

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 *Characterizing Adsorbents for Humid Post-Combustion Carbon Capture*
Wilkins N. <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, [§]Rajendran A.

13:10 0003 *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.

13:15 0004 *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>, Nikrityuk P., Rajendran A.

13:20 0005 *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.

13:25 0006 *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.

13:30 0007 *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.

13:35 0008 *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.

13:40 0009 *Hierarchical Porous Materials to the Rescue or How to Utilize Hierarchy of Porosity to Maximize Catalytic Activity*
***Sadeghi M.** <McGill University>, [§]Gostick J.T.

13:45 0010 *Decision Making Policy: Resilience towards the Uncertain*
Rahal S. <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Li Z.

13:50 0011 *Evaluation of Diamine Appended Metal-Organic Frameworks for Post-Combustion CO₂ Capture*
Pai K.N. <University of Alberta>, Rajendran A.

13:55 0012 *Nanoparticle Technology for Oil Sands Application*
***Nafie G.** <University of Calgary, 2500 University Dr. NW, Calgary, AB T2N 1N4>, Vitale G., [§]Nassar N.

14:00 0013 *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.

14:05 0014 *Strategic Planning of SAGD Reservoir Development under Uncertainty*
Motamed Nasab F. <University of Alberta, Department of Chemical and Materials Engineering>, Li Z, Shahandeh H.

14:10 0015 *Polymerization in Supercritical CO₂*
López-Domínguez P. <Facultad de Química, Departamento de Ingeniería Química, Universidad Nacional Autónoma de México, 04510, México D.F., México>

14:15 0016 *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.

14:20 0017 *Biofuel Production using Supported Solid Acid Catalyst*
Kurhade A. <Catalysis and Reaction Engineering Laboratories, Department of Chemical & Biological Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, [§]Dalai A.K.

14:25 0018 *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.

14:30 0019 *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.

14:35 0020 *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.

14:40 0021 *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.

14:45 0022 *From Seaweed to Jet Fuel*
Harris J. <Department of Chemical Engineering, Queen's University>, [§]Champagne P., Jessop P.G.

14:50 0023 *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.

14:55 0024 *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.

15:00 0025 *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.

15:05 0026 *Microstructured Flow Chemistry for Oxidation of Molecules from Biomass using Gold as Catalyst*
Behraves E.E. <Åbo Akademi University, Finland>**PAPER WITHDRAWN**

15:05 0027 *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.

15:10 0028 *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.

15:15 0029 *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.

15:20 0030 *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>

15:25 0031 *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.

15:30 0032 *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.

15:35 0033 *Anemia Management in Chronic Kidney Disease using Zone Model Predictive Control* **Bajwa N.** <University of Alberta>, McAllister J., Li Z., Liu J.

15:40 0034 *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.

15:45 0035 *Simultaneous Gross Error Detection and Data Reconciliation* ***Alighardashi H.** <Department of Chemical and Materials Engineering University of Alberta, Edmonton, AB T6G 1R1>, *Huang B.

15:50 0036 *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, >

15:55 0037 *CO₂ Capture with Ionic Liquids* ***Aghaie M.** <Memorial University>, *Zendejboudi S.

16:00 0038 *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.

16:05 End of Session

Monday AM

Plenary

PLEN

Hall B

Plenary

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

08:20 Introductory Remarks

Plenary Lecture presented by **Arun Majumdar, Stanford University**

08:30 0039 *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

HOB1

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 0040 *The NanoF-PoRes Project: NanoFilaments from Polymeric Residues* ***Abatzoglou N.** <Université de Sherbrooke>, Gitzhofer F., Blanchard J.

10:30 0041 *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 0042 *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 0043 *Shrinkage during Drying of Cellular Foods* ***Ratti C.** <Université Laval, Département des sols et de génie agroalimentaire>

11:30 0044 *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 0045 *An Integrated Product Design and Control Framework Applied to Polymer Nanocomposite Manufacturing* ***Ogunnaik B.** <University of Delaware, USA>, Wetzel M., Gou Q.

10:10 0046 *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 0047 *Modeling of High Temperature Radical Polymerization through Statistical Data Mining* **Debling J.** <BASF Corporation>, *Task K.

10:50 0048 *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.

11:10 0049 *Model-Based Reactor Design to Control Hyperbranched Polymer Architecture* ***Tobita H.** <Department of Materials Science and Engineering, University of Fukui, Japan>

11:30 0418 *Understanding Condensed Mode Cooling for Gas Phase PE Production* ***McKenna T.F.L.** <Université de Lyon, C2P2-UMR 5265 France>

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 0051 *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 0052 *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 0053 *Using Data Analytics
Techniques in Process Model Development for
Heavy Oil Processing* **Lenart P.J.**
<ExxonMobil Upstream Research Company>

11:30 0054 *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 0055 *Scaling Up Bioenergy and
Biochemical Process Technology* **Beckman
D.** <Zeton Inc., Burlington, ON>

10:30 0056 *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 0057 *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 0058 *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 0059 *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
Chair(s) - Nader Mahinpey

09:50 0060 *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.**

10:10 0061 *Enhanced CO₂
Hydrogenation to Methanol with Tertiary
Catalysts Cu/g-C₃N₄-Modified ZnO/Al₂O₃* ***Lu
Q.** <Department of Chemical and Petroleum
Engineering, University of Calgary, AB>,
Deng K., Hu B., ***Hong X.**

10:30 0062 *Feasibility Study of CO₂
Conversion to Syngas by Reverse Water Gas
Shift Reaction* ***Rezaei E.** <Department of
Chemical Engineering, Lakehead University,
Thunder Bay, ON>

10:50 0063 *Transition Metal Carbides as
Highly-Selective Catalysts for CO₂ Conversion
to Syngas via Reverse Water Gas Shift
Reaction* Khan F.M., ***Simakov D.S.A.**
<University of Waterloo>

11:10 0064 *Mathematical Modeling of
CO₂ Removal from Flue Gas using Micron-Size
Water Droplets* ***McAuley K.B.** <Queen's
University, Kingston, ON K7L 3N6, >, Tran N.

11:30 End of Session

Chemical Engineering Fundamentals

FUN1 Salon 5

FUN1

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

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

09:50 0065 *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 0066 *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 0067 *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 0068 *3D Simulation of Natural
Convection in Liquid Storage Tanks*
***Pletnyov F.M.** <University of Calgary>,
Jeje A.A.

11:30 0069 *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 0070 *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 0071 *Solvent Property
Optimization to Improve the Solvent-Aided
Thermal Recovery Processes* **Zirahi A.**
<University of Calgary>, Zirrahi M.,
***Hassanzadeh H.**, ***Abedi J.** **PAPER
WITHDRAWN**

10:30 0072 *Phase Behaviour Study of
Propane-Bitumen and Butane-Bitumen at High
Temperatures* **Haddadnia A.** <University of
Calgary>, Zirrahi M., ***Hassanzadeh H.**,
***Abedi J.**

10:50 0073 *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.**, ^{*}Hassanzadeh H., ^{*}Abedi J.

11:10 0074 *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>, ^{*}Xu Y.

11:30 0075 *Pore-Scale Modelling of Bitumen Transient Dissolution in Heated Solvent* **Bayestehparvin B.** <University of Calgary>, ^{*}Abedi J., Farouq Ali S.M.

11:50 End of Session

Environmental Engineering and Waste Management / Oil Spill Recovery

ENV1 Salon 8

ENV1

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

09:50 0076 *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., ^{*}Mohseni M.

10:10 0077 *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., ^{*}Ray A.K

10:30 0078 *Magnetic Nanomaterial for the Adsorptive Removal of Organic Drugs from Wastewater* **Alnajjar M.** <University of Calgary, Calgary, AB T2N 1N4, >, ^{*}Nassar N., Vitale G.

10:50 0079 *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.

11:10 0080 *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.

11:30 End of Session

Industrial Multiphase Flow

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 0081 *Step Change Improvements in Bitumen Production Performance through the Use of CFD* **Reid K.** <Syncrude Canada Ltd>

10:30 0082 *Physical Modeling of Multi-Phase Flows* **Hilderman T.** <Coanda Research & Development Corporation>, Kiel D.

10:50 0083 *Yield Stress Measurements of Bimodal Suspensions* **Olayode A.E.** <University of Alberta, Department of Chemical and Materials Engineering>, Sarker N.R., ^{*}Sanders R.S., Spelay R.B.

11:10 0084 *Flocculant-Dosed Clay Aggregate Restructuring in Laminar Pipeline Transport* **Sun Y.** <University of Alberta, Edmonton, AB T6G 2R3>, Breakey D., Sanders R.S.

11:30 End of Session

Macromolecular Sciences and Engineering

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 0085 *Creating a More Sustainable Future through Polymer Chemistry and Engineering* **Vignola E.** <NOVA Chemicals Corp>

10:30 0086 *Simulation of Morphology Evolution of Polyurethane Foams* **Ferkl P.**, **Krskova I.**, ^{*}**Kosek J.** <University of Chemistry and Technology Prague, 166 28 Prague 6, Czech Republic>

10:50 0087 *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., ^{*}Soares J.B.P.

11:10 0088 *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., ^{*}Zeng H.

11:30 End of Session

Nanotechnology

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 0089 *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 0090 *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 0091 *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., ^{*}Chung H.-J.

11:10 0092 *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 0093 *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

Process Safety and Risk Management

PSM1 Salon 10

PSM1

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

09:50 0094 *Making Safety Real: Taking Risk Management to the Next Level* ***Winkel G.** <Lynch School of Engineering Safety and Risk Management, University of Alberta>

10:20 0095 *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.

10:50 0096 *Creating QRA Scenarios* ***Odeluga I.** <Department of Chemical and Materials Engineering, University of Alberta>, Sharma V., *Lefsrud L.M.

