Etsell T.H., Luo J., Sarkar P.

**11:30 0431** *The Interplay between Pore Structure and Electrode Performance: A Pore Network Modeling Study* **\*Sadeghi M.** <McGill University>, Aghighi M., Barralet J., \*Gostick J.T.

**11:50** End of Session

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## Environmental Engineering and Waste Management / Oil Spill Recovery

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**ENV3**

**Salon 13/14**

**ENV3**

Organizer(s) - Bing Chen, Bipro Dhar, Madhumita Ray and Stanislav Stoyanov  
Chair(s) - Stanislav Stoyanov and Lindsay Hounjet

**Keynote Lecture presented by Heather Dettman, Natural Resources Canada**

**09:50 0432** *All Around the Circle with Hydrocarbons* \***Dettman H.D.** <Natural Resources Canada, CanmetENERGY, 1 Oil Patch Dr., Devon, AB T9G 1A8>

**10:30 0433** *Resurfacing of Chemically-Dispersed and Bio-Dispersed Oil in Frazil Ice-Covered Seawater* \***Song X.** <Northern Region Persistent Organic Pollution Control (NRPOP) Laboratory, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, \*Chen B., Zhang B., Lye L., Zhang K.

**10:50 0434** *Sorption of Organic Liquids on Kaolinite and Illite Clays in Industrial Process and Natural Environments* \***Pourmohammadbagher A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, Shaw J.M.

**11:10 0435** *Effects of Salinity and pH on the Distribution of Diluted Bitumen Products in Water* \***Hounjet L.J.** <CanmetENERGY, Natural Resources Canada, 1 Oil Patch Dr., Devon, AB T9G 1A8>, Tong J., \*Stoyanov S.R.

**11:30 0436** *Preparation and Application of Low-Cost Ceramic Membranes for Treatment of Oily Wastewater* **Agarwal A.** <Department of Chemical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad-826004, India>, \*Samanta A., Mandal A., Nandi B.K.

**11:50** End of Session

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### Micro and Nanofluidics

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**FLD1 Salon 7**

**FLD1**

Organizer(s) - Neda Nazemifard and David Sinton

**09:50 0437** *Nanofluidics: Direct Observation of Fluid Behaviors at Sub-10 nm for Unconventional Reservoirs* **Junjie Z.** <University of Toronto>, Seyed H.Z., Huawei L., Bo B., Aaron P.H., Farshid M., \*David S.

**10:10 0438** *Water Based Heavy Oil Recovery: A Microfluidic Approach* **Bazazi P.** <Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>, \*Hejazi S.H., Sanati-Nezhad A.

**10:30 0439** *Microfluidic Assessment of CO<sub>2</sub>-Oil Phase Behavior: Oil Swelling and Extraction* **Sharbatian A.** <Department of Mechanical and Industrial Engineering and Institute for Sustainable Energy, University of Toronto, 5 King's College Rd, Toronto, ON M5S 3G8>, Abedini A., Qi Z., Sinton D.

**10:50 0440** *Microfluidic Evaluation of Mutual Diffusion Coefficient using Image Processing Technique* **Keshmiri K.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4 AB>, \*Haibo H., \*Nazemifard N., Pourmohammadbagher M.

**11:10 0441** *The Effect of Rheology on the Measured Velocity in Capillary Tubes* **Sabbagh R.** <Department of Mechanical Engineering, University of Alberta, Edmonton, AB>, Waghmare P.R., \*Nobes D.S.

**11:30 0442** *Surface Modification of Microchips with Geo-Materials by Using Layer-by-Layer (LbL) Assembly Technology* \***Zhang Y.** <Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>, Sanati-Nezhad A., \*Hejazi S.H.

**11:50** End of Session

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### Process Safety and Risk Management

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**PSM3 Salon 10**

**PSM3**

Organizer(s) - Lianne Lefsrud, Norman Nibber and Gord Winkel  
Chair(s) - Norm Nibber and Anuar Caldera

**Process Safety and Risk Management Plenary Lecture presented by Fred Henselwood, NOVA Chemicals**

**09:50 0443** *The Use of Inherent Layers of Protection to Create Line-of-Sight between Individual Activities and Process Safety Performance* \***Henselwood F.W.** <Nova Chemicals>

**10:50 0444** *Process Safety Implementation in a Greenfield Refinery Project in Alberta* \***Thomas T.** <Integration Commissioning and Startup, NWR Partnership>, Belyea R., Holuk R.

**11:20 0445** *Safety Aspects of Floating LNG: Preliminary Inherent Safer Design Selection of Liquefaction Process* **Shah D.** <Faculty of Engineering, University of Alberta, Edmonton, AB>, \*Lefsrud L.M.

**11:50** End of Session

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### Systems and Control

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**SYS3 Salon 4**

**SYS3**

Organizer(s) - Stevan Dubljevic, Zukui Li and Jinfeng Liu  
Chair(s) - Yuri Shardt and Biao Huang

**09:50 0446** *Using Normal Probability Plots to Determine Parameters for Higher-Level Full Factorial Experiments with Orthogonal and Orthonormal Bases* **Donnelly T.** <Department of Chemical Engineering, University of Waterloo>, \*Shardt Y.A.W.

**10:10 0447** *Reconstruction of Missing Data in Vector Autoregressive (VAR) Processes* **Agarwal P.** <Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai, 600036, India>, Tangirala A.K.

**10:30 0448** *Robust Gaussian Process Regression with a Mixture of Gaussian Likelihood using Em Algorithm* \***Daemi A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G-2G6>, Hariprasad K., \*Huang B.

**10:50 0449** *Estimation of Random Time Delay for Soft Sensors* **Vasile A.** <Department of Chemical Engineering, University of Waterloo>, Yang X., \*Shardt Y.A.W.

**11:10 0450** *Design of Equipment and Process Condition Monitoring using Data Analytics* \***Fuxman A.** <Honeywell Process Solutions, 500 Brooksbank Ave., North Vancouver, BC V7J 3S4>, Germann D., Stewart G.

**11:30 0451** *Data Mining and Optimization of SAGD Process* **Li C.** <University of Alberta, Edmonton, AB T6G 2R3>, Magbool Jan N., \*Huang B.

**11:50** End of Session

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### Upgrading and Tailings Reduction

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**UPG1 Salon 1**

**UPG1**

Organizer(s) - Jinwen Chen, William McCaffrey, Richard Nelson and Yuming Xu  
Chair(s) - Richard Nelson and Feng Lin

**Keynote Lecture presented by John Brogly, Canada's Oil Sands Innovation Alliance**

**09:50 0452** *Improving the Environmental Performance of Oil Sands Tailings: An Update* **Brogly J.** <COSIA, Canada's Oil Sands Innovation Alliance>

**10:30 0453** *Flocculation of MFT by Hydrophobically-Modified Polyacrylamide Copolymers: Impact of Copolymer Microstructure on Flocculation and Dewatering* **Hripko J.** <Department of Chemical and Materials Engineering, University of Alberta>, \*Vajihinejad V., Motta F.L., \*Soares J.B.P.

**10:50 0454** *Functionalized Polyethylenes as Flocculants for Treatment of Oil Sands Tailings* **Rostami Najafabadi Z.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2G6>, \*Soares J.B.P.

**11:10 0455** *A Model Study on Water Soluble Polymeric Nanofibers for Rapid Flocculation and Enhanced Dewatering of Fine Oil Sands Tailings Simulated Through Kaolin* **Afacan C.** <University of Alberta, Department of Chemical and Materials Engineering, 9211 - 116 St., Edmonton, AB T6G 1H9>, \*Narain R., Soares J.B.P.

**11:30 0456** *Poly(methyl acrylate), a Viable Alternative for the Conventional Acrylamide-Based Polymers in Treatment of Oil Sands Tailings* **Njiru O.K.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Vajihinejad V., \*Soares J.B.P.

**11:50** End of Session

## Tuesday PM

### Plenary

PLEN

Hall B

#### Plenary

Organizer(s) - João Soares and Arvind Rajendran  
Chair(s) - Biao Huang

**R. S. Jane Memorial Award Plenary Lecture presented by Sirish Shah, University of Alberta**

**13:30 0457** *From Autonomous Cars to Autonomous Processes: Hype or Reality?* \*Shah S.L. <University of Alberta>

**14:30** End of Session

### Honourary Symposia

HOP4

Salon 2

#### Honourary Symposium in Recognition of Archie Hamielec, Harmon Ray and Charles Cozewith for Outstanding Contributions in Polymer Reaction Engineering

Organizer(s) - Jeff Brinen, Robin Hutchinson, João Soares and Shiping Zhu  
Chair(s) - Robin Hutchinson and Markus Busch

**14:30 0458** *Amphiphilic Block-Random Copolymers: A Thermodynamically Driven Emulsion Polymerization Mechanism?* George S.R., Champagne-Hartley R., Deeter G.A., Campbell J.D., Reck B., Urban D., \*Cunningham M.F. <Department of Chemical Engineering, Queen's University, Kingston, ON K7L 3N6>

**14:50 0459** *Catalytic Emulsion Polymerization of Acetylenic Monomers for Well-Defined Ultra-Small Carbon Nanospheres for Supercapacitive Energy Storage* \*Ye Z. <Department of Chemical and Materials Engineering, Concordia University, Montreal, QC; Bharti School of Engineering, Laurentian University, Sudbury, ON>, Tiwari V., Chen Z.

**15:10 0460** *Effect of Hydrogen on the Molecular Weight of Polyolefins - Non-Linear Response Curves* \*Paulik C. <Johannes Kepler University Linz, Altenbergerstrasse 69, 4040 Linz, Austria>, Garoff T., Kreuzer A., Saeed I.

**15:30 0461** *Online Measurement of Polymer Properties: Benefits, Challenges and Comparison of Current Options* **Floyd S.** <Fluence Analytics, 1078 S. Gayoso St., New Orleans, LA 70125 USA>, \*Drenski M., Brahmabhatt T.

**15:50 0462** *Applications of Process Engineering Fundamentals to Polymer Technology Commercialization* **Schiffino R.** <Wilmington, DE 19807 USA>

**16:10** Coffee Break

**16:30 0463** *State Estimation of Polymerization Processes Having Delayed Lab Measurements* **Rawlings J.B.** <Department of Chemical and Biological Engineering, University of Wisconsin, Madison, WI 53706 USA>, Arnold T.J.

**16:50 0464** *Modeling Vapor Solubility in Semi-Crystalline Polyethylene* \*Greenhalgh B.R. <ExxonMobil Chemical Company>, Moebus J.A.

**17:10 0465** *Steady-State Solution for the Molecular Weight Distribution in the Autoclave LDPE Process* \*Saldívar-Guerra E. <Centro de Investigación en Química Aplicada, Saltillo, Mexico>, \*López-Carpy B., García-Franco C.

**17:30 0466** *Dynamic Optimization of a Semibatch Polymerization Process* \*Villa C. <Dow Chemical>

**17:50 0467** *Estimation of Polymerization Rate Constants using Experimental Residence Time Studies in Industrial Pilot Plant Equipment* \*Karjala T.W. <The Dow Chemical Company>, Kolthammer B.W.S., Zhang M., Jain P.

**18:10** End of Session

HOS2

Salon 3

#### Honourary Symposium in Recognition of Sirish Shah for Outstanding Contributions in Systems and Control

Organizer(s) - Bhushan Gopalunni and Biao Huang  
Chair(s) - Stevan Dujljevic and Syed Imtiaz

**Keynote Lecture presented by Arun K. Tangirala, Indian Institute of Technology Madras**

**14:30 0468** *From Data to Directionality: Reconstruction of Causal Networks for Dynamic Multivariable Processes* **Garg A., \*Tangirala A.K.** <Department of Chemical Engineering, IIT Madras, Chennai 600036, India>

**15:10 0469** *ASPR Based Adaptive Output Feedback Control with Output Predictive Feedforward Input and its Evaluation through Experiments on Two-Tank System* \*Mizumoto I. <Kumamoto University, 2-39-1 Kurokami, Chuo-ku, Kumamoto 860-8555, Japan>, Fujii S.

