Monday AM

Plenary Lectures

PLS 2000AB

Plenary Lectures

10:30 Introductory Remarks

10:45 0001 *Acrolein Production from Renewable Resources: Glycerol and Ethanol Routes* *$**Dubois J-L** <ARKEMA, France>

Questions

12:00 End of Session

Special Symposia - Carbon Capture, Utilization and Storage

CCS1 207

Advances in Carbon Capture

Organizer(s) - Éric Croiset and Maria C Iliuta
Chair(s) - Éric Croiset, Marzieh Shokrollahi

08:00 0002 *Thermodynamic Study of Absorption of CO_2 in Aqueous Mixtures of Alkanolamines by Solution Calorimetry* *$**Arcis H** <University of Guelph>, Coulier Y, $Coxam J-Y

08:20 0003 *Liquid-liquid Phase Equilibria of Demixing Amines for Carbon Capture and Storage* **Lowe AR** <Clermont Université, France; CNRS, France>, Coulier Y, *$Ballerat-Busserolles K, Coxam J-Y

08:40 0004 *Phase-separating Amines for CO_2 Capture: Carbamate Equilibrium Constants in Aqueous Solutions of CO_2 in 2-methylpiperidine by ^{13}C NMR Spectroscopy* *$**McGregor C** <University of Guelph>, Penner G, Robertson V, Al-Abdul-Wahid S, Fandiño Torres O, Cox J, $Tremaine PR

09:00 0005 *Impacts of Amine Degradation on Diminishing Capacity of Sweetening Units Working with Different Types of Amines* *Rezaei Zare E, **Azarmehr A** <Bidboland Gas Refining Company, Iran>, Azimi A

09:20 0006 *Thermodynamic and Screening Study of Conventional Ionic Liquids for CO_2 Capture by Molecular Dynamic Simulation* **Aghaie M** <Memorial University of Newfoundland>, *Zendehboudi S

09:40 0007 *Acetate-based Ionic Liquids Transported into Mesoporous Silica as Efficient Sorbents for CO_2 Capture* **Mohamedali ME** <University of Regina>, *Ibrahim H, $Henni A

10:00 End of Session

Special Symposia - Process Safety and Loss Management

PSM6 204A

The Future of PSM

Organizer(s) - François Roche and Melanie Wilson
Chair(s) - Melanie Wilson, Jean-Paul Lacoursière

08:00 0643 *Remembering the Past Shapes our Future* *$**Kerin T** <Institution of Chemical Engineers Safety Centre, Australia>

09:00 Minerva-CIAC Case Study Competition Finalist

09:30 Minerva-CIAC Case Study Competition Finalist

10:00 Minerva-CIAC Case Study Competition Finalist

10:30 End of Session

Biomedical Engineering

BME1 307B

Biomedical Imaging and Sensing

Organizer(s) - Corinne Hoesli and Patrick Vermette
Chair(s) - Corinne Hoesli, Fabio Cicoira

08:00 0008 *Association of Non Synonymous SNP in DC-SIGN Receptor Gene with Tuberculosis (TB)* *$**Tahir MS** <University of Gujrat, Pakistan>, Kalsoom S

08:20 0009 *Microfluidic "Plaque-on-a-Chip" with Ph Imaging by Metal Enhanced Fluorescence Probes Individual Factors in Tooth Decay* *$Greener J, Boudreau D, Barbeau J, Parvinzadeh Gashti M, **Asselin J** <Centre d'optique, photonique et laser>

08:40 0010 *Bacterial Electrotaxis* **Doxsee K** <University of Guelph>, Berthelot R, *Weng X, $Neethirajan S

09:00 0011 *Assessing Biofilm Early Growth Stages in Microchannels with Infrared Spectroscopy and Confocal Microscopy* **Paquet-Mercier F** <Université Laval>, Greener J

09:20 0012 *Nanostructured Bioluminescence Quenching Sensor for Detecting Glucose* *$**Zhang J** <Western University>, Chen LY, Chen A