11:20 0097 *I've Got an App for That! All Things Risk in One Place, or the Democratization of PHA Software and Tools* **Timbers W.G.** <Timbers Consulting Inc>

11:50 End of Session

Reaction Engineering and Catalysis

RXN1 Salon 11

RXN1

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

09:50 0098 *Single Pass, Highly-Selective Thermocatalytic Upgrading of Landfill Gas into Renewable Natural Gas over the Highly Active and Stable, Ultra-Low Loading Ru/Al₂O₃ Catalyst* Zhuang Y., ***Simakov D.S.A.** <University of Waterloo>

10:10 0099 *Surface Investigation of Tungstophosphoric Acid (H₃PW₁₂O₄₀) 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 0100 *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 0101 *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 0102 *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 0103 *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

Systems and Control

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 0104 *Modeling of Chemical Processes: Challenges and Opportunities* ***McAuley K.B.** <Department of Chemical Engineering, Queen's University, Kingston, ON>

10:30 0105 *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 0106 *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 0107 *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 0108 *Design of a Novel Diesel Cloud Point Soft Sensor using Single Event Kinetics for Pt/H-ZSM5 Catalysts* **Neto E.T.**, ***Imtiaz S.A.** <Department of Process Engineering, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, Ahmed S.

11:50 End of Session

Monday PM

Plenary

PLEN Hall B

Plenary

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

Plenary Session - Panel Discussion

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

Joy Romero (Chair), CNRL

Fraser Forbes, University of Alberta

Murray Gray, Alberta Innovates and University of Alberta

Shafiq Jaffer, TOTAL

Arun Majumdar, Stanford University

Margaret McCuaig-Boyd, Minister of Energy, Province of Alberta

14:30 End of Session

Honourary Symposia

HOB2 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 0109 *Simultaneous Effect of Particle Size and Solid Concentration on Hydrodynamics of Slurry Bubble Columns* ***Chaouki J.**, ***Lakhidissi E.M.** <Department of Chemical Engineering, Ecole Polytechnique de Montreal, Montreal, QC>, Guy C.

14:50 0110 *Modeling Biomass Gasification in a Fluidized CREC Riser Simulator* *^{de Lasa H.}, **Kuhn Bastos A.** <Chemical Reactor Engineering Centre, University of Western Ontario, London, ON N6A 5B9>, Giron A., Mazumder A

15:10 0111 *Multi-Criteria Decision Making Tool for Assessment of Biorefinery Strategies* *^{Benali M.} <CanmetENERGY of Natural Resources Canada>, Jeaidi J., Mansoornejad B., Ajao O., Gilani B., Ghavidel Mehr N.

15:30 0112 *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>, ^{Savard S.}, ^{Belkacemi K.}

15:50 0113 *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 0114 *Polyethylene Furanoate by Ring-Opening Polymerization* Fleckenstein P., Rosenboom J.-G., Storti G., **Morbidelli M.** <ETH Zurich, Vladimir-Prelog-Weg 1, 8093 Zurich, Switzerland>

14:50 0115 *Modeling of RAFT Homo- and Copolymerization of Vinyl/Divinyl Monomers in Supercritical Carbon Dioxide* López-Domínguez P., Hernández-Ortiz J.C., ^{Vivaldo-Lima E.} <Facultad de Química, Departamento de Ingeniería Química, Universidad Nacional Autónoma de México, 04510, Ciudad de México, México>

15:10 0116 *How Research Training in Polymer Reaction Engineering Benefited a Research Career in Advanced Pharmaceuticals and Drug Delivery* ^{Wu X.Y.} <Leslie Dan Faculty of Pharmacy, University of Toronto, 144 College St., Toronto, ON M5S 3M2>

15:30 0117 *Control of Polymer Chain Architectures in the Polymer Industry via Polymer Reaction Engineering* **Zhang M.** <Axalta Coating Systems>, Grady M.

15:50 0118 *Nascent Growth of α -Olefin Polymers with *rac*-Et(ind)₂ZrCl₂/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 0119 *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 0120 *Application of Artificial Neural Networks in Ethylene/1-Olefin Copolymerization* ^{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.

17:10 0121 *High Temperature Radical Polymerization: From Inception to Commercial Practice* **Campbell D.** <BASF Corporation, Advanced Materials and Systems Research>, Debling J.

17:30 0122 *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.}

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 0123 *Canadian Natural's Culture of Innovation and Continuous Improvement* **Wallwork V.** <Canadian Natural>

15:10 0124 *Secondary Process Aids for Extraction Performance Enhancement: A Major Technical Breakthrough in Bitumen Extraction* ^{Long J.} <Research and Development, Syncrude Canada Ltd., Edmonton, AB T6N 1H4>, Hoskins S., Gu Y.

15:30 0125 *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 0126 *Experimental Investigation of Asphaltene-Induced Formation Damage in Porous Media* **Taylor S.D.** <Schlumberger-Doll Research>, ^{Mohammadzadeh O.}, Eskin D., Ratulowski J.

16:10 Coffee Break

16:30 0127 *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.

16:50 0128 *First Quantification of <2 μ m Clays and <0.2 μ m Ultrafines in Commercial Streams of Naphthenic Froth Treatment Process* **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 0129 *Role of Mineral Flotation Separation Technology in Improving Bitumen Extraction Recovery from Mined Athabasca Oil Sands* ^{Zhou J.} <Heavy Oil and Oil Sands, InnoTech Alberta Inc., Edmonton, AB, >, Li H., Chow R.

17:30 0130 *Observations on Flocculation in Oil Sands* **Kaminsky H.A.W.** <NAIT - Center for Oil Sands Sustainability>, Sedgwick A.

17:50 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 0131 *Ionic Liquid/SBA-15 Biodiesel Production Based Process: Process Design and Economic Analysis* ^{Ibrahim H.}, Alawad I., **Deedwania A.** <Process Systems Engineering, University of Regina, 3737 Wascana Pkwy., Regina, SK S4S 0A2>

16:50 0132 *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., ^{Volker V.C.}

17:10 0133 *Supercritical Water Gasification of Waste Food Residues for Hydrogen Production* **Nanda S., Dalai A.K.** <Department of Chemical and Biological Engineering, University of Saskatchewan, SK>, ^{*}Kozinski J.A., Naik S.N.

17:30 0134 *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.

17:50 End of Session

Carbon Reduction and Utilization

CCU2 Salon 13/14

CCU2

Organizer(s) - Rajender Gupta, Charles de Lannoy and Arvind Rajendran
Chair(s) - Ebrahim Rezaei and David Simakov

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

14:30 0135 *Carbon Capture by Metal Organic Framework (MOF) Solid Sorbents* ^{*}**Shimizu G.K.H.** <Department of Chemistry, University of Calgary>

15:10 0136 *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 0137 *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 0138 *Modeling CO₂ 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 0139 *Hydrothermally Stable, Amine-Grafted MCM-41 for CO₂ 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 0140 *Post-Combustion CO₂ 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 0141 *Evaluation of Diamine Appended Metal-Organic Frameworks for Post-Combustion CO₂ Capture* ^{*}**Pai K.N.** <University of Alberta>, Baboolal J., Sharp D., ^{*}Rajendran A.

17:30 0142 *CO₂ 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

Chemical Engineering Fundamentals

FUN2 Salon 5

FUN2

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

14:30 0143 *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 0144 *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 0145 *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 0146 *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 0147 *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 0148 *Dynamic Testing of FO Membranes* **Bai D.** <University of Ottawa>, Asempour F., ^{*}Kruczek B.

16:50 0149 *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 0150 *Crude Glycerol Purification by Combined Physico-Chemical and Semi-Continuous Membrane Filtration* **Choi C.G.** <Department of Chemical and Biological Engineering, University of Saskatchewan, SK S7N 5A9>, Dhabhai R., ^{*}Dalai A.K.

17:30 0151 *Gas Separations with Mixed Matrix Membranes Composed of Polyimide Matrimid with ZIF 8, Silicalite and SAPO 34* **Carter D., ^{*}Tezel F.H.** <Department of Chemical and Biological Engineering, University of Ottawa, Ottawa, ON>, 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 0152 *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 0153 *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 0154 *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 0155 *Ion Removal from Bitumen* **Penalzo I.** <University of Alberta, Edmonton, AB T6G 2R3, >, ^{*}de Klerk A.

17:50 End of Session

Colloids and Interfacial Sciences

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 0156 *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 0157 *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 0158 *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 0159 *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 0160 *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 0161 *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 0162 *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 0163 *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 0164 *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 0165 *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 0166 *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 0167 *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 0168 *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 0169 *Utilizing Leagacy Underground Mines as Municipal Infrastructure* ***Peachey B.R.** <New Paradigm Engineering Ltd., Edmonton, AB>, Theriault Y

15:50 0170 *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 0171 *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 0172 *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 0173 *Production of Biojet Fuel Precursors from Cellulose using Biphasic Reactions and High Pressure CO₂* **Harris J.** <Queen's University, Department of Chemical Engineering; Queen's University, Department of Chemistry>, Yao J., Lee R., Jessop P.G., *Champagne P.

17:30 0174 *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 0175 *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 0643 *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>

15:30 0177 *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 0178 *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) - David Breakey

14:30 0179 *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 0180 *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 0181 *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 0182 *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 0183 *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 0184 *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 0185 *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 0186 *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 0187 *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 0188 *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 0189 *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 0190 *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 0191 *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 0192 *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 0193 *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 0194 *Diffraction-Based Degradation Sensor for Polymer Thin Films* **Anbukarasu P.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, [§]Martinez-Tobón D.I., [§]Sauvageau D., [§]Elias A.

17:30 0195 *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 0196 *Flexible, Stretchable and Healable Electronics* [§]**Cicoira F., Zhang S.** <Polytechnique Montréal>

14:50 0197 *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 0198 *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 0199 *Langmuir Films and Uniform, Large Area, Transparent Coatings of Chemically Exfoliated MoS₂ Single Layers* **Zhang Y., Xu L., Walker W., Tittle C., Backhouse C., [§]Pope M.A.** <University of Waterloo>

15:50 0200 *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 0201 *Mucus Permeating Nanocarriers for the Delivery of Biopharmaceutics* Bourganis V., Karamanidou Th., Kammona O., *Kiparissides C. <Department of Chemical Engineering, AUTH, Thessaloniki, Greece; Chemical Process & Energy Resources Institute, CERTH>

16:50 0202 *Pharmaceutical Nanotechnology to Overcome the Bottleneck of Cancer Radiotherapy* *Wu X.Y. <Leslie Dan Faculty of Pharmacy, University of Toronto, 144 College St., Toronto, ON M5S 3M2>

17:10 0203 *Reorientation Dynamics of Confined Liquid Crystal Domains* Fred F., *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 0204 *Production and Characterization of Yarn Spun Directly from Carbon Nanotube Bundles* *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 0205 *Creating a Positive Safety Culture and Continuous Improvement in Alberta's Construction Industry* Lefsrud L.M., *Pennetta de Oliveira L. <University of Alberta>, *Caldera A., Esmaeeli N., Farjoo A.