**15:30 0470** *Collaborative Content Creation through Open Source Process Simulators for Learning and Employment* \*Moudgalya K.M. <Department of Chemical Engineering, IIT Bombay 400 076, India>

**15:50 0471** *Observer and Kalman Filter for Linear Transport-Reaction Processes* \*Dujljevic S. <Chemical and Materials Engineering Department, University of Alberta>

**16:10** Coffee Break

**16:30 0472** *Data-Driven Modeling: Two Methodological Generalizations* \*Georgakis C. <Chemical and Biological Engineering, and Systems Research Institute, Tufts University, Medford, MA 02155 USA, >

**16:50 0473** *Application of a Combined Qualitative-Quantitative Fault Detection and Diagnosis Method to a CSTR* \*Samavedham L. <Department of Chemical and Biomolecular Engineering, National University of Singapore, Singapore 117585>

**17:10 0474** *Diagnosis of Root Cause of Process Fault using BN with Multiple Uncertain Evidence* **Amin M.T.** <Centre for Risk Integrity and Safety Engineering, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, \*Imtiaz S.A., Khan F.I.

**17:30 0475** *Objective Functions for Estimating Parameters in Nonlinear Dynamic Models with Stochastic Disturbances* \*Karimi H., \*McAuley K.B. <Department of Chemical Engineering, Queen's University, Kingston, ON K7L 3N6>

**17:50 0476** *Simultaneous Input and State Estimation using Expectation Maximization (EM) Algorithm* **Khan M.A.I.** <Centre for Safety and Risk Engineering, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, <sup>†</sup>Imtiaz S.A., Khan F.I.

**18:10** End of Session

**HOI1 Salon 13/14**

**Honourary Symposium in Recognition of Eddy Isaacs for Outstanding Contributions to Energy and Environment**

Organizer(s) - John Zhou  
Chair(s) - Gord Lambert and Tom Corscadden

**Keynote Lecture presented by Jacob H. Masliyah, University of Alberta**

**14:30 0477** *Role of Colloidal and Interfacial Science in Bitumen Extraction from Athabasca Oil Sands* **Masliyah J.H.** <University of Alberta>, Xu Z.

**15:10 0478** *Applications for Colloid Chemistry in the Oil Field* **Chow R.** <InnoTech Alberta Inc>

**15:30 0479** *Adding Value to Alberta's Energy Resources-Opportunities and Challenges* **DuPlessis D.** <Alberta Innovates, 2450, 801-6 Ave. SW, Calgary, AB T2P 3W2>

**15:50 0480** *Commercialization of the DSU™ Process One Miracle at a Time!* <sup>†</sup>**Camarta N.** <Field Upgrading Ltd., Calgary, AB>

**16:10 Coffee Break**

**16:30 0481** *Opportunities for Partial Upgrading of Bitumen* <sup>†</sup>**Gray M.R.** <Alberta Innovates; Department of Chemical and Materials Engineering, University of Alberta>

**16:50 0482** *Integrated Solid Waste Management: Enerkem's World-First Waste to Biofuels Facility in Edmonton* **Lynch D.C.** <Enerkem Inc, 250 Aurum Road NE, Site 306, Edmonton AB T6S 1G9>

**17:10 0483** *The Global Transformation of the Hydrocarbon Energy Industry: Moving from a Resource-Driven Sector to a Technology-Driven Sector* **Asgarpour S.** <PTAC Petroleum Technology Alliance Canada>

**17:30 0484** *Path to Deployment: Suncor's Technology Journey* <sup>†</sup>**Bunio G.** <Suncor Energy>

**17:50 0485** *Collaborating for Innovation-The Alberta-Canada MOU* **Siewe C.** <CanmetENERGY-Devon, Department of Natural Resources, Devon, AB>

**18:10** End of Session

**HOW2 Salon 11**

**Honourary Symposium in Recognition of Sieghard E Wanke for Outstanding Contributions in Chemical Reaction Engineering**

Organizer(s) - Robert Hayes  
Chair(s) - Robert Hayes and Natalia Semagina

**14:30 0486** *Catalytic Hydrodeoxygenation of Biomass Pyrolysis Derived Bio-Oil: A Combined Theoretical and Experimental Study using Furfural as a Model Compound* <sup>†</sup>**Mushrif S.H.** <School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore>, Banerjee A., Ansari K.B.

**14:50 0487** *Making Fuels from CO<sub>2</sub>: Thermocatalytic Conversion of CO<sub>2</sub> into Renewable Synthetic Fuels* <sup>†</sup>**Simakov D.S.A.** <University of Waterloo>

**15:10 0488** *Petroleum Coke as a Catalyst Precursor* Montes V., Hazlett M.J., <sup>†</sup>**Hill J.M.** <Department of Chemical & Petroleum Engineering, University of Calgary>

**15:30 0489** *Removal of Nitrogen and Sulfur Compounds from Gas Oil via Selective Adsorption over Functionalized Polymers and Catalytic Hydrotreating* <sup>†</sup>**Dalai A.K.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, Misra P., Badoga S., Adjaye J.

**15:50 0490** *How to Use Microstructural Deconvolution Techniques to Quantify Multiple Site Types on Ziegler-Natta Catalysts* <sup>†</sup>**Soares J.B.P.** <University of Alberta>, Chen K., Mehdiabadi S.

**16:10** End of Session

**Biotechnology and Biomedical Engineering**

**BIO4 Salon 12**

Organizer(s) - Todd Hoare, Hyo-Jick Choi, Ravin Narain and Dominic Sauvageau  
Chair(s) - Hyo-Jick Choi and Ravin Narain

**Hatch Innovation Award Lecture and The Canadian Journal of Chemical Engineering Lectureship Award Lecture presented by Alison McGuigan, University of Toronto**

**14:30 0491** *Engineered Tissue Platforms for Probing Fundamental Tissue Biology and Identifying Novel Therapeutics* <sup>†</sup>**McGuigan A.P.** <University of Toronto, Department of Chemical Engineering and Applied Chemistry; University of Toronto, Institute for Biomaterials and Biomedical Engineering>

**15:10 0492** *Crosslinking of Pressurized Gas Expanded Liquid Polymer Morphologies to Create Macroporous Hydrogel Scaffolds* <sup>†</sup>**Johnson K.** <McMaster University>, Muzzin N., Cusack M., Hoare T., Latulippe D.

**15:30 0493** *Mechanism of Transition to Conduction Block in Cardiac Tissue after a Mechanical Impact* <sup>†</sup>**Hazim A.** <Department of Biomedical Engineering, University of Alberta, Edmonton, AB>, Belhamadia Y., Dubljevic S.

**15:50 0494** *Contactless Analysis of Proliferating E. Coli on Microfluidic Thin-Films to Develop Non-Invasive Microwave Biosensing Technology* **Narang R.** <BioMEMS and Bioinspired Microfluidic Laboratory, University of Calgary, ; Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>, <sup>†</sup>Sanati-Nezhad A., <sup>†</sup>Zarifi M.H., Hejazi S.H., Daneshmand M.

**16:10 Coffee Break**

**16:30 0495** *Design of Bioreactor Operating Profiles for the Optimal Production of Polyhydroxybutyrate (PHB) via Model-Based Fed-Batch Strategies* Penloglou G., <sup>†</sup>**Kiparissides C.** <Chemical Process and Energy Resources Institute, CERTH; Department of Chemical Engineering, AUTH, Thessaloniki, Greece>

**16:50 0496** *Polyhydroxybutyrate Depolymerase from *Marinobacter algicola* DG893: From Putative to Validated Activity* **Martínez-Tobón D.I.** <Department of Chemical and Materials Engineering, University of Alberta>, Waters B., Elias A., <sup>†</sup>Sauvageau D.

**17:10 0497** *Engineering of *Pichia pastoris* for the Production of (2R, 3R)-2, 3-Butanediol* **Yang Z.L.** <Department of Chemical and Biological Engineering, University of Ottawa, Ottawa, ON K1N 6N5, >, <sup>†</sup>Zhang Z.S.

**17:30 0498** *The Application of a Switchable Solvent to the Extraction of Polyhydroxybutyrate from Methanotrophic Bacteria* **Lawley M.** <University of Alberta, Chemical and Materials Engineering>, <sup>†</sup>Sauvageau D., Stein L.Y.

**17:50 0499** *A New Design of Polymeric Nanobio Composite-Based Biosensor for Simultaneous Detection of Hypoxanthine, Xanthine and Uric Acid* <sup>†</sup>**Sen S.** <Department of Polymer Science & Technology, University of Calcutta, 92 A P C Rd., Kolkata-700009 India>, <sup>†</sup>Sarkar P.

18:10 End of Session

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## Chemical Engineering Education

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EDU2

Salon 15/16

### EDU2

Organizer(s) - Marnie Jamieson, Suzanne Kresta and Michel Perrier  
Chair(s) - Michel Perrier and Greg Evans

**14:30 0500** *Contemplations on the Textbook of 2020 by a Textbook Author* **Lucy C.A.** <Department of Chemistry, Gunning/Lemieux Chemistry Centre, University of Alberta, Edmonton, AB T6G 2G2>

**14:50 0501** *Developing Digital Tools to Support First-Year Students* **Gilbert B.** <University of Calgary>, Musgrove A., Sandblom N.T.A.

**15:10 0502** *Smart Comsol Teaching Apps Use in Fluid Mechanics Class* **\*Edali M.** <Department of Chemical Engineering, University of Waterloo; Department of Chemical Engineering, Almergib University>, Sahem Z., Ben Rajeb F., Elkamel A.

**15:30 0503** *Student and Instructor Satisfaction and Engagement with Blended Learning in Chemical Engineering Design* **\*Jamieson M.V.** <Department of Chemical and Materials Engineering, Faculty of Engineering, University of Alberta>, \*Shaw J.M.

**15:50 0504** *Empowering Engineering Students in Ethical Risk Management* **\*Guntzburger Y** <CIRANO; Polytechnique Montréal>, Pauchant T.C., Tanguy P.A.

### 16:10 Coffee Break

**16:30 0505** *Enhancing Soft Skills in Engineering Laboratory Courses* **\*Ahmed S.** <Memorial University of Newfoundland>

**16:50 0506** *Applying Metacognitive Strategies to Teaching Engineering Innovation, Design and Leadership* **\*Jamieson M.V.** <Department of Chemical and Materials Engineering, Faculty of Engineering, University of Alberta>, \*Shaw J.M.

**17:10 0507** *Course Design for Curriculum Internationalization: Project-Based International Learning Experience @Home* **\*Stefanova A.** <Northern Alberta Institute of Technology>, Bandali Z., Kùlah G., Ayranci I.

**17:30 0508** *A Survey of Requirements for Language Courses in Accredited Engineering Programs across Canada: Responses to CEAB Requirements* **\*Abdulnabi A.** <Department of Civil and Environmental Engineering, University of Alberta>, Kresta S.M.

17:50 End of Session

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## Chemical Engineering Fundamentals

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FUN5

Salon 8

### FUN5

Organizer(s) - Dmitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - Janet A.W. Elliott and Alexandra Komrakova

**14:30 0509** *Molecular-Based Chemical Reaction Equilibrium Calculation by Kinetic Monte Carlo Simulation* **Kelly B.** <University of Guelph, Guelph, ON N1G 2W1>, \*Smith W.R.

**14:50 0510** *An Investigation of Kinetic Study of Non-Catalytic Heterogeneous Reactions with Solid Phase Structural Changes and Sintering during Chemical Reaction* **\*Sedghkerdar M.H.** <Gas, Oil and Petrochemical Engineering Department, Persian Gulf University, Bushehr 7516913817, Iran>, Azari A., Houshang M.A., Mahinpey N.

**15:10 0511** *Comparison of the Osmotic Virial Equation with the Margules Activity Model and their Application to Solid-Liquid Equilibrium* **Zargarzadeh L.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9, >, Elliott J.A.W.

**15:30 0512** *A Mild Synthetic Route for the Production of Ni-Aegirine Nanocatalysts for Selective Hydrogenation of Olefinic Molecules* **\*Sebakhy K.** <University of Calgary>, Vitale G., \*Pereira-Almao P.

**15:50 0513** *Theoretical Study on Interactions between Ionic Liquids and Model Naphthenic Acids* **Wu C.** <Department of Chemical and Petroleum Engineering, University of Calgary, >, De Visscher A., \*Gates I.D.