09:40 0013 *Ultrasensitive Detection of Chemical and Biological Analytes in Fluids Using a Novel Surface-enhanced Raman Scattering (SERS) Substrate* Dies H, Escobedo C, *$**Docoslis A** <Queen's University>

10:00 End of Session

Biotechnology/Bioengineering

BBE3 2101

Engineered Biological Systems

Organizer(s) - Bruno Gaillet and Denis Groleau
Chair(s) - Céline Vaneeckhaute

08:00 0014 *The Development a CRISPR-Cas9 Toolkit for Bacillus subtilis, and its Application to Strain Engineering* **Westbrook AW** <University of Waterloo>, Moo-Young M, *$Chou CP

08:20 0015 *Metabolic Pathway Prioritization* **Lu S** <University of Toronto>, *$Mahadevan K

08:40 0016 *A Systematic Approach for Identifying Dynamic Flux Balance Models* **Nikdel A** <University of Waterloo>, *$Budman H

09:00 0017 *A Novel Peptide-based Agent to Deliver Therapeutic Proteins in Mammalian Cells* **Lepetit-Stoffaes JP** <Université Laval; Feldan Therapeutics>, DelGuidice T, Roberge J, Bordeleau LJ, Gaillet B, $Guay D, *Garnier A

09:20 0018 *Innovative Influenza Vaccines for Pandemic Situations* **Kamen A** <McGill University>

10:00 End of Session

Catalysis and Catalytic Reaction Engineering

CCR1 205A

Catalysis for Sustainable Systems

Organizer(s) - Mladen Eic and Jan Kopyscinski
Chair(s) - Brant Peppley

08:00 0019 *Distributed Generation Reformer and Fuel Cell System* $**DePippo K** <Fuel Cell Research Centre; Queen's University>, *Peppley B

08:20 0020 *Catalytic Pyrolysis for the Production of Stable Phenol Rich Bio-oil from Wood* **Kaushik P** <University of Regina>, *Ibrahim H

08:40 0021 *Alumina Supported Heteropolyacid Catalyst for Biodiesel Production: Physiochemical Characterization and Support Interaction* **Kurhade AH** <University of Saskatchewan>, *Dalai AK

09:00 0022 *Red Mud as an Iron-based Catalyst for Gasification Tar Removal* *$**Madadkhani SM** <University of British Columbia>, Burhenne LB, $Bi XB, Ellis NE, Grace JG

09:20 0023 *Statistical Analysis of Photocatalytic Glycerol Valorization into Hydrogen* **Karimi Estahbanati MR** <Université Laval>, Feilizadeh M, *Iliuta MC

09:40 0024 *Processing of Biodiesel Using Sulphonated Poly (Ether Ether Ketone) as a Catalyst* $Beaudry BN, **Page DJYS** <Royal Military College of Canada>

10:00 End of Session

Chemical Engineering Education

CEE2 307A

Chemical Engineering Curriculum, Quo Vadis?

Organizer(s) - Suzanne Kresta and Michel Perrier
Chair(s) - Suzanne Kresta, Michel Perrier

08:00 0025 *Integration of Chemical Engineering Education and Language Training for First-year International Students: A Collaborative Approach* Murphy M, *$**Potvin G** <University of British Columbia>

08:20 0026 *Module-based Course Design for Disparate Outcome Streams* *$**Lowry BJ** <University of New Brunswick>

08:40 0027 *Online Learning Element Design Development and Application Experiences* *$**Jamieson MV** <University of Alberta>, Shaw JM

09:00 0028 *Consider Industrial Design Leaders Involvement in Specialized Workshops for Design Project Courses* Sidthiphol S, *Joao S <SNC-Lavalin>

09:20 0029 *Pre and Post Course Student Self Assessment of Ceab Graduate Attributes: A Tool for Outcomes Assessment, Student Skill and Course Improvement* *$**Jamieson MV** <University of Alberta>, Shaw JM

09:40 0030 *"Improving the Learning Experience for Millennials, by Millennials"* **Goettler L** <University of Alberta>, Leung C, Liu A, Roemer C, *$Jamieson MV