15:00 0206 *Risk According to a Matrix* Dancey J.J. <Baker Engineering and Risk Consulting, Inc>

15:30 0207 *The New Updated International Standard IEC 61511:2016 Ed. 2 (Key Changes)* Pacanins G. <ACM Facility Safety, >

16:00 Coffee Break

16:30 0208 *PHA Risk Reduction Optimization for Implementing Recommendations* Mukherjee R.K.M. <ACM Facility Safety>

17:30 0209 *You Be the Barrier: Bowties to Assess Hazards and Analyze Incidents due to Human Error* *Viloria E., Herd J. <Enbridge>, *Uy R.L., Robbins 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 0210 *Advanced Photo-Oxidation Process over Mn-TiO₂ for Water Treatment* Stucchi M., Galli F. <Polytechnique Montréal, Chemical Engineering, Montréal, QC H3T 1J4>, Elfiad A., *Boffito D.C.

14:50 0211 *Spray-Dried Micro-Sized TiO₂/WO₃ 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 0212 *Ozone-Assisted Catalytic Oxidation of a Binary Mixture of Volatile Organic Compounds in Air* Aghbolaghy M. <University of Saskatchewan, Saskatoon, SK>, Chen N., *Soltan J.

15:30 0213 *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., *Soltan J.

15:50 0214 *Catalytic Ozonation of Ibuprofen with Fe-Substituted MCM-41* *Jairani Z. <Department of Chemical and Biological Engineering, University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5A9>, *Soltan J.

16:10 Coffee Break

16:30 0215 *Multiscale Modeling of the Flow Inside of an Automotive Catalytic Converter* *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 0216 *CH₄ 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>, *Smith K.J.

17:10 0217 *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., *Semagina N.

17:30 0218 *Highly Stable Silica Encapsulated Emission Control Catalysts for Lean Methane Combustion* Habibi A.H. <University of Alberta, Edmonton, AB>, Hayes R.E., *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 Ricardez-Sandoval and Xiaodong Xu

14:30 0219 *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., *Prasad V.

14:50 0220 *Simultaneous Data Reconciliation and Gross Error Detection Based on Maximum Likelihood Estimation using EM Algorithm* *Alighardashi H. <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1R1>, Magbool Jan N., *Huang B.

15:10 0221 *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>, *Li Z., *Shah S.L.

15:30 0222 *A Robust Multivariate Fault Detection Scheme for Process Monitoring* Rashidi B. <Department of Electrical and Computer Engineering, University of Alberta, Edmonton, AB>, *Zhao Q., Meenakshi S., Saha S.

15:50 0223 *Real Time Monitoring of Feed Frame Powders and Tablets using Near Infrared Spectroscopy* Dalvi H. <Université de Sherbrooke, Pfizer Industrial Research Chair, Sherbrooke, QC>, *Gosselin R., *Abatzoglou N., Guay J.-M., Langlet A.

16:10 Coffee Break

16:30 0224 *Anemia Management in Chronic Kidney Disease using Zone Model Predictive Control* Bajwa N. <Department of Chemical and Materials Engineering, University of Alberta>, McAllister J., *Liu J., Li Z.

16:50 0225 *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., *Dubljevic S.

17:10 0226 *Multi Input Multi Output Model Predictive Control for Steam-Assisted Gravity Drainage (SAGD)* **Purkayastha S.N.** <University of Calgary>, Gates I.D., *Trifkovic M.

17:30 0227 *Dynamic Optimization and Control of a CO₂ Absorber Column for Post-Combustion CO₂ Capture* Cerrillo Briones I., **Ricardez-Sandoval L.** <Department of Chemical Engineering, University of Waterloo, Waterloo, ON N2L 3G1>

17:50 End of Session

Special

SPEC Salon 4

Special

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

Special Event

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

Facilitator, Eddy Isaacs, University of Alberta

19:10 End of Session

Posters

POS Hall C

Posters

Organizer(s) - Arvind Rajendran

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

0228 *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.

0229 *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.

0230 *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.

0697 *Impact of Alkyl Branching on the Rate and Position of Dehydrogenation in Alkanes* **Ahad N.** <University of Alberta>, *de Klerk A.

0231 *Comparative Study of a Set of Controller for Dynamic Positioning in Harsh Environments* **Imtiaz S.A., Ahmed S.** <Memorial University of Newfoundland>, Jayasiri A.

0232 *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.

0233 *Boundary Linear-Quadratic Control of a Coupled System of Parabolic-Hyperbolic PDEs and ODE* **Aksikas A.** <University of Alberta>, Aksikas I., *Hayes R.E., Forbes J.F.

0234 *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.

0235 *Synthesis and Characterization of Conductive Polyaniline in Various Nanostructures* **Al-Dulaimi A.** <MICET, Universiti Kuala Lumpur, Lot 1988, Taboh Nanning 78000 Alor Gajah, Melaka, Malaysia>**PAPER WITHDRAWN**

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

0239 *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.

0240 *Application of Surface-Modified Cellulose Nanocrystals for Enhanced Oil Recovery* **Bhatt V., Bazazi P.** <Porous Media Laboratory, Chemical and Petroleum Engineering Department, University of Calgary>, Sanati-Nezhad A., *Hejazi S.H.

0241 *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., *Sundararaj U.

0242 *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.

0243 *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.

0244 *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 *Local Control of Fuel Cell Systems within Hybrid Renewable Energy Generation using Model Predictive Control* **Chen S.** <Chemical and Biomolecular Engineering, National University of Singapore; Chemical and Materials Engineering, University of Alberta>, Siu M.-S., Wang X.

0248 *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.

0249 *Study of Sand Filtration for Removal of Pollen from Swimming Pools* **Bradley B., Creber S.** <Royal Military College of Canada>

0250 *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>

0251 *Clinical Data from Near-Infrared Imaging of Traumatic Brain Injuries* **Riley J., Creber S.** <Royal Military College of Canada>

0252 *Hydrogen Production through Supercritical Water Gasification of Bitumen* Rana R., Nanda S., **Dalai A.K.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK>, [§]Kozinski J.A.

0253 *Studies on the Fouling of Catalysts during Hydroprocessing of Gas-Oils* Kaushik P., **Dalai A.K.** <Department of Chemical and Biological Engineering, University of Saskatchewan>

0254 *Production of Jet Fuel through Hydroprocessing of Canola Oil over Bimetallic Supported CuFe Catalysts* Ayandiran A.A., Arun N., **Dalai A.K.** <Catalysis and Reaction Engineering Laboratories, Department of Chemical Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>

0245 *Coupling of Fermentation with Pervaporation: A Membrane Bioreactor System* Jain A., **Dalai A.K.** <Dept. of Chem. Eng., Banasthali University, Rajasthan 304022, India; Dept. of Chem. and Biol. Eng., University of Saskatchewan, Saskatoon, SK S7N 5A9>, Chaurasia S.P.

0246 *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., **Dalai A.K.** <Department of Chemical & Biological Engineering, University of Saskatchewan, Saskatoon, SK>

0255 *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.

0257 *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>

0258 *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>

0259 *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>

0260 *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.

0261 *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.

0262 *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.

0263 *Evaluation of Adsorption Efficiency of Hydrophobic Silica Adsorbents using Hansen Solubility Parameters* **Fuziwara N.** <Department of Chemical Energy and Environmental Engineering, Faculty of Environmental and Urban Engineering, Kansai University, Japan>, [§]Yamamoto H.

0264 *Solvent-Free Ultrasound Synthesis of Bio-Lubricant Diesters* [§]Patience N.A., **Galli F.** <Polytechnique Montreal, 2900 Boul. Edouard Montpetit, Montreal, QC, >, [†]Boffito D.C.

0265 *Dye-Sensitization: A New Facet of Solar Photocatalysis* **Ghosh M.** <University of Western Ontario, London, ON>, Chowdhury P., Ray A.K.

0266 *Interactions between Foulants and Liner Materials* [§]Shi X., **Gong L.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, Wang J., Li J., Leitch M., Luo J., [†]Zeng H.

0267 *Supercritical Carbon Dioxide Pretreatment of Flax Fibers for Enzymatic Production of Lignocellulosic Nanofibrils* Nlandu H., [§]Belkacemi K., Elkoun S., Robert M., Chorfa N., **Hamoudi S.** <Department of Soil Sciences & Agri-Food Engineering, Université Laval>

0268 *Separation of Zr and Hf from $K_2Zr(Hf)F_6$ using Fractional Crystallization* **Hayashi T.** <Department of Chemical, Energy and Environmental Engineering, Faculty of Environmental and Urban Engineering, Kansai University, Japan>, [†]Yamamoto H.

0269 *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.

0270 *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. **PAPER WITHDRAWN**

0271 *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. **PAPER WITHDRAWN**

0272 *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. **PAPER WITHDRAWN**

0273 *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. **PAPER WITHDRAWN**

0274 *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. **PAPER WITHDRAWN**

0275 *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. **PAPER WITHDRAWN**

0276 *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.

0277 *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.

0278 *Experimental Studies on Cold Flow Properties Improvement of Hexadecane by Catalytic Hydrodewaxing Reaction* Mehruz O., [§]**Imtiaz S.A.** <Process Engineering, Memorial University of Newfoundland, St. John's, NL A1B 3X5>

0279 *Evaluating the Hydrothermal Stability of Amine-Tethered, Large-Pore SBA-15 Silica during Cyclic CO₂ Capture* **Jahandar Lashaki M.** <Centre for Catalysis Research and Innovation, Department of Chemistry and Biomolecular Sciences, University of Ottawa, Ottawa, ON K1N 6N5>, Ziaei-Azad H., [§]Sayari A.

0280 *The Impact of the Support Pore Size and Intrawall Pore Volume on the CO₂ 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.

0698 *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., Ahmado S., Mortazavi M.M., Zohuri G.H.

0699 *Novel Binuclear Ni-Based FI Catalysts for Polymerization of 1-Hexene* **Khoshsefat M.** <Department of Catalyst, Iran Polymer and Petrochemical Institute, Tehran, Iran>, Ahmado S., Mortazavi M.M., Zohuri G.H.