16:10 End of Session

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## Colloids and Interfacial Sciences

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COL3

Salon 6

### COL3

Organizer(s) - Edgar Acosta, Janet A.W. Elliott and Hongbo Zeng  
Chair(s) - Hongbo Zeng and Edgar Acosta

**14:30 0514** *Probing the Fouling Mechanism on Pipe Liner Slot in Oil Production by Direct Force Measurements* **Gong L.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Wang J., Shi X., Leitch M., Luo J., \*Zeng H.

**14:50 0515** *The Dissolution of a Sheared Water Drop in Bitumen Measured using a Novel Microfluidic Platform* **\*Goel S.** <Department of Chemical Engineering and Applied Chemistry, University of Toronto, Toronto, ON>, Ng S., Acosta E., \*Ramachandran A.

**15:10 0516** *Synergistic Interaction in Emulsions Stabilized by a Mixture of Graphene Oxide and Polymers* **Jahandideh H.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary>, Bryant S.L., \*Trifkovic M.

**15:30 0517** *Developing a Non-Fouling Hybrid Microfluidic Device for Applications in Circulating Tumour Cell Detections* **Qin Y.** <Department of Chemical and Biological Engineering, University of Ottawa, 161 Louis Pasteur, Ottawa, ON K1N 6N5>, \*Cao X.

**15:50 0518** *Metal Nanoparticles in Biosolids from Municipal Wastewater Treatment Plants* **Abdul Rahim A.** <Department of Civil Engineering and Applied Mechanics, McGill University, Montreal, QC H3A 0C3>, \*Ghoshal S.

### 16:10 Coffee Break

**16:30 0519** *A Study of Rolling Circle Amplification and its Application in E. coli O157:H7 Detection using a Microfluidic System* **Jiang Y.** <Department of Chemical and Biological Engineering, University of Ottawa, 161 Louis Pasteur, Ottawa, ON K1N 6N5; Measurement Science and Standards, National Research Council Canada, 100 Sussex Drive, Ottawa, ON K1A 0R6>, Zou S., \*Cao X.

**16:50 0520** *Non-Isothermal Vapour-Liquid Phase Diagrams for Binary Mixtures with Interfacial Curvature* **Shardt N.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, \*Elliott J.A.W.

**17:10 0521** *Polymer Structure and Water States in Salt-Containing Polyampholyte Hydrogels* **Li X.D.** <Department of Chemical and Materials Engineering, University of Alberta>, Elliott J.A.W., Lee B.D., \*Chung H.-J.

**17:30 0522** *Detection and Fate of Engineered Nanoparticles in Lake Waters* **Rao S.** <Department of Civil Engineering and Applied Mechanics, McGill University>, \*Ghoshal S.

17:50 End of Session

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## Conventional and Unconventional Energy Sources

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ENR4

Salon 9

ENR4

Organizer(s) - Bruce Peachey and Japan Trivedi  
Chair(s) - Harvey Yarranton and Bruce Peachey

**14:30 0523** *Labscale Investigation of Polymer Solution Injection to Improve Heavy Oil Recovery: Effect of Periodic Injection Pressure* <sup>†</sup>Upreti S.R., Chan P., <sup>§</sup>Manzoor A. <Ryerson University, Victoria St., Toronto, ON>

**14:50 0524** *An Experimental Approach to Investigating Permeability Reduction Caused by Asphaltene Deposition in Porous Media* **Kordestany A.** <University of Calgary>, Abedi J., <sup>§</sup>Hassanzadeh H.

**15:10 0525** *Fouling Behaviour of Bitumen Partial Upgrading Products* **King T.** <Natural Resources Canada, CanmetENERGY>, Alem T., Ali M., Rana S., Chen J.

**15:30 0526** *Probing the Surface Forces in Bitumen Extraction using a Bubble Probe AFM* **Xie L.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, <sup>†</sup>Zeng H.

**15:50 0527** *Generalized Phase Diagram for Heavy Oil and Bitumen + Diluent Mixtures* <sup>§</sup>Amani M.J., <sup>†</sup>Shaw J.M. <Department of Chemical and Materials Engineering, University of Alberta>

### 16:10 Coffee Break

**16:30 0528** *Analysis of Froth Separation Behavior during Induction Time for Poor Quality Froth* **Xu R.** <Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, <sup>†</sup>Saraka C., <sup>†</sup>Bhattacharya S., Ng S., <sup>§</sup>Kresta S.M.

**16:50 0529** *Differences between C5 Asphaltenes and Nanoparticulate Materials in Athabasca Bitumen* <sup>§</sup>Pourmohammadbagher A. <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, Shaw J.M.

**17:10 0530** *Design and Construction of a Continuous, Pilot-Scale Flotation Facility* <sup>†</sup>Lin F. <Natural Resources Canada>, Xu Y., Nelson R.

**17:30 0531** *The Effect of Air on the Kinetics of Asphaltene Precipitation* **Duran J.A.** <University of Calgary, Department of Chemical and Petroleum Engineering, 2500 University Dr. NW, Calgary, AB>, Schoegg F.F., <sup>†</sup>Yarranton H.W.

**17:50** End of Session

## Electrochemistry and Electrochemical Engineering

ELC2

Salon 5

### ELC2

Organizer(s) - Partha Sarkar

**14:30 0532** *The Effect of Iodide Based Ionic Liquids on Electrochemical Performance of Zinc Iodide Batteries* <sup>†</sup>Shakeri Hosseinabad F. <Department of Chemical and Petroleum Engineering>, Yasri N., Fofana D., Roberts E.P.L., Roesler R.

**14:50 0533** *The Effects of Flow Rate and Temperature on Pitting Corrosion of Industrial Metals in Potash Brine* <sup>†</sup>Coller A.S. <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK>, Kennell G.F., <sup>§</sup>Evitts R.W.

**15:10 0534** *Monitoring the Proton Gradients in an Electrocoagulation Cell by Ratiometric Fluorescent Probes* **Fuladpanjeh-Hojaghan B.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, <sup>†</sup>Trifkovic M., <sup>§</sup>Roberts E.P.L.

**15:30 0535** *Use of Devanathan-Stachurski Electrochemical Permeation Test to Study Diffusion of Hydrogen in API 5L X70 Pipeline Steel* **Izadi H.** <Materials and Metallurgical Engineering Department, Ferdowsi University of Mashhad, Mashhad, Iran>, Tavakoli M., Moayed M.H.

### 15:50 Coffee Break

**16:30 0536** *Modified Chemical Activation of Biochar for Electrochemical Capacitive Applications* <sup>†</sup>Dehkhoda A.M., Caplin J., <sup>§</sup>Ellis N. <Department of Chemical and Biological Engineering, The University of British Columbia>

**16:50 0537** *Decorating Graphene Oxide with Ionic Liquid Nanodroplets: An Approach Leading to Energy Dense, High Voltage Supercapacitors* She Z., Ghosh D., <sup>†</sup>Pope M.A. <University of Waterloo>

**17:10 0538** *Electrochemical Technologies for Water Purification* <sup>†</sup>Halali M.A. <McMaster University, Hamilton, ON>, de Lannoy C.-F.

**17:30 0539** *Electrochemical Fabrication of Nanostructured Pseudo-Capacitive Materials for Supercapacitor* Huang Z., <sup>†</sup>Liu X. <Northeastern University, China>

**17:50** End of Session

## Environmental Engineering and Waste Management / Oil Spill Recovery

ENV4

Salon 7

### ENV4

Organizer(s) - Bing Chen, Bipro Dhar, Madhumita Ray and Stanislav Stoyanov  
Chair(s) - Stanislav Stoyanov and Lindsay Hounjet

**16:30 0540** *The Environmental Forensics and Spill Response for the 2016 Pipeline Spill in the North Saskatchewan River* <sup>†</sup>Shah K. <Emergencies Science & Technology Section, Environment and Climate Change Canada, 335 River Road, Ottawa, ON K1V 1C7>

**16:50 0541** *Factorial Design Study of Diluted Bitumen and Conventional Crude Behaviour in Water Environments* **Farooqi H.** <University of Alberta, Department of Chemical and Materials Engineering, Edmonton, AB; Natural Resources Canada, CanmetENERGY, Devon, AB>, Kresta S.M., Dettman H.D.

**17:10 0542** *Spill Management Research in a Simulated Flowing Water Ecosystem at the Proposed Facility for Oilfield Release Testing and Training (FORTT)* **Levy J.S.** <InnoTech Alberta>, Wagg B.T.

**17:30 0543** *Microbial Communities and their Natural Attenuation in Diesel Contaminated Sites in Northern Labrador* Zhu Z., Cai Q., **Chen B.** <Faculty of Engineering and Applied Science, Memorial University, St. John's, NL A1B 3X5>, Liu B., <sup>†</sup>Zhang B.

**17:50 0544** *Amylopectin-Based Solidifier for Oil Spill Recovery* **Motta F.L.** <Department of Chemical and Materials Engineering, University of Alberta, ; Natural Resources Canada, CanmetENERGY, Devon, AB>, <sup>†</sup>Stoyanov S.R., Soares J.B.P.

**18:10** End of Session

## Micro and Nanofluidics

FLD2

Salon 7

### FLD2

Organizer(s) - Neda Nazemifard and David Sinton

**Keynote Lecture presented by Sibani Lisa Biswal, Rice University**

**14:30 0545** *Microfluidic Visualization for Multiphase Flows in Porous Media* <sup>†</sup>Biswal S.L. <Rice University, Houston, TX USA>

**15:10 0546** *Flow Visualization and Pressure Calculation of Electrokinetically Driven Flows through Slots in SAGD Process* **Ansari S.** <Department of Mechanical Engineering, University of Alberta, Edmonton, AB>, Sabbagh R., <sup>†</sup>Nobes D.S.

**15:30 0547** *Direct Observation of Liquid to Vapour Transition of Hydrocarbons Confined in Two-Dimensional Nanoporous Media* **Jatukaran A.** <Department of Mechanical and Industrial Engineering, University of Toronto, Toronto, ON M5S 3G8>, Mostowfi F., <sup>§</sup>Sinton D.

**15:50 0548** *Diffusion Measurement using Multiplexed Microfluidics* **Doan-Prevost J.** <Interface Fluidics>, Bao B., de Haas T.

**16:10** End of Session

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### Process Safety and Risk Management

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#### PSM4 Salon 10

##### PSM4

Organizer(s) - Lianne Lefsrud, Norman Nibber and Gord Winkel  
Chair(s) - Gord Winkel and Dhaval Shah

**14:30 0549** *Practical Application of Bowtie Analysis: Enhancing Traditional PHA* **Sneddon J.** <Risktec Solutions (Canada) Ltd>, Ormerod G.

**15:00 0550** *Risk Ranking Tool for Railway Transport of Dangerous Goods in Canada* **Macciotta R., Robitaille S.** <Canadian National Railways>, Hendry M., Martin C.D.

**15:30 0551** *Comparison of the New Canadian PSM Standard CSA Z767 to Existing PSM Standards* **Brouillard G.** <GCM Consultants, 9496 boul. du Golf, Montréal, QC H1J 3A1>

**16:00 Coffee Break**

**Process Safety and Risk Management Award Lecture to be presented by TBA**

**16:30** Award Lecture TBA

**17:30** End of Session

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### Reaction Engineering and Catalysis

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#### RXN3 Salon 11

##### RXN3

Organizer(s) - TBD  
Chair(s) - Jafar Soltan

**16:30 0552** *Numerical Model for Crude Glycerol Autothermal Reforming to Hydrogen Rich Syngas* **Odoom A., Salama A., Deedwania A.** <Process Systems Engineering, University of Regina, 3737 Wascana Pkwy., Regina, SK S4S 0A2>, Ibrahim H.

**16:50 0553** *Accelerating Reacting Flow Simulations with Detailed Chemistry using Artificial Neural Networks* **Fadic A.** <University of Alberta>, Hayes R.E., Votsmeier M.

**17:10 0554** *Catalytic Reactor for Energy Storage - Proof of Concept* **Lu Y.R.** <University of Alberta, Edmonton, AB>, Nikrityuk P.

**17:30 0555** *Heterogeneous Catalysts for Olefin Polymerization: Mathematical Model for Catalyst Particle Fragmentation* **Fisch A.G.** <Universidade Luterana do Brasil (ULBRA), Chemical Engineering Department>, Santos J.H.Z., Secchi A.R., Cardozo N.S.M.

**17:50** End of Session

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### Systems and Control

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#### SYS4 Salon 4

##### SYS4

Organizer(s) - Stevan Dujljevic, Zukui Li and Jinfeng Liu  
Chair(s) - Xiang Li, Tom Adams and Milana Trifkovic

**14:30 0556** *A Back-Off Approach for Integration of Design, Control and Scheduling for Multi-Product Chemical Processes under Disturbances and Uncertainty* **Koller R.W., Ricardez-Sandoval L.** <University of Waterloo>, Biegler L.T.

**14:50 0557** *Optimal Scheduling of a Microgrid in a Volatile Electricity Market Environment* **Chen Y.** <Department of Chemical and Petroleum Engineering, University of Calgary>, Trifkovic M.

**15:10 0558** *Discretization and Global Optimization for the Multiperiod Pooling Problem* **Cheng X.C.** <Department of Chemical Engineering, Queen's University>, Li X.L.

**15:30 0559** *Strategic Planning of SAGD Reservoir Development under Uncertainty* **Motamed Nasab F.** <Department of Chemical and Materials Engineering, University of Alberta>, Shahandeh H., Li Z.

**15:50 0560** *Optimal Scheduling of a Microgrid Utilizing the Steam-Assisted Gravity Drainage (SAGD) Waste Heat* **Purkayastha S.N.** <University of Calgary>, Chen Y., Layzell D., Sit S., Gates I.D., Trifkovic M.

**16:10 Coffee Break**

**16:30 0561** *Optimal Sizing and Placement of the Components of a Microgrid Considering a GIS Multicriteria Decision Analysis and Supply Reliability* **Molina Bacca E.J.** <University of Calgary, Calgary, AB T2N 1N4>, Knight A., Trifkovic M.

**16:50 0562** *Optimization of Bitumen Upgrading Facility Design with CO<sub>2</sub> Reduction* **Shahandeh H.** <Department of Chemical and Materials Engineering, University of Alberta>, Li Z.

**17:10 0563** *Design of Simple Operator Training Simulator using Dynamic Models* **Agarwal N.** <BBA, 227 11th Ave. SW, Suite 100, Calgary, AB T2R 1R9>, Legare B., Tardif M., Ruel M.

**17:30 0564** *Dynamic Modeling of the Integrated Methane Reforming and Nuclear Heat Systems* **Hoseinzade L.** <Department of Chemical Engineering, McMaster University, 1280 Main St. W, Hamilton, ON L8S 4L7>, Adams II T.A.

**17:50** End of Session

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### Upgrading and Tailings Reduction

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#### UPG2 Salon 1

##### UPG2

Organizer(s) - Jinwen Chen, William McCaffrey, Richard Nelson and Yuming Xu  
Chair(s) - Jinwen Chen and William McCaffrey

**14:30 0565** *Process Modelling and GHG Emissions Analysis of Partial Bitumen Upgrading* **Alvarez-Majmutov A.** <Natural Resources Canada, CanmetENERGY-Devon, One Oil Patch Dr., Devon, AB T9G 1A8>, Chen J.

**14:50 0566** *Effect of Different Factors in Viscosity Reduction of Oil Sands Bitumen through Visbreaking* **Sivaramkrishnan K.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, Prasad V., de Klerk A.

**15:10 0567** *Bitumen Thermal Cracking with SCO as a Hydrogen-Donor in a Batch Reactor* **Ali M.** <Natural Resources Canada, CanmetENERGY-Devon, One Oil Patch Dr., Devon, AB T9G 1A8>, Chen J.

**15:30 0568** *Cracked Naphtha Reactivity: Effect of Free Radical Reactions* **Uzcatogui G.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2G6>, de Klerk A.

**15:50 0569** *Synthesis of Carbon-Labelled Compounds to Study the Reaction Chemistry in a Complex Matrix* **Tannous J.** <Department of Chemical and Materials Engineering, University of Alberta, 9211 - 116 St., Edmonton, AB T6G 1H9>, de Klerk A.

**16:10 Coffee Break**

**16:30 0570** *Thermogravimetric Analysis of Asphaltene Precipitated from Bitumen using Different Solvents and Solvent to Bitumen Ratios in the Solvent Deasphalting Process* **Turuga A.** <Department of Chemical and Materials Engineering, University of Alberta, 9211 - 116 St., Edmonton, AB T6G 1H9>, de Klerk A.



**16:50 0571** *New Methods for Characterizing Olefins and Diolefins in Cracked Petroleum Streams* \***Gieleciak R.** <Natural Resources Canada, CanmetENERGY-Devon, One Oil Patch Dr., Devon, AB T9G 1A8>, Michaelian K., Heshka N., Lay C., Rezaei M., Chen J.

**17:10 0572** *Ex-Situ Observation and Characterization of Hydrotreated Liquid Products* **Palys D.** <University of Alberta>, \*McCaffrey W.C.

**17:30 0573** *Measurement and Modeling of Visbroken Oil Stability* \***Rodriguez S.L.** <University of Calgary>, Yarranton H.W.

**17:50 0574** *Coke Formation in Bulk and on Surfaces during Heating of Heavy Oils* **Wang W.** <Department of Chemical & Biological Engineering, The University of British Columbia, Vancouver, BC V6T 1Z3>, Watkinson A.P.

**18:10** End of Session

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**3-Minute Elevator Pitch Competition for Graduate Students**

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**3MEP2 Salon 3**

**3-Minute Elevator Pitch Competition Finals**

Organizer(s) - Zukui Li  
Chair(s) - Zukui Li

**18:20** The finalists from Sunday afternoon's preliminary round will present their 3-Minute Elevator Pitches.

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**Wednesday AM**

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**Plenary**

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**PLEN Hall B**

**Plenary**

Organizer(s) - João Soares and Arvind Rajendran  
Chair(s) - Dominic Sauvageau and Neda Nazemifard

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**Plenary Session - Emerging Leaders in Chemical Engineering**

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**08:30** This prestigious session will aim to highlight the vision and leadership of four early career researchers. They will each present a perspective talk of their own research topic and how it will influence science, engineering and society at large in Canada.

The following have been selected to participate:

**Thomas A. Adams II, McMaster University, "What Should We Do with our Energy? How Chemical Engineers Have the Tools to Answer Society's Toughest Problems"**

**Ya-Huei (Cathy) Chin, University of Toronto, "Heterogeneous Catalytic Strategies for Sustainable Synthesis of Fuels and Chemicals"**

**Benoît H. Lessard, University of Ottawa, "The Future of Organic Electronics and What it Means for Chemical Engineering"**

**Vikramaditya G. Yadav, University of British Columbia, "Medicine-by-Design: Discovery and Development of a Novel Therapy for Epidermolysis Bullosa Simplex"**

**09:30** Coffee Break

**09:50** End of Session

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**Honourary Symposia**

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**HOM3 Salon 9**

**Honourary Symposium in Recognition of Jacob Masliyah for Outstanding Contributions in Heavy Oil Processing**

Organizer(s) - Qingxia (Chad) Liu, Zhenghe Xu, Sean Sanders and Shawn Taylor  
Chair(s) - Jun Long and Sean Sanders

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**Keynote Lecture presented by Harvey Yarranton, University of Calgary**

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**09:50 0575** *Settling of Flocculated Asphaltene and Solids from Diluted Bitumen* \***Yarranton H.W.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, Casas Y., Duran J.A., Schoeggl F.F.

**10:30 0576** *Effect of Solids on Dewatering of Naphthenic Bitumen Froth* \***Acosta E.** <University of Toronto, Department of Chemical Engineering and Applied Chemistry>, Quraishi S., Stammitti A., Upadhyaya A., Ng S.

**10:50 0577** *Diffusion in Bitumen and Heavy Oil + Diluent Mixtures* **Shaw J.M.** <Department of Chemical and Materials Engineering, University of Alberta>

**11:10 0578** *Observations on Flocculation in Oil Sands* **Kaminsky H.A.W.** <NAIT - Center for Oil Sands Sustainability>, Sedgwick A.

**11:30 0579** *Graphene Oxide and Its Application in Demulsification of Crude Oil-in-Water Emulsion* \***Ren S.** <School of Resources and Environmental Engineering, Jiangxi University of Science and Technology, Ganzhou 341000, China>, \*Liu J.

**11:50** End of Session

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**HOS3 Salon 3**

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**Honourary Symposium in Recognition of Sirish Shah for Outstanding Contributions in Systems and Control**

Organizer(s) - Bhushan Gopaluni and Biao Huang  
Chair(s) - Bhushan Gopaluni and Salim Ahmed

**09:50 0580** *A Process Control Odyssey* \***Seborg D.E.** <UC-Santa Barbara>

**10:10 0581** *Performance Index Based on Low Frequency Component of Control Error* \***Ohnishi Y.** <Ehime University, Japan>, Kinoshita T., Yamamoto T.

**10:30 0582** *Data Analytics for Advanced Control and Monitoring in Steam-Assisted Gravity Drainage Processes (SAGD)* **Raveendran R.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, Alipouri Y., Sedghi S., McClure K., Huang B., Mitchell W.

**10:50 0583** *Design of a Performance-Driven PID Control System by Specifying a Control Performance Index* **Kinoshita T.** <Hiroshima University>, Yamamoto T., Shah S.L.

**11:10 0584** *A Reinforcement Learning Controller that Imitates a Model Predictive Controller* \***Gopaluni R.B.** <Department of Chemical and Biological Engineering, University of British Columbia, Vancouver, BC V6T 1Z3>, Lim S., Tsai Y., Rippon L., Steven S., Lu Q.

**11:30 0585** *Identification and Controller Design for Fractional Order Systems* \***Ahmed S.** <Memorial University of Newfoundland>

**11:50** End of Session

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**Carbon Reduction and Utilization**

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**CCU3 Salon 13/14**

**CCU3**

Organizer(s) - Rajender Gupta, Charles de Lannoy and Arvind Rajendran

**09:50 0586** *Development of a Base Process Model for Assessment of the Carbon Capture of Flue Gases from Coal and Natural Gas* **Ibadin E.** <Faculty of Engineering, Department of Mechanical Engineering, 10-263 Donadeo Innovation Centre for Engineering, 9211 116 St. NW, University of Alberta, Edmonton, AB T6G 1H9>, **Oyedun A.**, <sup>\*</sup>Kumar A.

**10:10 0587** *Absorption of CO<sub>2</sub> in Methyl-diethanolamine Blended with Potassium Sarcosinate as a New Absorbent for CO<sub>2</sub> Capture* **Ramezani R., Di Felice R.** <Department of Civil, Chemical and Environmental Engineering, University of Genoa, Via Opera Pia 15, 16145, Genoa, Italy>

**10:30 0588** *Development of a Novel Reclaiming Process for Degraded Alkanolamine and Glycol Solvents Used for CO<sub>2</sub> Capture Systems* **Ju H.** <University of Calgary>, **Kundra P., ElMoudir W., Aboudheir A., Mahinpey N.**

**10:50 0589** *Macroscopically Inspired Rapid Molecular Simulation of CO<sub>2</sub> Reactive Absorption* **Qi W.** <University of Guelph, Guelph, ON N1G 2W1>, <sup>\*</sup>Smith W.R.

**11:10 0590** *CO<sub>2</sub> Capture Performance Evaluations of Various Amino Acid Ionic Liquids Supported on Porous Microspheres using Two Different Cations* **Uehara Y.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB T2N 1N4>, **Karami D., Mahinpey N.**

**11:30 0591** *Determination of Solubility of CO<sub>2</sub> in Ionic Liquids using PC-SAFT Equation of State* **Aghaie M.** <Memorial University, St. John's, NL A1B 3X9>, <sup>\*</sup>Zendehboudi S.

**11:50** End of Session

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### Chemical Engineering Fundamentals

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#### FUN6 Salon 6

##### FUN6

Organizer(s) - Dmitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - Artin Afacan and Milana Trifkovic

**Keynote Lecture presented by Andreas Richter, TU Bergakademie Freiberg**

**09:50 0592** *In-situ Measurements and Numerical Studies of Single Particle Conversion for Improved Modeling of Gasification Processes* **Richter A.** <Institute of Energy Process Engineering and Chemical Engineering, TU Bergakademie Freiberg, Freiberg, Germany, >, <sup>\*</sup>An F., <sup>\*</sup>Kuester F., <sup>\*</sup>Guhl S., <sup>\*</sup>Meyer B.