0281 *Fabrication of Superhydrophobic and Superoleophilic Cellulose Biomembrane for Oil/Water Separation* **Kollarigowda R.H.** <Ingenuity Lab, 11421 Saskatchewan Drive Northwest, Edmonton, A1B T6G 2M9; Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2V4>, Abraham S., [§]Montemagno C., Gray M.R.

0282 *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>

0283 *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. **PAPER WITHDRAWN**

0284 *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.

0700 *Effect of Vanadium Content and Calcination Temperature on the Performance of a Cr-V Bimetallic Catalyst for Ethylene Polymerization* Liu B. <East China University of Science and Technology, Shanghai 200237 China>, Zhou T., Soares J.B.P., Liu B.

0285 *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.

0286 *Modeling of ATRP Polymerization via Kinetic Monte Carlo and the Method of Moments* López-Dominguez P. <Departamento de Ingeniería Química, Facultad de Química, Universidad Nacional Autónoma de México, 04510, Ciudad de México, México>, [§]Vivaldo-Lima E.

0287 *Synthesis of Copper Oxide/Alumina Composite Aerogel as an Oxygen Carrier for Chemical Looping Combustion of Methane* Karami D., [§]Mahinpey N. <Department of Chemical and Petroleum Engineering, University of Calgary>

0288 *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.

0289 *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.

0290 *Ionic Liquid Incorporation into Zeolitic Imidazolate Framework (ZIF-8) as Efficient Sorbents for CO₂ Capture* Mohamedali M. <Clean Energy Technology Research Institute (CETRI), and Process Systems Engineering, University of Regina, 3737 Wascana Pkwy., Regina, SK, S4S 0A2>, [§]Henni A., Ibrahim H.

0291 *The Impact of Selecting the Appropriate Probit for Hydrogen Sulphide (H₂S) when Conducting a Quantitative Risk Assessment (QRA)* Montgomery D. <Atkins Consulting Canada Ltd>

0292 *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., [§]Soares J.B.P.

0293 *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.

0294 *Characterization of Starch/Sodium Montmorillonite Composite (Starch/Na-MMT) and its Application for Removal of Cobalt (II) and Nickel (II) Ions from Aqueous Solutions* Garcia-Padilla A., Moreno-Sader K. <Chemical Engineering, University of Cartagena, Cartagena, Colombia>, Acevedo-Morantes M., Realpe-Jimenez A., Soares J.B.P.

0295 *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.

0296 *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., Stuart P.R.

0297 *Removal of Ciprofloxacin from Aqueous Solution using Oat Hulls Based Adsorbents* Movasaghi Z. <Department of Chemical and Biological Engineering, University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5A9>, Yan B., Niu C.H.

0298 *Investigating Hydrocracking of Waste Plastic Mixture using Mesoporous Beta Catalysts* [§]Munir D. <Institute of Chemical Engineering and Technology, University of the Punjab Lahore, Pakistan>, Usman M.R.

0299 *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., [§]Lefsrud L.M.

0300 *Negatively-Templated Multiscale Porous Polymer Monoliths for Bioseparations* Muzzin N. <McMaster University, 1280 Main St. W, Hamilton, ON L8S 4L8>, Johnson K., [§]Hoare T., Latulippe D.

0301 *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.

0302 *In-situ Synthesis of NiO Nanoparticles in Reservoir Oils for in-situ Upgrading* Amrollahi B. A., [§]Hosseinpour N., Nassar N. <University of Calgary>, Marei N., Bahramian A., Vatani A., Hassan A. **PAPER WITHDRAWN**

0303 *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.**, **Soares J.B.P.**

0304 *Process Characterization of Water Stable Metal Organic Frameworks (MOFs) for Post-Combustion CO₂ Capture* **Nguyen T.T.T.** <Department of Chemical and Materials Engineering, University of Alberta>, **Taylor J.**, **Rajendran A.**

0305 *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>, **Yamamoto H.**

0306 *Game Based Learning for Process Safety* **Ormerod G.** <Risktec Solutions; Institution of Chemical Engineers (UK)>

0307 *Synthesis and Characterisation of Zeolite NaY Catalyst using Lawani Benin River Nigeria Kaolin as a Precursor for Silicon and Alumina* **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.**

0308 *The Need to Ensure Climate Science is Based on Valid Mass and Energy Balances* **Peachey B.R.** <New Paradigm Engineering Ltd., Edmonton, AB>

0309 *Direct Contact Steam Generation: Design Options for Oil Sands Applications* **Peachey B.R.** <New Paradigm Engineering Ltd>, **Godin M.**

0310 *TIRF Tomography to Study Bitumen-Clay Association in Oil Sands Tailings* **Shende S.**, **Nazemifard N.**, **Pendharker S.** <University of Alberta, Department of Electrical and Computer Engineering>, **Jacob Z.**

0311 *Toward Quantitative Measurement of Clay Content in Water: Enthalpic End Point Detection for the Methylene Blue Test* **Pourmohammadbagher A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, **Shaw J.M.**

0312 *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.**, **Jazini M.**

0313 *Optimal Scheduling of a Bitumen Upgrader Facility for Steam-Assisted Gravity Drainage (SAGD)* **Purkayastha S.N.** <University of Calgary>, **Gates I.D.**, **Trifkovic M.**

0314 *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.**, **Nobes D.S.**

0315 *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.**

0316 *Effect of Solvent Additives on Liquid-Liquid Equilibrium of n-Butane-Athabasca Bitumen* **Sadeghi H.** <University of Calgary>, **Zirrahi M.**, **Hassanzadeh H.**

0317 *Separation of Troilite and Ferronickel* **Sandhu J.** <Department of Materials Science & Engineering, University of Toronto, Toronto, ON M5S 3E4>, **Wang J.**, **Bobicki E.**

0318 *Numerical Studies of Crude Oil Batches Mixing in a Long Channel* **Sepehr H.** <Department of Chemical and Material Engineering, University of Alberta, Edmonton, AB>, **Nikrityuk P.**, **Breakey D.**, **Sanders R.S.**

0319 *Application of ZnO-Ag and WO₃-Ag as a Photocatalyst for Dye Removal of Colored Wastewater: A Comparison Study* **Shafaei B.S.** <Chemistry Department, Islamic Azad University (Tehran North Branch), Iran>, **Motiee F.**, **Olya M.E.**

0320 *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.**

0321 *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>, **Prasad V.**, **de Klerk A.**

0322 *Estimating the Bulk Density of Polyolefin Particles Made in Industrial Reactors via Monte Carlo Simulation* **Romero J.**, **Soares J.B.P.** <Department of Chemical and Materials Engineering, University of Alberta>

0323 *The Effects of Rare and Alkaline Earth Metal Zirconates on Ca-Based Sorbents for CO₂ 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.**, **Mahinpey N.**

0324 *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.**, **Mahinpey N.**

0325 *Photodegradation of Bisphenol A using Singlet Molecular Oxygen as Advanced Oxidation Process* **Doria G.M.**, **Soltan J.** <University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5A9>, **Peñuela G.**, **Valencia G.C.**

0326 *Degradation of Thiabendazole Systemic Fungicide by Homogeneous Modified Fenton Reaction using Fe²⁺-Glutamate Complex as Catalyst* **Mena L.**, **Balladares O.**, **Munoz F.**, **Soltan J.** <University of Saskatchewan>

0327 *Application of Adsorption on Granular Activated Carbons for the Removal of Lincomycin from Water* **Balladares O.**, **Soltan J.** <University of Saskatchewan, 57 Campus Dr., Saskatoon, SK S7N 5A9>

0328 *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.**, **Rajendran A.**

0329 *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.**, **Sundararaj U.**

0330 *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.**

0331 *Impact of Substrates on Development of Industrial Process for Methylotrophs* **Tays C.** <University of Alberta, Edmonton, AB>, **Stein L.Y.**, **Sauvageau D.**

0332 *Mesoporous Silica Copper Catalysts for Methanol Steam Reforming* **Thurgood C.** <Department of Chemistry/Chemical Engineering, Royal Military College, Kingston, ON>, **Scott J.**, **Peppley B.**

0333 *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.

0334 *Development of Small Scale Spontaneous Combustion Test for Bio-Fuel from Sewage Sludge* ***Ueda A.** <Tsukishima Kikai Co. Ltd., Tokyo 1040053 Japan>, *Nogami H., Nishizaka Y., Sotozaki H., Kawai H.

0335 *Optimization of Zeaxanthin Production by Immobilized Flavobacterium sp. Cells in Fluidized Bed Bioreactor* ***Valadez N.** <Chemical Faculty, Autonomous University of Querétaro, University Center, Cerro de las Campanas, C.P. 76010, Querétaro, Qro., México>, *Escamilla-Silva E.M.

0336 *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.

0337 *Design of an IMC-Based Data-Driven Performance-Adaptive Controller* **Wakitani S.** <Hiroshima University, Hiroshima, Japan>, *Yamamoto T.

0338 *Deep Reinforcement Learning-Based Controllers for Process Control* ***Wang Y.** <University of Alberta, Edmonton, AB T6G 1H9, >, Velswamy K., *Huang B.

0339 *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.

0340 *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.

0341 *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.

0342 *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.

0343 *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.

0344 *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.

0345 *Model Reduction and Subsystem Decomposition for Wastewater Treatment Plants* **Zhang A.** <Department of Chemical and Materials Engineering, University of Alberta>, Yin X., *Liu J.

0346 *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.

Tuesday AM

Plenary

PLEN

Hall B

Plenary

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

Plenary Lecture presented by Massimo Morbidelli, ETH Zurich

08:30 0347 *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 0348 *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 0349 *Multi-scale, Multi-phase Modelling of a Slurry-Phase Catalytic Ziegler-Natta Ethylene- α -Olefins Polymerization Continuous Process* **Pladis P., Baltsas A., *Kiparissides C.** <Chemical Process & Energy Resources Institute, CERTH; Department of Chemical Engineering, AUTH, Thessaloniki, Greece>

10:30 0350 *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 0351 *Automatic Control of Free Radical Polymerization Reactions* ***Reed W.F.** <Tulane University>, McAfee T, Leonardi N, Montgomery R.D., Siqueira J, Jarand C, Zekoski T, Drenski M.

11:10 0352 *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 0353 *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 Gopaluni and Biao Huang
Chair(s) - Fan Yang and Jannatun Nahar

09:50 0354 *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 0355 *Chattering Alarm Reduction Techniques* ***Brown K.** <ISA 18 - Alarm Management>

10:30 0356 *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 0357 *Pattern Mining for Industrial Alarm Floods* ***Yang F.** <Department of Automation, Tsinghua University, Beijing 100084, China>, Guo C., Huang D., Xiao D.

11:10 0358 *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 0359 *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 0360 *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 0361 *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 0362 *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 0363 *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 Richard Leask

Keynote Lecture presented by Elizabeth Gillies, Western University

09:50 0364 *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>

10:30 0365 *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.**

10:50 0366 *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>

11:10 0367 *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.**

11:30 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 0368 *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 0369 *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>

10:50 0370 *Are We Near a Threshold of Yet Another Paradigm Shift in Chemical Engineering Education? If So, Is That Good or Bad?* **Samavedham L.** <National University of Singapore>, Nandakumar K.

11:10 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 0371 *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 0372 *Phase-Bounded Finite Element Method for Two-Fluid Incompressible Flow Systems* **Treeratanaphitak T.** <Department of Chemical Engineering, University of Waterloo>, ***Abukhdeir N.M.**

10:30 0373 *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.**

10:50 0374 *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.**

11:10 0375 *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.

11:30 End of Session

Colloids and Interfacial Sciences

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 0376 *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 0377 *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 0378 *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 0379 *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 0380 *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

Conventional and Unconventional Energy Sources

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 0381 *Clean Resource Innovation Network* **Asgarpour S.** <Petroleum Technology Alliance Canada>

10:30 0382 *In-situ Oil Sands Technology Needs and Opportunities Change as Recovery Progresses* ***Peachey B.R.** <New Paradigm Engineering Ltd., Edmonton>

10:50 0383 *Uncertainty Analysis Applied to SAGD Reservoirs* ***Hajipour S.** <Process Ecology Inc., Calgary, AB>, Alva-Argaez A., Khoshkbarchi M.

11:10 0384 *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 0385 *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

Electrochemistry and Electrochemical Engineering

ELC1 Salon 5

ELC1

Organizer(s) - Partha Sarkar
Chair(s) - Partha Sarkar and Charles de Lannoy

Keynote Lecture presented by Venkataraman Thangadurai, University of Calgary

09:50 0386 *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 0387 *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 0388 *Estimating the Properties of Thin Porous Materials using Indentation Dynamic Mechanical Analysis* **Unno J.** <McGill University>, Gostick J.T., Leask R.L.

11:10 0389 *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 0390 *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

Environmental Engineering and Waste Management / Oil Spill Recovery

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 0391 *All Around the Circle with Hydrocarbons* ***Dettman H.D.** <Natural Resources Canada, CanmetENERGY, 1 Oil Patch Dr., Devon, AB T9G 1A8>

10:30 0392 *Resurfacing of Chemically-Dispersed and Bio-Dispersed Oil in Frazil Ice-Covered Seawater* ***Song X., Chen B., Zhang B., Lye L., Zhang K., Liu 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>

10:50 0393 *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>, Stoyanov S.R., Soares J.B.P.

11:10 0394 *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 0256 *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.

11:50 0395 *Preparation and Application of Low-Cost Ceramic Membranes for Treatment of Oily Wastewater* **Agarwal A., Samanta A.** <Department of Chemical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad-826004, India>, Mandal A., Nandi B.K.**PAPER WITHDRAWN**

11:50 End of Session

Micro and Nanofluidics

FLD1 Salon 7

FLD1

Organizer(s) - Neda Nazemifard and David Sinton
Chair(s) - Tom de Haas and Jennifer McMillan

09:50 0396 *Nanofluidics: Direct Observation of Fluid Behaviors at Sub-10 nm for Unconventional Reservoirs* **Zhong J.** <University of Toronto>, **Zandavi S.H.**, **Li H.**, **Bao B.**, **Persad A.H.**, **Mostowfi F.**, **Sinton D.**

10:10 0397 *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 0398 *Microfluidic Assessment of CO₂-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 0399 *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>, **Hajibo H.**, **Nazemifard N.**, **Pourmohammadbagher M.**

11:10 0400 *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 0401 *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

Process Safety and Risk Management

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 0402 *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 0403 *Process Safety Implementation in a Greenfield Refinery Project in Alberta* **Thomas T.** <Integration Commissioning and Startup, NWR Partnership>, **Belyea R.**, **Holuk R.**

11:20 0404 *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

Systems and Control

SYS3 Salon 4

SYS3

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

09:50 0405 *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 0406 *Reconstruction of Missing Data in Vector Autoregressive (VAR) Processes* **Agarwal P.**, **Tangirala A.K.** <Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai, 600036, India>

10:30 0407 *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 0408 *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 0409 *Design of Equipment and Process Condition Monitoring using Data Analytics* **Fuxman A.**, **Germann D.**, **Stewart G.**, **Krishnaswamy S.** <Honeywell Process Solutions, 500 Brooksbank Ave., North Vancouver, BC V7J 3S4>

11:30 0410 *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

Upgrading and Tailings Reduction

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 0411 *Improving the Environmental Performance of Oil Sands Tailings: An Update* **Brogly J.** <COSIA, Canada's Oil Sands Innovation Alliance>

10:30 0412 *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 0413 *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 0414 *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 0415 *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, Arvind Rajendran and Shaffiq Jaffer
Chair(s) - Biao Huang

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

13:30 0416 *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 0417 *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 0050 *An Ode to Elegant Solutions in Polymerization Reaction Engineering* *Soares J.B.P. <University of Alberta>

15:10 0419 *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 0420 *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 0421 *Applications of Process Engineering Fundamentals to Polymer Technology Commercialization* Schiffino R. <Wilmington, DE 19807 USA>

16:10 Coffee Break

16:30 0422 *Dynamic Optimization of a Semibatch Polymerization Process* *Villa C. <Dow Chemical>

16:50 0423 *Modeling Vapor Solubility in Semi-Crystalline Polyethylene* *Greenhalgh B.R. <ExxonMobil Chemical Company>, Moebus J.A.

17:10 0424 *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 0425 *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.

17:50 0426 *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.

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 Gopaluni and Biao Huang
Chair(s) - Stevan Dubljevic and Salim Ahmed

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

14:30 0427 *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 0428 *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 0429 *Observer and Kalman Filter for Linear Transport-Reaction Processes* *Dubljevic S. <Chemical and Materials Engineering Department, University of Alberta>

15:50 0430 *Collaborative Content Creation through Open Source Process Simulators for Learning and Employment* *Moudgalya K.M. <Department of Chemical Engineering, IIT Bombay 400 076, India>

16:10 Coffee Break

16:30 0431 *Data-Driven Modeling: Two Methodological Generalizations* *Georgaklis C. <Chemical and Biological Engineering, and Systems Research Institute, Tufts University, Medford, MA 02155 USA, >

16:50 0432 *State and Parameter Estimation under Structural Model Uncertainty* *Samavedham L. <Department of Chemical and Biomolecular Engineering, National University of Singapore, Singapore 117585>, Dong D.W.S.

17:10 0433 *Diagnosis of Root Cause of Process Fault using BN with Multiple Uncertain Evidence* Amin M.T., *Imtiaz S.A. <Centre for Risk Integrity and Safety Engineering, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, Khan F.I.

17:30 0434 *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 0435 *Simultaneous Input and State Estimation using Expectation Maximization (EM) Algorithm* Khan M.A.I., *Imtiaz S.A. <Centre for Safety and Risk Engineering, Memorial University of Newfoundland, St. John's, NL A1B 3X5>, Khan F.I.

18:10 End of Session

HO1

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 0436 *Role of Colloidal and Interfacial Science in Bitumen Extraction from Athabasca Oil Sands* Masliyah J.H. <University of Alberta>, Xu Z.

15:10 0437 *Applications for Colloid Chemistry in the Oil Field* Chow R. <InnoTech Alberta Inc>

15:30 0438 *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 0439 *Commercialization of the DSU™ Process One Miracle at a Time!* *Camarta N. <Field Upgrading Ltd., Calgary, AB>

16:10 Coffee Break

16:30 0440 *Opportunities for Partial Upgrading of Bitumen* *Gray M.R. <Alberta Innovates; Department of Chemical and Materials Engineering, University of Alberta>

16:50 0441 *Integrated Solid Waste Management: Enkerm's World-First Waste to Biofuels Facility in Edmonton* Lynch D.C. <Enkerm Inc, 250 Aurum Road NE, Site 306, Edmonton AB T6S 1G9>

17:10 0442 *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 0443 *Path to Deployment: Suncor's Technology Journey* ***Bunio G.** <Suncor Energy>

17:50 0444 *Collaborating for Innovation- The Alberta-Canada MOU* **Siewe C.** <CanmetENERGY-Devon, Department of Natural Resources, Devon, AB>

18:10 Concluding remarks by Eric Newall and Eddy Issacs

18:20 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 0445 *Catalytic Hydrodeoxygenation of Biomass Pyrolysis Derived Bio-Oil: A Combined Theoretical and Experimental Study using Furfural as a Model Compound* ***Mushrif S.H.** <School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore>, Banerjee A., Ansari K.B.

14:50 0446 *Making Fuels from CO₂: Thermocatalytic Conversion of CO₂ into Renewable Synthetic Fuels* ***Simakov D.S.A.** <University of Waterloo>

15:10 0447 *Petroleum Coke as a Catalyst Precursor* Montes V., Hazlett M.J., ***Hill J.M.** <Department of Chemical & Petroleum Engineering, University of Calgary>

15:30 0448 *Removal of Nitrogen and Sulfur Compounds from Gas Oil via Selective Adsorption over Functionalized Polymers and Catalytic Hydrotreating* ***Dalai A.K.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, Misra P., Badoga S., Adjaye J.

15:50 0449 *How to Use Microstructural Deconvolution Techniques to Quantify Multiple Site Types on Ziegler-Natta Catalysts* ***Soares J.B.P.** <University of Alberta>, Chen K., Mehdiabadi S.

16:10 End of Session

Biotechnology and Biomedical Engineering

BIO4 Salon 12

BIO4

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 0450 *Engineered Tissue Platforms for Probing Fundamental Tissue Biology and Identifying Novel Therapeutics* ***McGuigan A.P.** <University of Toronto, Department of Chemical Engineering and Applied Chemistry; University of Toronto, Institute for Biomaterials and Biomedical Engineering>

15:10 0451 *Crosslinking of Pressurized Gas Expanded Liquid Polymer Morphologies to Create Macroporous Hydrogel Scaffolds* ***Johnson K.** <McMaster University>, Muzzin N., Cusack M., Hoare T., Latulippe D.