**10:30 0593** *4-Dimensional Imaging of Emulsion Flow Instabilities* **Pilapil B.K.** <Department of Chemical and Petroleum Engineering, University of Calgary, 2500 University Dr. NW, Calgary, AB T2N 1N4>, **Workman B., Derakhshandeh M., Jahandideh H., Bryant S.L., Trifkovic M.**

**10:50 0594** *Dynamics and Regeneration of Turbulent Vortices for High-Extent Drag Reduction in Polymer Fluids* **Zhu L.** <Department of Chemical Engineering, McMaster University>, <sup>\*</sup>Xi L.

**11:10 0595** *Drag Reduction of Polymer Solutions at Similar Dynamic Viscosities* **Mohammadtabar M.** <Department of Mechanical Engineering, University of Alberta, Edmonton, AB T6G 1H9>, **Sanders R.S., Ghaemi S.**

**11:30 0596** *Thermo-Viscous Instabilities of Nanoflow Displacements in Porous Media* **Dastvareh B.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB>, **Azaiez J.**

**11:50** End of Session

#### FUN7 Salon 7

##### FUN7

Organizer(s) - Dmitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - Vinay Prasad and Dave Sharp

**10:30 0597** *Transient Process of Radial and Axial Segregation Caused by Differences in Particle Size and Density in a Horizontal Drum* **Beaulieu C.** <Ecole Polytechnique, Montreal, QC H3C 3A7>, **Vidal D., Chaouki J., Bertrand F.**

**10:50 0598** *Particle Electrostatic Charging Arising from Pneumatic Conveying* **Taghavivand M.** <Department of Chemical and Biological Engineering, University of Ottawa, 161 Louis-Pasteur, Ottawa, ON K1N 6N5>, **Sowinski A., Mehrani P.**

**11:10 0599** *Blend Time Measurements in a Confined Impeller Stirred Tank using Image Analysis* **Jairamdas K.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB; Department of Mechanical Engineering>, **Pinto N., Bhalerao A., Machado M.B., Kresta S.M.**

**11:30 0600** *Using Computational Fluid Dynamics (CFD) to Evaluate the Local Mixing Quality in a Slurry Tank Furnished with a Maxblend Impeller* **Mishra P.C.** <Ryerson University>, **Mozaffari F.E.**

**11:50** End of Session

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### Conventional and Unconventional Energy Sources

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#### ENR5 Salon 1

##### ENR5

Organizer(s) - Bruce Peachey and Japan Trivedi  
Chair(s) - Zhehui (Charlie) Jin and Bruce Peachey

**09:50 0601** *Investigation of Microbial Growth Kinetics in MEOR by Artificial Neural Networks* **Cao J.** <University of Calgary>, **Kadeethum T., Siegler H.D.H., Chen Z.**

**10:10 0602** *Effect of Alkali, Surfactant and Salts on the Extensional Rheological Behaviour of Hydrolyzed Polyacrylamide* **Shah N.** <University of Alberta>, **Azad M., Trivedi J.**

**10:30 0603** *Equilibrium Ratio of Hydrocarbons and Non-Hydrocarbons at Reservoir Conditions: Experimental and Modeling Study* **Ahmadi M.A.** <Memorial University of Newfoundland>, **Zendehboudi S., James L.A.**

**10:50 0604** *Geochemical Studies of Low Salinity Water Injection in Botucatu Sandstone for Hybrid Applications* **Almeida da Costa A.** <Universidade Federal da Bahia, Escola Politécnica, Rua Aristides Novis, 02, Salvador, Bahia, Brazil, 40210 630; University of Alberta, Donadeo Innovation Centre for Engineering, 9211 - 116 St., Edmonton, AB, T6G 1H9>, **Costa G., Embiruçu M., Rocha P., Soares J.B.P., Trivedi J.**

**11:10 0605** *Enhanced Oil Recovery via Targeted Emulsified Solvent Injection (TESI) Guided by the Hydrophilic-Lipophilic Difference (HLD) Framework* **Acosta E.** <University of Toronto, Department of Chemical Engineering and Applied Chemistry>, **Stammitti A.**

**11:30 0606** *Hybrid Connectionist Model Determines CO<sub>2</sub>-Oil Swelling Factor* **Ahmadi M.A.** <Memorial University of Newfoundland>, **Zendehboudi S., James L.A.**

**11:50** End of Session

#### ENR6 Salon 15/16

##### ENR6

Organizer(s) - Bruce Peachey and Japan Trivedi  
Chair(s) - Nobuo Maeda and Bruce Peachey

**09:50 0607** *Assessment of Natural Gas Supply Chains from Canada to Europe* **Sapkota K.** <Department of Mechanical Engineering, 10-263 Donadeo Innovation Centre for Engineering, 9211 116 St. NW, University of Alberta, Edmonton, AB T6G 1H9, >, **Oni A.O., Kumar A.**

**10:10 0608** *Accurate Characterization of Absolute Adsorption in Clay Minerals in Relation to Shale Gas from Molecular Perspective* **Tian Y.** <University of Alberta; Chengdu University of Technology, Japan>, \*Jin Z.

**10:30 0609** *Connectivity Restoration of Shale Pore-Level Images by Spatial Aggregation of Irregular Nano-Grains* **Rahmanian M.** <University of Calgary>, Mohammadmoradi P., \*Kantzas A.

**10:50 0610** *Low Frequency Dielectric Relaxation of Supramolecular Petroleum Fluids* \***Abraham T.** <University of Alberta>, Wadhawan H., Goswami A., Thundat T.

**11:10 0611** *A Novel Analytical Model for Prediction of Gas Molecular Diffusion Coefficient in Liquids: Effect of Swelling* **Sabet N.** <University of Calgary, Chemical and Petroleum Engineering Department>, Khalifi M., Zirrahi M., \*Hassanzadeh H., Abedi J.

**11:30 0612** *Acid Mine Drainage Remediation using Green Liquor Dregs* \***Sebogodi K.R.** <Discipline of Chemical Engineering, University of KwaZulu-Natal, >, Johakimu J., \*Sithole B.B

**11:50** End of Session

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## Environmental Engineering and Waste Management / Oil Spill Recovery

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### ENV5 Salon 2

#### ENV5

Organizer(s) - Bing Chen, Bipro Dhar, Madhumita Ray and Stanislav Stoyanov  
Chair(s) - Maen Husein and Bing Chen

**09:50 0613** *Treatment of Atrazine Manufacturing Wastewater by UV/Ozone and Ozone/Ultrasonic Processes* Zheng J., Wen D., \***Chen B.** <Northern Region Persistent Organic Pollution Control (NRPOP) Laboratory, Faculty of Engineering and Applied Science, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, Liu B., Zhang B., Yang C.

**10:10 0614** *Study of Vacuum UV Photolysis of Water Contaminated with Nitrate and Formation of Nitrite* **Han M.** <Department of Chemical and Biological Engineering, University of British Columbia, 2360 East Mall, Vancouver, BC V6T 1Z3>, \*Mohseni M.

**10:30 0615** *Degradation of Micropollutants from Contaminated Water using UV-LEDs Combined with Chlorine Advanced Oxidation Process* **Rezaei R.** <University of British Columbia>, \*Kheyrandish A., Linden K., \*Mohseni M.

**10:50** End of Session

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## Macromolecular Sciences and Engineering

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### POL3 Salon 12

#### POL3

Organizer(s) - Phillip Choi, João Soares and Boxin Zhao  
Chair(s) - Robin Hutchinson and Boxin Zhao

**09:50 0616** *Green, Recyclable Cross-Linked Polymer Networks and Network Composites via Simple One-Step Nitroxide Mediated Polymerization: Full Property Recovery after Multiple Reprocessing Steps for Tire Rubber and Other Polymer Networks* \***Torkelson J.M.** <Chem. and Biol. Eng. Dept., Northwestern University, Evanston, IL 60208 USA; Materials Science and Eng. Dept., Northwestern University, Evanston, IL 60208 USA>, Jin K., Li L., Chen X.

**10:10 0617** *Model-Based Design of Reaction Conditions for Segmented Copolymer Synthesis by Combining Step- and Chain-Growth Polymerization* De Keer L., Gegenhuber T., Van Steenberge P.H.M., Goldmann A., Reyniers M.F., Barner-Kowollik C., \***D'hooge D.R.** <LCT, Ghent University, Belgium>

**10:30 0618** *Radical Copolymerization of Acrylic Acid and [2-(Methacryloyloxy)ethyl]trimethylammonium Chloride in Aqueous Solution* **Ezenwajiaku I.H.** <Department of Chemical Engineering, Queen's University, Kingston, ON K7L 3N6>, \*Hutchinson R.A.

**10:50 0619** *Experimental Study of MMA AGET ATRP using HMTA Ligand in Emulsion Reactor* **Awad M.** <Ryerson University, Toronto, ON M5B 2K3>, \*Dhib R., \*Duever T.

**11:10 0620** *A kinetic Investigation on Homo- and Co-Polymerization of Ethylene with 1-Hexene and 1-Octene using Dimethylsilyl(N-tert-butylamido)-(tetramethylcyclopentadienyl)-titanium dichloride, Alkyl Aluminums and Borate* \***Mehdiabadi S.** <Chemical and Materials Engineering Department, University of Alberta>, Soares J.B.P.

**11:30** End of Session

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## Micro and Nanofluidics

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### FLD3 Salon 5

#### FLD3

Organizer(s) - Neda Nazemifard and David Sinton

**09:50 0621** *Microfluidics-Based Measurement of Solubility and Diffusion Coefficient of Propane in Bitumen* **Talebi S.** <Department of Mechanical and Industrial Engineering, and Institute for Sustainable Energy, University of Toronto, 5 King's College Rd., Toronto, ON M5S 3G8>, Abedini A., Guerrero A., Sinton D.

**10:10 0622** *Contactless Analysis of Nanoparticle Induced Recovery of Mineral Oil from Microfluidic Oil-Water Reservoir* **Reeves J.P.** <BioMEMS and Bioinspired Microfluidic Laboratory, University of Calgary, Calgary, AB>, \*Sanati-Nezhad A., Bazazi P., \*Zarifi M.H.

**10:30 0623** *Advanced Image Processing Techniques and Modified Fabrication Method for Microfluidic Studies* \***Mahmoodi M.** <Memorial University of Newfoundland>, \*James L.A.

**10:50 0624** *Preparation and Characterization of Au/Al<sub>2</sub>O<sub>3</sub>-Based Microreactors for Oxidation of Ethanol* \***Behravesh E.E.** <Abo Akademi University, Finland>

**11:10** End of Session

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## Nanotechnology

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### NAN3 Salon 8

#### NAN3

Organizer(s) - Hyun-Joong Chung, Anastasia Elias and Zeinab Hosseinioust  
Chair(s) - Anastasia Elias and Adrian Lopera

**09:50 0625** *Batch and Continuous Adsorption of Contaminants from Single and Multi-Component Waters by Hierarchically Porous Graphene Oxide-Cellulose Nanocrystal Sponges* **Yousefi N.** <Department of Chemical Engineering, McGill University, Montreal, QC>, Wong K., Hosseinioust Z., Sørensen H., \*Tufenkji N.

**10:10 0626** *Preparation and Characterization of a Novel Reverse Osmosis Thin Film Nanocomposite (TFN) Membrane using Dendritic Functionalized Halloysite Nanotubes (HNT)* **Asempour F.** <Department of Chemical and Biological Engineering, University of Ottawa, 161 Louis Pasteur St., Ottawa, ON K1N 6N5>, Akbari S., Emadzadeh D., \*Kruczek B.

**10:30 0627** *Removal of Organic Compound Contaminants from Wastewater using Hybrid Pyroxene Nanoparticles* **Nafie G.** <University of Calgary, 2500 University Dr., NW, Calgary, AB T2N 1N4>, Vitale G., Carbognani Ortega L., \*Nassar N.

**10:50 0628** *Synthesis of Sinter-Resistant Gold Catalysts Derived from Au<sub>25</sub> Clusters*  
**Veeranmaril S.** <110 Science Place, University of Saskatchewan, Saskatoon, SK S7N 5C9>, Scott R.W.J.

**11:10 0629** *Nanocomposite Nanofibre for Sustained Release of Chemotherapeutic Agents*  
**Saha K.** <Department of Polymer Science and Technology, University of Calcutta, Kolkata - 700009, India, >, \*Sarkar P.

**11:30 0630** *Synthesizing Highly Ordered Titanium Dioxide Nanotube Array in Aqueous Media using Ozone Gas: Degradation of Rhodamine B*  
\***Gholami M.** <Department of Chemistry, Marvdasht Branch, Islamic Azad University, P.O. Box 465, Marvdasht, Iran>, Behkami S.

**11:50** End of Session

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### Process Safety and Risk Management

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#### PSM5 Salon 10

##### PSM5

Organizer(s) - Lianne Lefsrud, Norman Nibber and Gord Winkel  
Chair(s) - George Ormerod and Kathleen Baker

**09:50 0631** *A Bibliometric Analysis of the Interdisciplinarity of Microbiologically Influenced Corrosion Research from 2000-2016*  
\***Bak N.** <Department of Chemical and Materials Engineering, University of Alberta>, §Lefsrud L.M., Wolodko J.

**10:20 0632** *An Ontology Based Framework for Process Risk Assessment and Management*  
**Aziz A.**, \***Ahmed S.** <Memorial University of Newfoundland>, Khan F.I.

**10:50 0633** *An Event Based Alarm System Design using Bayesian Network Models*  
**Naeema J.**, \***Ahmed S.** <Memorial University of Newfoundland>

**11:20 0634** *PSM Effectiveness in Pipeline Operations*  
\***Sahraei A.** <Enbridge, ; IEC Standard Technical Committee for Functional Safety IEC61511>

**11:50** End of Session

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### Reaction Engineering and Catalysis

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#### RXN4 Salon 11

##### RXN4

Organizer(s) - TBD  
Chair(s) - David Simakov and Jinwen Chen

**Keynote Lecture presented by Faiçal Larachi, Université Laval**

**09:50 0635** *Opportunities for Process Intensification in Chemical Reaction Engineering using Magnetic Nanoparticles*  
\***Larachi F.** <Department of Chemical Engineering, Laval University, 1065, Ave. de la Médecine, Québec, QC G1V 0A6>

**10:30 0636** *Propane Oxidative Dehydrogenation using Consecutive Feed Injections and Fluidizable VO<sub>x</sub>/Al<sub>2</sub>O<sub>3</sub> and VO<sub>x</sub>/ZrO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> Catalysts*  
**Rostom S.** <University of Western Ontario>, \*de Lasa H.

**10:50 0637** *Simulations of Dimethyl Ether Production by Catalytic Distillation*  
**Dar D.** <University of Alberta, Edmonton, AB T6G 2G6>, \*Hayes R.E., \*Mussone P., Afacan A.

**11:10 0638** *Effects of Hydrodynamics on Hydrocarbon Oxidation*  
**Wu W.Y.** <University of Alberta>

**11:30 0639** *Development of New Structured Catalyst and Reactor Technologies for Biomass Conversion*  
\***Najarneshadmadhadi A.** <Åbo Akademi University, Johan Gadolin Process Chemistry Centre (PCC), Laboratory of Industrial Chemistry and Reaction Engineering, 20500 Åbo/Turku, Finland>, Eränen K., Engblom S., Salmi T.

**11:50** End of Session

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### Systems and Control

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#### SYS5 Salon 4

##### SYS5

Organizer(s) - Stevan Dubljevic, Zukui Li and Jinfeng Liu  
Chair(s) - Jinfeng Liu and Hector Budman

**Keynote Lecture presented by James B. Rawlings, University of Wisconsin-Madison**

**09:50 0640** *Achieving High-Level Control Goals with Model Predictive Control*  
**Rawlings J.B.** <Chemical and Biological Engineering, University of Wisconsin - Madison, USA>

**10:30 0641** *Using Set-Based Constraints in Iterative Identification and Optimization of Batch Processes*  
**Hille R.**, \***Budman H.** <University of Waterloo>

**10:50 0642** *Distributed Output-Feedback Fault Detection and Isolation of Cascade Process Networks*  
**Yin X.** <Department of Chemical and Materials Engineering, University of Alberta>, \*Liu J.

**11:10 0643** *Two-Stage Adaptive Stochastic Optimization: A Computational Study on Decision Rule Based Methods*  
**Rahal S.** <Department of Chemical and Materials Engineering, University of Alberta>, \*Li Z.

**11:30 0644** *Optimization of Hydrogen Plant Startup Operating Procedure*  
\***Garg A.** <Department of Chemical Engineering, McMaster University, 1280 Main St. W, Hamilton, ON, L8S 4L8>, \*Mhaskar P., Kumar A., Hu G., Flores-Cerrillo J.

**11:50** End of Session

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### Wednesday PM

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### Honourary Symposia

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#### HOM4 Salon 9

**Honourary Symposium in Recognition of Jacob Masliyah for Outstanding Contributions in Heavy Oil Processing**

Organizer(s) - Qingxia (Chad) Liu, Zhenghe Xu, Sean Sanders and Shawn Taylor  
Chair(s) - Shawn Taylor and Zhenghe Xu

**13:30 0645** *Pore-Scale Investigation of Solvent Based Bitumen Recovery*  
**Qi Z.** <Department of Mechanical and Industrial Engineering and Institute for Sustainable Energy, University of Toronto, 5 King's College Road, Toronto, ON M5S 3G8>, Abedini A., Sharbatian A., Guerrero A., \*Sinton D.

**13:50 0646** *A Polymer-Based Microfluidic Platform for Redox-Mediated Electrochemical Sensing*  
**Su X.**, Hryciw A., Hatton T.A., \***Nazemifard N.** <Chemical and Materials Engineering Department, University of Alberta>

**14:10 0647** *Study on Microbubbles in Bitumen Flotation in Oil Sands Extraction*  
**Liu Q.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Liu B., Zhang X, Manica R., Xu Z., Masliyah J.H.

**14:30 0648** *Asphaltene-Stabilized Emulsions: An Interfacial Rheology Study*  
**Harbottle D.** <School of Chemical and Process Engineering, University of Leeds, Leeds, UK>, Masliyah J.H., Liu Q., Xu Z

**14:50 0649** *Multiphase Flows in the Oil Sands Industry and Opportunities for Process Improvements*  
\***Sanders R.S.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>

**15:10** End of Session

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#### HOS4 Salon 3

### Honourary Symposium in Recognition of Sirish Shah for Outstanding Contributions in Systems and Control

Organizer(s) - Bhushan Gopalunni and Biao Huang  
Chair(s) - James Ng and Jinfeng Liu

**13:30 0650** *An Approach to Real Time Adaptive Optimization in Oil and Gas Well Drilling* \***Ng J.** <Pason Systems Corporation>, Khromov S., Lai S.

**13:50 0651** *On the Automation of Spectral Envelope Method for Oscillation Monitoring in Industrial Processes* \***Munaro C.J.** <Department of Electrical Engineering - UFES - Vitoria - ES- Brazil>, Martins D.S., Guzzo H., Vasconcelos V.B.

**14:10 0652** *A Personal Review of the Economic Impact of S.L. Shah's Research* Kadali R., Mitchell W., Patwardhan R., \***Shook D.S.** <Dave Shook & Associates>

**14:30 0653** *A Critical Assessment of Non-Ideal Mixing Phenomena in High-Pressure LDPE Autoclaves: Prediction of Variable Initiator Efficiency and Ethylene Decomposition* Pladis P., Baltsas A., \***Kiparissides C.** <Chemical Process & Energy Resources Institute, CERTH; Department of Chemical Engineering, AUTH, Thessaloniki, Greece>

**14:50** End of Session

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### Carbon Reduction and Utilization

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**CCU4** **Salon 13/14**

**CCU4**

Organizer(s) - Rajender Gupta, Charles de Lannoy and Arvind Rajendran

**13:30 0654** *Ilmenite Oxidation Kinetics for Pressurized Chemical Looping Combustion of Natural Gas* **Rana S.** <University of Ottawa>, Mehrani P., \***Macchi A.**

**13:50 0655** *Performance Assessment and Kinetic Study of a Low-Cost Canadian Ilmenite Ore: A Key for Cost Effective Carbon Capture* **Khakpoor N.** <University of Calgary, Calgary, AB T2N 1N4>, Mostafavi E., Siegler H.D.H., Mahinpey N.

**14:10 0656** *Chemical Looping Combustion of Indian Coal using Natural and Synthetic Oxygen Carriers* **Dubey A.K.** <Department of Chemical Engineering, IIT (ISM), Dhanbad, 826004, India>, Sarkar P., Saxena V.K., \***Samanta A.**

**14:30 0657** *Effect of Various Types of Aumina Supports on the Carbonation Behavior of  $K_2CO_3$ : Comparing Physical Mixing and Incipient Wetness Impregnation Methods* **Bararpour S.T.** <University of Calgary, Calgary, AB T2N 1N4>, Karami D., \*Mahinpey N.

**14:50 0658** *Synthesis, Experiments and Kinetics Measurements of Supported Mixed-Metal Oxygen Carriers in a Methane Fuelled CLC System* **Tijani M.M.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB, T2N 1N4>, \***Mahinpey N.**

**15:10** Coffee Break

**15:30 0659** *Pore-Level Simulation of  $CO_2$  Capillary Trapping* \***Mohammadmoradi P.** <Chemical and Petroleum Engineering Department, University of Calgary>, \***Kantzas A.**

**15:50 0660** *Integrated  $CO_2$  Capture and Use for EOR in a Remote Offshore Oil Field* \***Mahdavi S.** <Memorial University of Newfoundland>, \***James L.A.**

**16:10 0661** *Optimization of  $CO_2$  Biofixation using *Chlorella vulgaris* Cultivation in a Tubular Photobioreactor* \***Razzak S.A.** <Department of Chemical Engineering, King Fahd University of Petroleum & Minerals Dhahran 31261, Saudi Arabia, >, Hossain M.M., Hossain M.Z.

**16:30 0662**  *$CO_2$  Storage Capacity of Pillared Graphenes: Effect of Interlayer Spacing* \***Xu J.** <College of Science, China University of Petroleum, Qingdao, Shandong 266580, PR China>, Li J., Zhao L., Xing W., Yan Z.

**16:50** End of Session

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### Chemical Engineering Fundamentals

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**FUN8** **Salon 6**

**FUN8**

Organizer(s) - Dmitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - Joe Mmbaga and Artin Afacan

**13:30 0663** *Characterization of Tribocharging Behaviour of Polymer Particles in a Turbulent Flow Tribocharger* \***Li C.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK, >, Yu Z.R., Choi K.S., \***Zhang L.F.**

**13:50 0664** *Modelling a Biomethanation System by Computational Fluid Dynamic. A First Approach to the Integration of Biochemical Reactions and Transport Phenomena* **Sadino-Riquelme M.C.** <INRIA-Chile, Communication and Information Research and Innovation Center (CIRIC), Avenida Apoquindo 2827, Piso 12, Las Condes, Santiago, Chile>, Jeison D., Hayes R.E., Mmbaga J., Donoso-Bravo A.

**14:10 0665** *The Weibull Distribution as a New Model for Residence Time Distribution and its Application to a Mass Transfer Operation* \***Li X.T.** <BC Research Inc., a Subsidiary of NORAM Engineering and Constructors Ltd>, Gulamhusein A., Kazemi S., Bhattacharya S., McKnight C.A.

**14:30 0666** *The Evaluation of Oil Sand Tailings Dewatering Performance of an In-Line Mixer in Comparison to that of an Overhead Mixer* **Bazoubandi B., Asare E.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Samuel A., Afacan A., \***Soares J.B.P.**

**14:50 0667** *On the CFD Simulation of Wire-Wrapped Sand Screen and the Porous Media around It* \***Razavi F.** <Mechanical Engineering, University of Alberta>, Komrakova A.E., Lange C.F.L.