15:30 0452 *Mechanism of Transition to Conduction Block in Cardiac Tissue after a Mechanical Impact* ***Hazim A.** <Department of Biomedical Engineering, University of Alberta, Edmonton, AB>, Belhamadia Y., Dubljevic S.

15:50 0453 *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>, ***Sanati-Nezhad A.**, ***Zarifi M.H.**, Hejazi S.H., Daneshmand M.

16:10 Coffee Break

16:30 0454 *Design of Bioreactor Operating Profiles for the Optimal Production of Polyhydroxybutyrate (PHB) via Model-Based Fed-Batch Strategies* **Penoglou G.**, ***Kiparissides C.** <Chemical Process and Energy Resources Institute, CERTH; Department of Chemical Engineering, AUTH, Thessaloniki, Greece>

16:50 0455 *Polyhydroxybutyrate Depolymerase from Marinobacter algicola DG893: From Putative to Validated Activity* **Martinez-Tobón D.I.** <Department of Chemical and Materials Engineering, University of Alberta>, Waters B., Elias A., ***Sauvageau D.**

17:10 0456 *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, >, ***Zhang Z.S.**

17:30 0457 *The Application of a Switchable Solvent to the Extraction of Polyhydroxybutyrate from Methanotrophic Bacteria* **Lawley M.** <University of Alberta, Chemical and Materials Engineering>, ***Sauvageau D.**, Stein L.Y.

17:50 0458 *A New Design of Polymeric Nanobio Composite-Based Biosensor for Simultaneous Detection of Hypoxanthine, Xanthine and Uric Acid* ***Sen S.** <Department of Polymer Science & Technology, University of Calcutta, 92 A P C Rd., Kolkata-700009 India>, ***Sarkar P.**

18:10 End of Session

Chemical Engineering Education

EDU2 Salon 15/16

EDU2

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

14:30 0459 *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 0460 *Developing Digital Tools to Support First-Year Students* **Gilbert B.** <University of Calgary>, Musgrove A., Sandblom N.T.A.

15:10 0461 *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 0462 *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 0463 *Empowering Engineering Students in Ethical Risk Management* ***Guntzburger Y** <CIRANO; Polytechnique Montréal>, Pauchant T.C., Tanguy P.A.

16:10 Coffee Break

16:30 0464 *Enhancing Soft Skills in Engineering Laboratory Courses* ***Ahmed S.** <Memorial University of Newfoundland>

16:50 0465 *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 0466 *Course Design for Curriculum Internationalization: Project-Based International Learning Experience @Home* **Stefanova A.** <Northern Alberta Institute of Technology>, **Bandali Z.**, **Kulah G.**, **Ayranci I.**

17:30 0467 *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

Chemical Engineering Fundamentals

FUN5 Salon 8

FUN5

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

14:30 0468 *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 0469 *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.**, **Houshanghi M.A.**, **Mahinpey N.**

15:10 0470 *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 0471 *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 0472 *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

Colloids and Interfacial Sciences

COL3 Salon 6

COL3

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

14:30 0473 *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 0474 *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 0475 *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 0476 *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 0477 *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 0478 *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 0479 *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 0480 *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 0481 *Detection and Fate of Engineered Nanoparticles in Lake Waters* **Rao S.** <Department of Civil Engineering and Applied Mechanics, McGill University>, [§]**Ghoshal S.**

17:50 0482 *Enhanced Adsorption of Asphaltene 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.**

18:10 End of Session

Conventional and Unconventional Energy Sources

ENR4 Salon 9

ENR4

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

14:30 0483 *Labscale Investigation of Polymer Solution Injection to Improve Heavy Oil Recovery: Effect of Periodic Injection Pressure* [§]**Upreti S.R.**, **Chan P.**, [§]**Manzoor A.** <Ryerson University, Victoria St., Toronto, ON>

14:50 0484 *An Experimental Approach to Investigating Permeability Reduction Caused by Asphaltene Deposition in Porous Media* **Kordestany A.** <University of Calgary>, **Abedi J.**, [§]**Hassanzadeh H.**

15:10 0485 *Fouling Behaviour of Bitumen Partial Upgrading Products* **Xing T.** <Natural Resources Canada, CanmetENERGY>, **Alem T.**, **Ali M.**, **Rana S.**, **Chen J.**

15:30 0486 *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>, [§]**Zeng H.**

15:50 0487 *Generalized Phase Diagram for Heavy Oil and Bitumen + Diluent Mixtures* [§]**Amani M.J.**, [§]**Shaw J.M.** <Department of Chemical and Materials Engineering, University of Alberta>

16:10 Coffee Break

16:30 0488 *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>, [§]**Saraka C.**, **Bhattacharya S.**, **Ng S.**, [§]**Kresta S.M.**

16:50 0489 *Differences between C5 Asphaltenes and Nanoparticulate Materials in Athabasca Bitumen*

^{*}**Pourmohammadbagher A.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB>, Shaw J.M.

17:10 0490 *Design and Construction of a Continuous, Pilot-Scale Flotation Facility*

^{*}**Lin F.** <Natural Resources Canada>, Xu Y., Nelson R.

17:30 0491 *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., ^{*}Yarranton H.W.

17:50 End of Session

Electrochemistry and Electrochemical Engineering

ELC2 Salon 5

ELC2

Organizer(s) - Partha Sarkar
Chair(s) - Partha Sarkar

14:30 0492 *The Effect of Iodide Based Ionic Liquids on Electrochemical Performance of Zinc Iodide Batteries* ^{*}**Shakeri Hosseinabad F.** <Department of Chemical and Petroleum Engineering>, Yasri N., Fofana D., Roberts E.P.L., Roesler R.

14:50 0493 *The Effects of Flow Rate and Temperature on Pitting Corrosion of Industrial Metals in Potash Brine* ^{*}**Coller A.S.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK>, Kennell G.F., ^{*}Evitts R.W.

15:10 0494 *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>, ^{*}Trifkovic M., ^{*}Roberts E.P.L.

15:30 0495 *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 0496 *Modified Chemical Activation of Biochar for Electrochemical Capacitive Applications* ^{*}Dehkhoda A.M., Caplin J., ^{*}Ellis N. <Department of Chemical and Biological Engineering, The University of British Columbia>

16:10 0497 *Decorating Graphene Oxide with Ionic Liquid Nanodroplets: An Approach Leading to Energy Dense, High Voltage Supercapacitors* She Z., Ghosh D., ^{*}**Pope M.A.** <University of Waterloo>

16:30 0498 *Electrochemical Fabrication of Nanostructured Pseudo-Capacitive Materials for Supercapacitor* Huang Z., ^{*}**Liu X.** <Northeastern University, China>

16:50 End of Session

Environmental Engineering and Waste Management / Oil Spill Recovery

ENV4 Salon 8

ENV4

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

16:30 0499 *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.

16:50 0500 *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.

17:10 0501 *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., ^{*}Zhang B.

17:30 0502 *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.

17:50 End of Session

Micro and Nanofluidics

FLD2 Salon 7

FLD2

Organizer(s) - Neda Nazemifard and David Sinton
Chair(s) - Farshid Mostowfi and Prashant Waghmare

Keynote Lecture presented by Sibani Lisa Biswal, Rice University

14:30 0503 *Microfluidic Visualization for Multiphase Flows in Porous Media* ^{*}**Biswal S.L.** <Rice University, Houston, TX USA>

15:10 0504 *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., ^{*}Nobes D.S.

15:30 0505 *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., ^{*}Sinton D.

15:50 0506 *Diffusion Measurement using Multiplexed Microfluidics* **Doan-Prevost J.** <Interface Fluidics>, ^{*}Bao B., ^{*}de Haas T.

16:10 Coffee Break

16:30 0507 *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.

16:50 0701 *Advanced Image Processing Techniques and Modified Fabrication Method for Microfluidic Studies* ^{*}**Mahmoodi M.** <Memorial University of Newfoundland>, ^{*}James L.A.

17:10 0508 *Preparation and Characterization of Au/Al₂O₃-Based Microreactors for Oxidation of Ethanol* ^{*}**Behraves E.E.** <Abo Akademi University, Finland>**PAPER WITHDRAWN**

17:10 Industry-Academia Roundtable Discussion on Micro and Nanofluidics

17:50 End of Session

Process Safety and Risk Management

PSM4 Salon 10

PSM4

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

14:30 0509 *Practical Application of Bowtie Analysis: Enhancing Traditional PHA* **Sneddon J.** <Risktec Solutions (Canada) Ltd>, ^{*}Ormerod G.

15:00 0510 *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 0511 *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 Management Award Lecture to be presented by Paul Amyotte, Dalhousie University

16:30 0512 *We Can Do Better* ***Amyotte P.R.** <Department of Process Engineering & Applied Science, Dalhousie University>

17:30 End of Session

Reaction Engineering and Catalysis

RXN3 Salon 11

RXN3

Organizer(s) - Bob Hayes, Natalia Semagina and David Simakov
Chair(s) - Jafar Soltan

16:30 0513 *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 0514 *Accelerating Reacting Flow Simulations with Detailed Chemistry using Artificial Neural Networks* ***Fadic A.** <University of Alberta>, Hayes R.E., Votsmeier M.

17:10 0515 *Catalytic Reactor for Energy Storage - Proof of Concept* ***Lu Y.R.** <University of Alberta, Edmonton, AB>, ***Nikrityuk P.**

17:30 0516 *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 0517 *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.

18:10 End of Session

Systems and Control

SYS4 Salon 4

SYS4

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

14:30 0518 *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 0519 *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.**

15:10 0520 *Discretization and Global Optimization for the Multiperiod Pooling Problem* **Cheng X.C.** <Department of Chemical Engineering, Queen's University>, ***Li X.L.**

15:30 0521 *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 0522 *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.**

16:10 Coffee Break

16:30 0523 *Optimization of Bitumen Upgrading Facility Design with CO₂ Reduction* **Shahandeh H.** <Department of Chemical and Materials Engineering, University of Alberta>, ***Li Z.**

16:50 0524 *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.