**15:10** End of Session

**FUN9** **Salon 7**

**FUN9**

Organizer(s) - Dmitry Eskin, Petr Nikrityuk and Vinay Prasad  
Chair(s) - Alexandra Komrakova and Vinay Prasad

**13:30 0668** *Impact of Non-Newtonian Fluid Behavior on Hydrodynamics and Mass Transfer in Spiral-Wound Membrane Modules* **Fischer N.** <Fluid Dynamics of Complex Biosystems, School of Life Sciences Weihenstephan, Technical University of Munich, 85354 Freising, Germany>, Masoudian M., \***Germann N.**

**13:50 0669** *Effects of Mixing on the Settling Properties of Asphaltene Aggregates* \***Cheung A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Breakey D., Pavelich J.S., \***Sanders R.S.**

**14:10 0670** *Liquid Drawdown and Dispersion: Scaling Rotational Speed and Mean Chord Length with Mixing Power and Mixing Energy* \***Safari F.** <Chemical and Materials Engineering, University of Alberta>, Machado M.B., Bhalerao A., \***Kresta S.M., Komrakova A.E.**

**14:30 0671** *Intensification of Fluid Deformation in the Chaotic SMX Static Mixer using Computational Fluid Dynamics* **Jegatheeswaran S.** <Ryerson University>, Ein-Mozaffari F., Wu J.

**14:50 0672** *Measuring Solid Distribution in a Jet-Impactor Assisted Fluidized Bed*  
**Nasri Lari H.** <Department of Chemical Engineering, École Polytechnique de Montreal, Montreal, QC H3C 3A7>, **Chaouki J.**, **Tavares J.R.**

**15:10** End of Session

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## Conventional and Unconventional Energy Sources

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### ENR7 Salon 1

#### ENR7

Organizer(s) - Bruce Peachey and Japan Trivedi  
Chair(s) - Huazhou Li and Bruce Peachey

**13:30 0673** *Optimal Control of Atmospheric Air Injection for Enhanced Oil Recovery* **\*Khodaï Booran S.** <Ryerson University>, **Upreti S.R.**, **Ein-Mozaffari F.**

**13:50 0674** *Cyclic Gas Injection in Tight/Unconventional Oil Reservoirs: Heterogeneity Effects* **\*Assef Y.A.** <Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>, **Hejazi S.H.**

**14:10 0675** *Discussion on the Coking Mechanism of Heavy Oil on Base of the Composition Analysis of the Coke Samples in Refinery Furnace Tube* **\*Yang J.** <State Key Laboratory of Heavy Oil Processing, China University of Petroleum, Qingdao, China>, **Xiao J.**, **Shen G.**

**14:30 0676** *Studies on the Fouling of Catalysts during Hydroprocessing of Gas-Oils*  
**Kaushik P.** <Department of Chemical and Biological Engineering, University of Saskatchewan>, **Dalai A.K.**

**14:50 0677** *Hydrocracking and Catalytic Hydrocracking of Athabasca VR*  
**Kaminski T.A.** <Department of Chemical & Petroleum Engineering, University of Calgary, Calgary, AB>, **Husein M.**

**15:10** End of Session

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## Environmental Engineering and Waste Management / Oil Spill Recovery

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### ENV6 Salon 5

#### ENV6

Organizer(s) - Bing Chen, Bippro Dhar, Madhumita Ray and Stanislav Stoyanov  
Chair(s) - Maen Husein

**13:30 0678** *A Telling Tale of Tailpipes: Traffic Related Air Pollution in Canada*  
**\*Evans G.J.** <Department of Chemical Engineering and Applied Chemistry and Southern Ontario Centre for Atmospheric Aerosol Research, University of Toronto>, **Jeong C.-H.**, **Wang J.M.**, **Hilker N.**, **Shairsingh K.J.**

**13:50 0679** *Mitigation of Hydrogen Sulphide and Ammonia Emissions using a Composite Nano-Adsorbent*  
**Azar R.** <University of Saskatchewan>, **Valdes Labrada G.**, **Predicala B.**, **\*Nemati M.**

**14:10 0680** *Numerical Investigation of the Impact of Washcoat Deposition on the Performance of Particulate Filters*  
**Belot I.** <Polytechnique Montréal, Montréal, QC H3C 3A7>, **Vidal D.**, **Votsmeier M.**, **van Setten B.**, **Hayes R.E.**, **Bertrand F.**

**14:30 0681** *Creating a Life Cycle Assessment Framework for Oil and Gas and Pipelines*  
**Di Lullo G.** <Faculty of Engineering, Department of Mechanical Engineering, 10-263 Donadeo Innovation Centre for Engineering, 9211 116 St. NW, University of Alberta, Edmonton, AB T6G 1H9>, **Oni A.O.**, **\*Kumar A.**

**14:50 0682** *Thermal Recycling of Plastic Solid Waste into Liquid Fuel*  
**\*Husein M.** <University of Calgary>, **Kasumu A.**, **Mehairi A.**, **Zakaria M.**

**15:10** Coffee Break

**15:30 0683** *Biochar: A Sustainable Solution for Waste Management in Prince Edward Island*  
**Dahal R.** <School of Sustainable Design Engineering, University of Prince Edward Island, 550 University Ave., Charlottetown, PE C1A 4P3>, **\*Acharya B.**

**15:50 0684** *Valorisation of Chicken Feathers: New Approach for Use in Speciality Paper Production*  
**\*Yimer T.T.** <Discipline of Chemical Engineering, University of KwaZulu-Natal, Durban, South Africa, ; Ethiopian Institute of Textile and Fashion Technology, Bahir Dar, Ethiopia, >, **Sithole B.B.**, **Ramjugernath D.**, **Chunilall V.**

**16:10** End of Session

### ENV7 Salon 15/16

#### ENV7

Organizer(s) - Bing Chen, Bippro Dhar, Madhumita Ray and Stanislav Stoyanov  
Chair(s) - Bing Chen and Bippro Dhar

**13:30 0685** *Optimization of Photocatalytic Treatment of Aqueous Methyl Orange using N-doped TiO<sub>2</sub>*  
**Nasirian M.** <Graduate Programs in Environmental Applied Science and Management, Ryerson University, 350 Victoria St. Toronto, ON M5B 2K3>, **Lin Y.P.**, **\*Mehrvan M.**

**13:50 0686** *Advanced Oxidation of Naphthenic Acids in Water by Ozone and Hydrogen Peroxide*  
**Al jibouri A.K.H.** <Dept. of Chemical Engineering, Ryerson University, 350 Victoria St., Toronto, ON M5B 2K3>, **\*Wu J.**, **Upreti S.R.**

**14:10 0687** *Development of Enzymatic Membrane Bioreactors for Removal of Persistent Organohalogen Compounds from Wastewater*  
**Asif M.B.**, **\*Hai F.I.** <Strategic Water Infrastructure Lab, School of Civil, Mining and Environmental Engineering, University of Wollongong (UOW), Wollongong, NSW 2522, Australia>

**14:30 0688** *Electro-Fenton Regeneration of Methyl Orange Saturated Carbon Materials*  
**Xiao Y.** <Department of Chemical and Petroleum Engineering, Schulich School of Engineering, University of Calgary, Calgary, AB T2N 1N4>, **Hill J.M.**

**14:50 0689** *Mitigation of Antimicrobial Resistance Risk by Removal of Antibiotics from Waste Stream of Animal Production Facilities*  
**Valdes Labrada G.** <University of Saskatchewan, >, **Predicala B.**, **Soltan J.**, **\*Nemati M.**

**15:10** Coffee Break

**15:30 0690** *Biodegradation of Naphthenic Acids in Microbial Electrolysis Cell*  
**Barua S.** <Civil and Environmental Engineering, University of Alberta, 9211-116 St. NW, Edmonton, AB T6G 1H9>, **\*Dhar B.**

**15:50 0691** *Investigating Biodegradation of Natural Organic Matter during the Ion Exchange Process for Surface Water Treatment*  
**Dezfoolian M.** <Department of Chemical and Biological Engineering, University of British Columbia, Vancouver, BC>, **\*Mohseni M.**

**16:10 0692** *Adsorption of Wastewater Contaminants with Magnetic Graphene Foam*  
**Grove T.** <University of Calgary, Chemical and Petroleum Department>, **\*Sharif F.**, **\*Roberts E.P.L.**

**16:30 0693** *Growth Kinetics of p-Chloro-m-xyleneol (PCMX) Tolerant Bacteria and their Biodegradation*  
**Brahma B.** <Dept. of Chemical Engineering, Pollution Control Lab, Jadavpur University, Kolkata-700032, India>, **\*Sarkar P.**, **\*Sarkar U.**

**16:50** End of Session

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## Macromolecular Sciences and Engineering

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### POL4 Salon 12

#### POL4

Organizer(s) - Phillip Choi, João Soares and Boxin Zhao  
Chair(s) - Michael Cunningham and João Soares

**13:30 0694** *Application of Large Amplitude Oscillatory Shear (LAOS) Method for the Analysis of CNT/MnO<sub>2</sub>NW Hybrid Nanocomposites Viscoelastic Behavior*  
**Kamkar M.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, Aliabadian E., Shayesteh A., Otero I., \*Sundraraj U.

**13:50 0695** *Shear Induced Twin-Screw Extrusion for the Production of Modified Pea Starch as a Functional Food Ingredient*  
\***Ciardullo S.K.** <McMaster University, Department of Chemical Engineering>, \*Thompson M.R., Liu Q., Donner E.

**14:10 0696** *Electrical Conductivity and Electromagnetic Interference Shielding of Polypropylene Nanocomposite: Synergistic Effect of Carbon Nanotube and Stainless Steel Fiber*  
**Shajari Sh.** <Department of Mechanical and Manufacturing Engineering, University of Calgary, Calgary, AB T2N 1N4>, Arjmand M., \*Sundraraj U., Sudak L.J.

**14:30 0697** *Structure Modifications of Hydrolytically Degradable Cationic Flocculants to Improve Water Recovery from Oil Sands Tailings*  
**Younes G.R.** <Department of Chemical Engineering, Queen's University, Kingston, ON K7L 3N6>, Proper A.R., Rooney T.R., \*Hutchinson R.A., Gumfekar S., Soares J.B.P.

**14:50 0698** *Responsive Silver-PHEMA-PEGDA Conductive Films for Humidity Sensing with Applications in Smart Food Storage Systems*  
\***Lopera-Valle A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Elias A.

### 15:10 Coffee Break

**15:30 0699** *Failure Analysis of Polymeric Materials*  
\***Riahinezhad M.** <Forensic and Component Services, Materials and Major Components, Kinectrics Inc., >, Rouison D.

**15:50 0700** *Enhancement of Ionic Conductivity of PEO-PMMA Blends by Tuning Polymer Chain Length*  
**Ganjeh-Anzabi P.** <Department of Chemical and Petroleum Engineering, University of Calgary>, Hartwell A., Pervez S.A., Farooq U., Thangadurai V., Roberts E.P.L., \*Trifkovic M.

**16:10 0701** *Effect of Cellulose Acetate and Magnesium Hydroxide on Flame Retardant Properties and Thermal Behavior of Polypropylene-Based Composites*  
\***Al-Kubaisi O.** <Department of Chemical Engineering, University of Waterloo>, Nasser R., Moresoli C., Yu A.

**16:30 0702** *Experimental Comparative Study of Two Ligands in MMA AGET ATRP in Emulsion Reactor*  
**Awad M.** <Ryerson University, Toronto, ON M5B 2K3>, Duever T., Dhib R.

**16:50 0703** *Asphaltene Fractionation, Characterization of Fractions and Comparison with Three Physical Models*  
\***da Silva M.A.** <Department of Chemical and Material Engineering, University of Alberta>, Soares J.B.P.

### 17:10 End of Session

## Nanotechnology

### NAN4

### Salon 8

#### NAN4

Organizer(s) - Hyun-Joong Chung, Anastasia Elias and Zeinab Hosseinidou  
Chair(s) - Thanh-Giang La and Amin Pourmohammadbagher

**13:30 0704** *A Mechanism for the Effect of Nanocomposite Porous Structure of Graphitic Carbon Nitride (g-C<sub>3</sub>N<sub>4</sub>) on Photocatalytic Hydrogen Evolution*  
\***Reda M., Reda G.** <WSP Canada Inc., 100 Commerce Valley Dr. W, Floor 2, Thornhill, ON L3T 0A1>

**13:50 0705** *Ultrasound Assisted Wet Stirred Media Mill of High Concentration Catalysts*  
**Li H.** <Polytechnique Montreal>, Rostamizadeh M., Mameri K., Boffito D.C., Saadatkhah N., Rigamonti M.G., \*Patience G.S.

**14:10 0706** *Fickian to Single-File Diffusion Transition in Nano-Colloids*  
**Pourmohammadbagher M.** <Department of Chemical and Material Engineering, University of Alberta, Edmonton, AB>, Pourmohammadbagher A., \*Shaw J.M.

**14:30 0707** *Rheological Behavior of Networks of Partially Hydrolyzed Polyacrylamide and Fumed Silica Nanoparticles*  
**Aliabadian E.** <University of Calgary, Calgary, AB>, Sadeghi S., Kamkar M., \*Sundraraj U., \*Chen Z.

**14:50 0708** *Heat Treatment Application in Controlling Morphology of Polysulfone Membrane*  
\***Abdelrasoul A.** <Ryerson University>, Doan H., Lohi A., Cheng C.-H.

### 15:10 End of Session

## Process Safety and Risk Management

### PSM6

### Salon 10

#### PSM6

Organizer(s) - Lianne Lefsrud, Norman Nibber and Gord Winkel  
Chair(s) - Lianne Lefsrud and Ifeoma Odeluga

**13:30 0709** *How are Safety, Quality and Productivity Related?*  
\***Hamid D.H.** <University of Alberta>, \*Lefsrud L.M.

**14:00 0710** *Optimizing PFP through Risk Based Structural Analysis*  
\***Loudoun J.D.** <Atkins Consulting Canada Ltd>, Stahl M., Akinci N.

**14:30 0711** *What PHAs Are Trying to Tell Us*  
**De Man A.** <ACM Facility Safety>

### 15:00 Coffee Break

**15:20 0712** *Protecting Worker Safety by Enhancing Field Level Hazard Assessment Tools*  
**Baker K.E.** <University of Alberta, Edmonton, AB>, \*Lefsrud L.M., Macciotta R., Hendry M.

**15:50 0713** *Process Hazard Analysis (PHA) Consistency and Facility Comparisons*  
**De Man A.** <ACM Facility Safety>

### 16:20 End of Session

## Reaction Engineering and Catalysis

### RXN5

### Salon 7

#### RXN5

Organizer(s) - Bob Hayes, Natalia Semagina and David Simakov  
Chair(s) - Gregory Patience

**15:30 0714** *Fischer-Tropsch Process over Fe-Co Catalysts*  
Louyot P., Neagoe C., **Galli F.** <Department of Chemical Engineering, Polytechnique Montréal, C.P. 6079, Succ. CV, Montréal, QC H3C 3A7>, Pirola C., Patience G.S., \*Boffito D.C.

**15:50 0715** *Influence of Mesoporous Titanosilicates on the Activity and Selectivity of Cobalt-Based FTS Catalysts*  
**Kamath G.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK>, Badoga S., \*Dalai A.K.

**16:10 0716** *Deactivation Studies of Fischer-Tropsch Catalysts Synthesized by Plasma*  
**Aluha J.** <Department of Chemical and Biotechnological Engineering, Université de Sherbrooke, Sherbrooke, QC J1K 2R1>, \*Abatzoglou N.

**16:30 0717** *Impact of Alkyl Branching on the Rate and Position of Dehydrogenation in Alkanes*  
\***Ahad N.** <University of Alberta>, \*de Klerk A.

### 16:50 End of Session

### RXN6

### Salon 11

#### RXN6

Organizer(s) - Bob Hayes, Natalia Semagina and David Simakov  
Chair(s) - Samir Mushrif

**13:30 0718** *Optimizing Hydrogen Consumption for the Catalytic Hydrotreating of Olefins in Partially Upgraded Bitumen* **Xin Q.** <Natural Resources Canada, CanmetENERGY-Devon, 1 Oil Patch Dr., Devon, AB T9G 1A8, >, <sup>\*</sup>Chen J., Alvarez-Majmutov A., Dettman H.D.

**13:50 0719** *Silicate-Based Nanoparticles for Catalytic Oxy-Cracking of Solid Heavy Waste Hydrocarbons* **Manasrah A.** <Department of Chemical and Petroleum Engineering, University of Calgary, 2500 University Dr. NW, Calgary, AB T2N 1N4>, <sup>\*</sup>Nassar N.

**14:10 0720** *Evaluation of Ni-Ce-Mg-Al Hydrotalcite Monolithic Catalyst for Steam Cracking of Vacuum Gas Oil (VGO)* <sup>\*</sup>**Roustapishah M.** <University of Calgary, Schulich School of Engineering, Calgary, AB>, Bartolini M., Pérez Zurita M.J., Pereira Almao P.

**14:30 0721** *Role of Al<sub>2</sub>O<sub>3</sub> Support in Reduction Reaction of NiO for Chemical Looping Applications: A Density Functional Theory Study* <sup>\*</sup>**Manafi Rasi N.** <University of Calgary>, Ponnurangam S., Mahinpey N.

**14:50 0722** *Investigation of Industrial Dehydrogenation Catalyst Performance Analysis in a Fluidized Bed Reactor* <sup>\*</sup>**Aliuddin K.** <SABIC Technology & Innovation, Riyadh 11551, Kingdom of Saudi Arabia>, Nawaz Z., Al-Mutairi S.M.

### 15:10 Coffee Break

**15:30 0723** *A New Stoichiometric and Kinetic Model for the Substitution of Polysaccharides with Two Reagents* **Teerikoski S.** <Johan Gadolin Process Chemistry Centre, Laboratory of Industrial Chemistry and Reaction Engineering, Åbo Akademi, FI-20500, Turku/Åbo, Finland>, Salmi T.

**15:50 0724** *ALD Over-Coated ZnO on Cu/SiO<sub>2</sub> for Catalytic Hydrogenation of CO<sub>2</sub> for Methanol* **Gao J.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, Hu Y., Dalai A.K., <sup>\*</sup>Wang H.

**16:10 0725** *Liquid Phase Etherification of Styrene and Methanol to 1-Methoxyethylbenzene over Acidic Ion-Exchange Resin Catalysts* **Dirk-Faitakis C.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, <sup>\*</sup>Chuang K.

**16:30 0726** *Glycerol Aqueous Phase Reforming as Hydrogen Source for Phenol Hydrogenation* **Putra R.D.D.** <Department of Chemical and Biological Engineering, University of British Columbia, Vancouver, BC V6T 1Z3>, Trajano H.L., <sup>\*</sup>Kim C.S.

**16:50 0727** *Novel Copper (II) Oxide Nanoleaf Catalyst for the Hydrogen Peroxide Assisted Oxidation of Glycerol to Dicarboxylic acids: A Combined Theoretical and Experimental Study* **Amaniampong P.N.** <INCREASE (FR CNRS 3707), Université de Poitiers, ENSIP, 1 rue Marcel Doré, TSA41105, 86073 Poitiers Cedex 9, France>

**17:10** End of Session

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## Systems and Control

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### SYS6

### Salon 4

#### SYS6

Organizer(s) - Stevan Dubljevic, Zukui Li and Jinfeng Liu  
Chair(s) - Arun Tangirala, Stevan Dubljevic and Su Liu

**13:30 0728** *A Stochastic Back-Off Approach for Integration of Design and Control under Probabilistic-Based Uncertainty* **Rafiei M.** <Department of Chemical Engineering, University of Waterloo, Waterloo, ON N2L 3G1>, <sup>\*</sup>Ricardez-Sandoval L.

**13:50 0729** *Uniting Lyapunov-Based MPC with Closed-Loop Subspace Identification* **Kheradmandi M.** <Department of Chemical Engineering, McMaster University>, <sup>\*</sup>Mhaskar P.

**14:10 0730** *Nonlinear Model Predictive Control for Zone Tracking* **Liu S.** <Department of Chemical and Materials Engineering, University of Alberta>, Mao Y., <sup>\*</sup>Liu J.

**14:30 0731** *Distributed Fault Diagnosis for Networked Nonlinear Uncertain Systems* **Shahnazari H.** <Chemical Engineering Department, McMaster University>, <sup>\*</sup>Mhaskar P.

**14:50 0732** *Approximate Optimal Control using a Set-Based Learning Algorithm for a Class of Unknown Nonlinear Systems* <sup>\*</sup>**Guay M.** <Department Chemical Engineering, Queen's University>, Atta K.

### 15:10 Coffee Break

**15:30 0733** *Optimal Operation and Control Policy of a Solar-Thermal District Heating System* **Xu X.** <University of Alberta, Department of Chemical and Materials Engineering>, Yuan Y., <sup>\*</sup>Dubljevic S.

**15:50 0734** *Simplified Tuning of Model Predictive Control for Industry* <sup>\*</sup>**Forbes M.** <Honeywell Process Solutions, 500 Brooksbank Ave., North Vancouver, BC V7J 3S4>, Backstrom J.

**16:10 0735** *LPV System Identification and Model Predictive Control of an Agro-Hydrological System* **Mao Y.** <Department of Chemical and Materials Engineering, University of Alberta; Key Laboratory of Advanced Process Control for Light Industry, Jiangnan University, China>, Liu S., Nahar J., <sup>\*</sup>Liu J., Ding F.

**16:30 0736** *Adaptive Output Regulation of Uncertain Nonlinear Systems* **Wang M.** <Department of Chemical Engineering, Queen's University>, <sup>\*</sup>Guay M.

**16:50 0737** *Sparse Vector Auto-Regressive Modelling for Reconstruction of Causal Networks: A Critical Study* **Kathari S.** <Systems and Control Group, Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai - 600036, India>, <sup>\*</sup>Tangirala A.K.

**17:10** End of Session

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## Upgrading and Tailings Reduction

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### UPG3

### Salon 2

#### UPG3

Organizer(s) - Jinwen Chen, William McCaffrey, Richard Nelson and Yuming Xu  
Chair(s) - Yuming Xu and Arno de Klerk

**13:30 0738** *Polymer Flocculation of Oil Sands Tailings: Dynamic Rheological and Microstructural Properties of Floc Formation* **Govedarica A.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, Shrivastava S., Workman B., <sup>\*</sup>Trifkovic M.

**13:50 0739** *Application of Geopolymers in Oil Sand Tailings Treatment* <sup>\*</sup>**Xu Y.** <CanmetENERGY-Devon, Natural Resources Canada, 1 Oil Patch Dr., Devon, AB T9G 1A8>, Zhu Y.

**14:10 0740** *Application of a Mathematical Model for Describing the Flocculation Process of Oil Sands Tailings Treatment* <sup>\*</sup>**Vajihinejad V.** <University of Alberta, Department of Chemical and Materials Engineering>, <sup>\*</sup>Soares J.B.P.

**14:30 0741** *Nanotechnology in Oil Sands Tailings: Flocculation Mechanism using Surface Modified Nanoparticles* **Shamim S.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, Govedarica A., <sup>\*</sup>Trifkovic M.

**14:50 0742** *Chitosan-Based Bioflocculant for the Dewatering of Mature Fine Tailings* **Pennetta de Oliveira L.** <University of Alberta>, <sup>\*</sup>Gumfekar S., Soares J.B.P.

### 15:10 Coffee Break



**15:30 0743** *Nitrogen-Oxides  
Decomposition: Application to Oil  
Denitrogenation* **Prado G.H.C.** <University  
of Alberta>, Yasemi A.-A., Kamal S., Yan  
Y., <sup>s</sup>de Klerk A.

**15:50 0744** *Oxidative Ring-Opening of  
Aromatics as Upgrading Strategy* **Montoya  
Sánchez N.** <Department of Chemical and  
Materials Engineering, University of Alberta,  
9211 - 116th St., Edmonton, AB T6G 1H9>,  
<sup>s</sup>de Klerk A.

**16:10 0745** *Effect of Metal Halides on  
Thermal Conversion of Athabasca Vacuum  
Residue* **Riya R.** <University of Alberta,  
Edmonton, AB T6G 2R3>, <sup>t</sup>Prado G.H.C.,  
<sup>s</sup>de Klerk A.

**16:30 0746** *Chemical Reactions of H<sub>2</sub>O  
and Heavy Oil during the Process of Steam  
Drive or SAGD* **Wei Q.** <State Key Laboratory  
of Heavy Oil Processing, China University of  
Petroleum-Beijing, 18 Fuxue Road, Beijing,  
102249 PR China>, <sup>t</sup>Zhou Y., Zhou W., Ding  
S.

**16:50** End of Session