17:10 0525 *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.**

17:30 End of Session

Upgrading and Tailings Reduction

UPG2 Salon 1

UPG2

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

14:30 0526 *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 0527 *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 0528 *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 0529 *Cracked Naphtha Reactivity: Effect of Free Radical Reactions* **Uzcategui G.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 2G6>, ***de Klerk A.**

15:50 0530 *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 0531 *Thermogravimetric Analysis of Asphaltenes 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 0532 *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 0533 *Ex-Situ Observation and Characterization of Hydrotreated Liquid Products* **Palys D.** <University of Alberta>, ***McCaffrey W.C.**

17:30 0534 *Measurement and Modeling of Visbroken Oil Stability* ***Rodriguez S.L.** <University of Calgary>, ***Yarranton H.W.**

17:50 0535 *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

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

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.

19:00 End of Session

Wednesday AM

Plenary

EML Hall B

Emerging Leaders

Organizer(s) - Shaffiq Jaffer, Dominic Sauvageau and Neda Nazemifard
Chair(s) - Dominic Sauvageau and Neda Nazemifard

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

08:15 Introductory Remarks

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:

08:20 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"

08:40 Ya-Huei (Cathy) Chin, University of Toronto, "Heterogeneous Catalytic Strategies for Sustainable Synthesis of Fuels and Chemicals"

09:00 Benoît H. Lessard, University of Ottawa, "The Future of Organic Electronics and What it Means for Chemical Engine"

09:20 Vikramaditya G. Yadav, University of British Columbia, "Medicine-by-Design: Discovery and Development of a Novel Therapy for Epidermolysis Bullosa Simplex"

09:40 End of Session

Honourary Symposia

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

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

09:50 0536 *Settling of Flocculated Asphaltenes and Solids from Diluted Bitumen*
***Yarranton H.W.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, Casas Y., Duran J.A., Schoeegl F.F.

10:30 0537 *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 0538 *Diffusion in Bitumen and Heavy Oil + Diluent Mixtures* **Shaw J.M.** <Department of Chemical and Materials Engineering, University of Alberta>

11:10 0539 *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

11:30 0540 *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

HOS3 Salon 3

**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 Syed Imtiaz

09:50 0541 *A Process Control Odyssey*
***Seborg D.E.** <UC-Santa Barbara>

10:10 0542 *Performance Index Based on Low Frequency Component of Control Error*
***Ohnishi Y.** <Ehime University, Japan>, Kinoshita T., Yamamoto T.

10:30 0543 *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 0544 *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 0545 *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 0546 *Identification and Controller Design for Fractional Order Systems*
***Ahmed S.** <Memorial University of Newfoundland>

11:50 End of Session

Carbon Reduction and Utilization

CCU3 Salon 13/14

CCU3

Organizer(s) - Rajender Gupta, Charles de Lannoy and Arvind Rajendran
Chair(s) - Nader Mahinpey and Deepak Pudasainee

09:50 0547 *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., *[§]Kumar A.

10:10 0548 *Development of a Novel Reclaiming Process for Degraded Alkanolamine and Glycol Solvents Used for CO₂ Capture Systems* **Ju H.** <University of Calgary>, Kundra P., EIMoudir W., Aboudheir A., Mahinpey N.

10:30 0549 *Macroscopically Inspired Rapid Molecular Simulation of CO₂ Reactive Absorption* **Qi W.** <University of Guelph, Guelph, ON N1G 2W1>, *[§]Smith W.R.

10:50 0550 *CO₂ 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.

11:10 0551 *Determination of Solubility of CO₂ in Ionic Liquids using PC-SAFT Equation of State* **Aghaie M.** <Memorial University, St. John's, NL A1B 3X9>, *Zendehboudi S.

11:30 End of Session

Chemical Engineering Fundamentals

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 0552 *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, >, *An F., Kuester F., Guhl S., Meyer B.

10:30 0553 *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 0554 *Dynamics and Regeneration of Turbulent Vortices for High-Extent Drag Reduction in Polymer Fluids* **Zhu L.** <Department of Chemical Engineering, McMaster University>, *Xi L.

11:10 0555 *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 0556 *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 0557 *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 0558 *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 0559 *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 0560 *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

Conventional and Unconventional Energy Sources

ENR5 Salon 1

ENR5

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

09:50 0561 *Effect of Alkali, Surfactant and Salts on the Extensional Rheological Behaviour of Hydrolyzed Polyacrylamide* **Shah N., *Azad M., *Trivedi J.** <University of Alberta>

10:10 0562 *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. **PAPER WITHDRAWN**

10:30 0563 *Geochemical Studies of Low Salinity Water Injection in Botucatu Sandstone for Hybrid Applications* **Almeida da Costa A.** <Universidade Federal da Bahia, Escola Polit cnica, 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., Embiru u M., Rocha P., Soares J.B.P., Trivedi J.

10:50 0564 *Hybrid Connectionist Model Determines CO₂-Oil Swelling Factor*

Ahmadi M.A. <Memorial University of Newfoundland>, Zendehboudi S., James L.A.

11:10 0565 *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 End of Session

ENR6 Salon 15/16

ENR6

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

09:50 0566 *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 0567 *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 0568 *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 0569 *Low Frequency Dielectric Relaxation of Supramolecular Petroleum Fluids* **Abraham T.** <University of Alberta>, Wadhawan H., Goswami A., Thundat T.

11:10 0570 *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 End of Session

Environmental Engineering and Waste Management / Oil Spill Recovery

ENV5 Salon 2

ENV5

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

09:50 0571 *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 0572 *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 0573 *Degradation of Micropollutants from Contaminated Water using UV-LEDs Combined with Chlorine Advanced Oxidation Process* Rezaei R., Kheyrandish A., Linden K., **Mohseni M.** <University of British Columbia>

10:50 End of Session

Macromolecular Sciences and Engineering

POL3 Salon 12

POL3

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

09:50 0574 *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 0575 *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 0576 *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 0577 *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 0578 *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 0579 *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.

11:50 End of Session

Nanotechnology

NAN3 Salon 8

NAN3

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

09:50 0580 *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., Hosseinidoust Z., Sørensen H., Tufenkji N.

10:10 0581 *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 0582 *Synthesis of Sinter-Resistant Gold Catalysts Derived from Au₂₅ Clusters* **Veeranmaril S.** <110 Science Place, University of Saskatchewan, Saskatoon, SK S7N 5C9>, Scott R.W.J.

10:50 0583 *Nanocomposite Nanofibre for Sustained Release of Chemotherapeutic Agents* **Saha K.** <Department of Polymer Science and Technology, University of Calcutta, Kolkata - 700009, India, >, Sarkar P. **PAPER WITHDRAWN**

11:10 End of Session

Process Safety and Risk Management

PSM5 Salon 10

PSM5

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

09:50 0584 *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 0585 *An Ontology Based Framework for Process Risk Assessment and Management* **Aziz A., Ahmed S.** <Memorial University of Newfoundland>, Khan F.I.

10:50 0586 *An Event Based Alarm System Design using Bayesian Network Models* **Naeema J., Ahmed S.** <Memorial University of Newfoundland>

11:20 0587 *PSM Effectiveness in Pipeline Operations* **Sahraei A.** <Enbridge, IEC Standard Technical Committee for Functional Safety IEC61511>

11:50 End of Session

Reaction Engineering and Catalysis

RXN4 Salon 11

RXN4

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

Keynote Lecture presented by Faiçal Larachi, Université Laval

09:50 0588 *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 0589 *Propane Oxidative Dehydrogenation using Consecutive Feed Injections and Fluidizable VO_x/Al₂O₃ and VO_x/ZrO₂-Al₂O₃ Catalysts* **Rostom S.** <University of Western Ontario>, de Lasa H.

10:50 0590 *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 0591 *Effects of Hydrodynamics on Hydrocarbon Oxidation* **Wu W.Y.** <University of Alberta>

11:30 0592 *Development of New Structured Catalyst and Reactor Technologies for Biomass Conversion*

***Najarneshadmashhadi 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

Systems and Control

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 0593 *Achieving High-Level Control Goals with Model Predictive Control* **Rawlings J.B.** <Chemical and Biological Engineering, University of Wisconsin - Madison, USA>

10:30 0594 *Using Set-Based Constraints in Iterative Identification and Optimization of Batch Processes* Hille R., ***Budman H.** <University of Waterloo>

10:50 0595 *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 0596 *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 0597 *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

Wednesday PM

Honourary Symposia

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 0598 *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 0599 *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 0600 *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>

14:30 0601 *Hydrodynamic Interactions involving Drops and Bubbles* **Manica R.** <Department of Chemical and Materials Engineering, University of Alberta>, **Liu Q., Xu Z.**

14:50 0602 *Improved Efficiency Bitumen Extraction Process using Petroleum Diesel* **Russell D.** <University of Alberta, Edmonton, AB T6G 1H9>, ***Xu Z., Liu Q.**

15:10 Coffee Break

15:30 0603 *Polymer at Interface: Single-Molecule Adhesion Force of Stimuli-Responsive Polymer on Hydrophobic Surfaces in Aqueous Solution* **Tang Y.C.** <Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB T6G 1H9>, **Liu Q., Xu Z.**

15:50 0604 *Applications of Thermoresponsive Hybrid Polymer in Oil Sands Mining* **Ng J.** <University of Alberta>, ***Liu Q., *Xu Z.**

16:10 0605 *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.**

16:30 0606 *Enhancement of Oil Sands Extraction using CO₂-Responsive Supra-Amphiphiles* **Lu Y.** <University of Alberta>, **Sun D., *Xu Z.**

16:50 0607 *Application of Fast Responsive CO₂-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.**

17:10 End of Session

HOS4 Salon 3

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

Organizer(s) - Bhusan Gopaluni and Biao Huang
Chair(s) - James Ng and Jinfeng Liu

13:30 0608 *An Approach to Real Time Adaptive Optimization in Oil and Gas Well Drilling* ***Ng J.** <Pason Systems Corporation>, **Khromov S., Lai S.**

13:50 0609 *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 0610 *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 0611 *A Critical Assessment of Non-Ideal Mixing Phenomena in High-Pressure LDPE Autoclaves: Prediction of Variable Initiator Efficiency and Ethylene Decomposition* **Pladis P., Baltas A., *Kiparissides C.** <Chemical Process & Energy Resources Institute, CERTH; Department of Chemical Engineering, AUTH, Thessaloniki, Greece>

14:50 End of Session

Carbon Reduction and Utilization

CCU4 Salon 13/14

CCU4

Organizer(s) - Rajender Gupta, Charles de Lannoy and Arvind Rajendran
Chair(s) - Raj Gupta and Shaikh Razzak

13:30 0612 *Ilmenite Oxidation Kinetics for Pressurized Chemical Looping Combustion of Natural Gas* **Rana S.** <University of Ottawa>, **Mehrani P., *Macchi A.**

13:50 0613 *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 0614 *Chemical Looping Combustion of Indian Coal using Natural and Synthetic Oxygen Carriers* **Dubey A.K., Sarkar P., Saxena V.K., *Samanta A.** <Department of Chemical Engineering, IIT (ISM), Dhanbad, 826004, India>**PAPER WITHDRAWN**

14:30 0615 *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 0616 *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 0617 *Pore-Level Simulation of CO_2 Capillary Trapping* **Mohammadmoradi P.** <Chemical and Petroleum Engineering Department, University of Calgary>, **Kantzas A.**

15:50 0618 *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.**

16:10 End of Session

Chemical Engineering Fundamentals

FUN8 Salon 6

FUN8

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

13:30 0619 *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 0620 *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 0621 *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 0622 *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 0623 *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 0624 *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 0625 *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.**

14:10 0626 *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 0627 *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 0628 *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.**

15:10 End of Session

Conventional and Unconventional Energy Sources

ENR7 Salon 1

ENR7

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

13:30 0629 *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.**

13:50 0630 *Hydrocracking and Catalytic Hydrocracking of Athabasca VR* **Kaminski T.A.** <Department of Chemical & Petroleum Engineering, University of Calgary, Calgary, AB>, **Husein M.**

14:10 0631 *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.**, **Gupta R.**

14:30 0632 *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.**

14:50 End of Session

Environmental Engineering and Waste Management / Oil Spill Recovery

ENV6 Salon 5

ENV6

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

13:30 0633 *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 0634 *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.**

14:10 0635 *Mitigation of Hydrogen Sulphide and Ammonia Emissions using a Composite Nano-Adsorbent* **Azar R.**, **Valdes Labrada G.** <University of Saskatchewan>, **Predicala B.**, **Nemati M.**

14:30 0636 *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 0637 *Thermal Recycling of Plastic Solid Waste into Liquid Fuel* ***Husein M.** <University of Calgary>, Kasumu A., Mehairi A., Zakaria M.

15:10 0638 *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.

15:30 End of Session

ENV7

Salon 15/16

ENV7

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

13:30 0639 *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.

13:50 0640 *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 0641 *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.

14:30 0642 *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.

14:50 0176 *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.

15:10 Coffee Break

15:30 0644 *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.

15:50 0645 *Adsorption of Wastewater Contaminants with Magnetic Graphene Foam* **Grove T.** <University of Calgary, Chemical and Petroleum Department>, *Sharif F., *Roberts E.P.L.

16:10 0646 *Growth Kinetics of p-Chloro-m-xylene (PCMX) Tolerant Bacteria and their Biodegradation* **Brahma B.** <Dept. of Chemical Engineering, Pollution Control Lab, Jadavpur University, Kolkata-700032, India>, *Sarkar P., *Sarkar U. **PAPER WITHDRAWN**

16:30 End of Session

Macromolecular Sciences and Engineering

POL4

Salon 12

POL4

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

13:30 0647 *Application of Large Amplitude Oscillatory Shear (LAOS) Method for the Analysis of CNT/MnO₂NW Hybrid Nanocomposites Viscoelastic Behavior* **Kamkar M.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, Aliabadian E., Shayesteh A., Otero I., *Sundararaj U.

13:50 0648 *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 0649 *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., *Sundararaj U., Sudak L.J.

14:30 0650 *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 0651 *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 0652 *Failure Analysis of Polymeric Materials* ***Riahinezhad M.** <Forensic and Component Services, Materials and Major Components, Kinetics Inc., >, Rouison D.

15:50 0653 *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 0654 *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 0655 *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 0656 *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 Hosseinidoust
Chair(s) - Thanh-Giang La and Amin Pourmohammadbagher

13:30 0657 *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.

13:50 0658 *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.

14:10 0659 *Rheological Behavior of Networks of Partially Hydrolyzed Polyacrylamide and Fumed Silica Nanoparticles* **Aliabadian E.** <University of Calgary, Calgary, AB>, Sadeghi S., Kamkar M., Sundararaj U., Chen Z.

14:30 0660 *Heat Treatment Application in Controlling Morphology of Polysulfone Membrane* **Abdelrasoul A.** <Ryerson University>, Doan H., Lohi A., Cheng C.-H.

14:50 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 0661 *How are Safety, Quality and Productivity Related?* **Hamid D.H.** <University of Alberta>, Lefsrud L.M.

14:00 0662 *Optimizing PFP through Risk Based Structural Analysis* **Loudoun J.D.** <Atkins Consulting Canada Ltd>, Stahl M., Akinci N.

14:30 0663 *What PHAs Are Trying to Tell Us* **De Man A.** <ACM Facility Safety>

15:00 Coffee Break

15:20 0664 *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 0665 *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 0666 *Kinetics of CPOX Reaction with FeCralloy Catalysts* **Ma Z.** <Chemical Engineering, Polytechnique Montreal>, Boffito D.C., Patience G.S.

15:50 0667 *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.

16:10 0668 *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.

16:30 0669 *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.

16:50 End of Session

RXN6 Salon 11

RXN6

Organizer(s) - Bob Hayes, Natalia Semagina and David Simakov
Chair(s) - Samir Mushrif and Natalia Semagina

13:30 0670 *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>, Chen J., Alvarez-Majmutov A., Dettman H.D.

13:50 0671 *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>, Nassar N.

14:10 0672 *Role of Al₂O₃ Support in Reduction Reaction of NiO for Chemical Looping Applications: A Density Functional Theory Study* **Manafi Rasi N.** <University of Calgary>, Ponnurangam S., Mahinpey N.

14:30 0673 *Investigation of Industrial Dehydrogenation Catalyst Performance Analysis in a Fluidized Bed Reactor* **Alluddin K.** <SABIC Technology & Innovation, Riyadh 11551, Kingdom of Saudi Arabia>, Nawaz Z., Al-Mutairi S.M.

14:50 0674 *ALD Over-Coated ZnO on Cu/SiO₂ for Catalytic Hydrogenation of CO₂ for Methanol* **Gao J.** <Department of Chemical and Biological Engineering, University of Saskatchewan, Saskatoon, SK S7N 5A9>, Hu Y., Dalai A.K., Wang H.

15:10 Coffee Break

15:30 0675 *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>, Chuang K.

15:50 0676 *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., Kim C.S.

16:10 0677 *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>

16:30 End of Session

Systems and Control

SYS6 Salon 4

SYS6

Organizer(s) - Stevan Dubljevic, Zukui Li and Jinfeng Liu
Chair(s) - Arun Tangirala, Stevan Dubljevic and Su Liu

13:30 0678 *A Stochastic Back-Off Approach for Integration of Design and Control under Probabilistic-Based Uncertainty* Rafiei M., Ricardez-Sandoval L. <Department of Chemical Engineering, University of Waterloo, Waterloo, ON N2L 3G1>

13:50 0679 *Uniting Lyapunov-Based MPC with Closed-Loop Subspace Identification* Kheradmandi M., Mhaskar P. <Department of Chemical Engineering, McMaster University>

14:10 0680 *Nonlinear Model Predictive Control for Zone Tracking* Liu S. <Department of Chemical and Materials Engineering, University of Alberta>, Mao Y., Liu J.

14:30 0681 *Distributed Fault Diagnosis for Networked Nonlinear Uncertain Systems* **Shahnazari H.** <Chemical Engineering Department, McMaster University>, Mhaskar P.

14:50 0682 *Approximate Optimal Control using a Set-Based Learning Algorithm for a Class of Unknown Nonlinear Systems* **Guay M.** <Department Chemical Engineering, Queen's University>, Atta K.

15:10 Coffee Break

15:30 0683 *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., ^{*}Dubljevic S.

15:50 0684 *Simplified Tuning of Model Predictive Control for Industry* ^{*}**Forbes M.** <Honeywell Process Solutions, 500 Brooksbank Ave., North Vancouver, BC V7J 3S4>, Backstrom J.

16:10 0685 *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., ^{*}Liu J., Ding F.

16:30 0686 *Adaptive Output Regulation of Uncertain Nonlinear Systems* **Wang M.** <Department of Chemical Engineering, Queen's University>, ^{*}Guay M.

16:50 0687 *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>, ^{*}Tangirala A.K.

17:10 End of Session

Upgrading and Tailings Reduction

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 0688 *Polymer Flocculation of Oil Sands Tailings: Dynamic Rheological and Microstructural Properties of Flocc Formation* **Govedarica A.** <Department of Chemical and Petroleum Engineering, University of Calgary, Calgary, AB>, Shrivastava S., Workman B., ^{*}Trifkovic M.

13:50 0689 *Application of Geopolymers in Oil Sand Tailings Treatment* ^{*}**Xu Y.** <CanmetENERGY-Devon, Natural Resources Canada, 1 Oil Patch Dr., Devon, AB T9G 1A8>, Zhu Y.

14:10 0690 *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.

14:30 0691 *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., ^{*}Trifkovic M.

14:50 0692 *Chitosan-Based Bioflocculant for the Dewatering of Mature Fine Tailings* **Pennetta de Oliveira L.** <University of Alberta>, ^{*}Gumfekar S., Soares J.B.P.

15:10 Coffee Break

15:30 0693 *Nitrogen-Oxides Decomposition: Application to Oil Denitrogenation* **Prado G.H.C.** <University of Alberta>, Yasemi A.-A., Kamal S., Yan Y., ^{*}de Klerk A.

15:50 0694 *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>, ^{*}de Klerk A.

16:10 0695 *Effect of Metal Halides on Thermal Conversion of Athabasca Vacuum Residue* **Riya R.** <University of Alberta, Edmonton, AB T6G 2R3>, ^{*}Prado G.H.C., ^{*}de Klerk A.

16:30 0696 *Chemical Reactions of H₂O 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>, Zhou Y., Zhou W., Ding S.

16:50 End of Session