10:00 End of Session

Chemical Engineering Foundations

CEF2 206A

Fluid Flow and Mixing in Continuous and Discrete Systems

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Ali Lohi, Seyed M Taghavi

08:20 0032 *A PAT-based Experimental Methodology Relating Velocity Profiles of a Binary Granular System under Gravitational Flow with Cohesion/Adhesion Parameters* **Chaib O** <Université de Sherbrooke>, *Abatzoglou N

08:40 0033 *Development of Pressure Based Methods for the Determination of the Just-suspended Speed and Suspension State in Viscous Solid-liquid Mixing* **Bertrand O** <Polytechnique Montréal>, Blais B, *Bertrand F, Fradette L

09:00 0034 *CFD Modeling and Experimental Validation of Offshore Floating Packed Bed Hydrodynamics* $**Motamed Dashliborun A** <Université Laval>, Hamidipour M, *Larachi F

09:20 0031 *Suitable Power-law Exponent for Scaling-up Pickering Emulsions: Effect of Oil Viscosity, Oil Volume Fraction and Coverage Potential* $**Al-haiek A** <Polytechnique Montréal>, Tsabet È, *Fradette L

09:40 End of Session

CEF5 2105

Transport Phenomena Triptych

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Ayodeji A Jeje, Anthony Wachs

08:00 0035 *Flash Point prediction for Crudes with Wide Boiling Range* *$**Veldandi P** <Cognizant Technology Solutions>, Bethi A

08:20 0036 *Nonlocal Fractional Non-Fourier Heat Conduction for Ultrafast Heat Transfer* *$**Akbarzadeh AH** <McGill University>, Cui Y, Chen ZT

08:40 0037 *A Simple Method for Reducing the k_La Error Induced by Oxygen Depletion in Effective Gas/Liquid Contactors* $**Idhbeaa AO** <Dalhousie University>, *Al Taweel AM, Ghanem A, Walsh M, Schlüter M

09:00 0038 *Field-driven Dynamics of Nematic Droplets in PDLC Smart Glass* **Fu F** <University of Waterloo>, *$Abukhdeir NM

09:20 0039 *Packed-bed Reactor Studies of the Effects of Polymetal Sulphides Galvanic Interactions on Ore Conditioning and Flotation* **Gravel O** <Université Laval>, Larachi F, Hart B

09:40 0040 *Pore-scale Modeling of Transport in a Porous Catalyst Particle with Hierarchy of Porosity* *$**Sadeghi M** <McGill University>, Aghighi M, $Gostick JT

10:00 End of Session

Electrochemistry and Electrochemical Engineering

EEE1 205B

Batteries, Electrolyzers and Supercapacitors

Organizer(s) - Zhongwei Chen and Elöd Gyenge
Chair(s) - Jeff Gostick, Jesse Greener

08:00 0041 *Multiphysics Simulation of the Flow Battery Cathode; Cell Architecture and Electrode Optimization* *$**Kok MD R** <McGill University>, $Gostick J

08:40 0042 *High Power Density Flow Battery System* *$**Rachid RZ** <Qatar Environment & Energy Research Institute, Qatar>

09:00 0043 *Optimizing Novel Electrospun Materials for Flow Battery Electrodes* **Liu SP** <McGill University>, $Gostick J

09:20 0044 *Using X-ray Radiographic Imaging Technique for Investigation of Water Droplet Dynamics in Proton Exchange Membrane (PEM) Fuel Cells* **Rahimian Esfahani P** <University of Saskatchewan>, Battrell L, Anderson R, Zhu N, Zhang L

09:40 0045 *Pore Network Modeling of Phase Change in the Gas Diffusion Layers of PEMFC* **Aghighi M** <McGill University>, *Gostick JT

10:00 End of Session

Energy Resources

ENR3 205C

Fossil Energy

Organizer(s) - Nicolas Abatzoglou, Cédric Briens and Jinwen Chen
Chair(s) - Nicolas Abatzoglou

08:20 0046 *Recent Developments in Hydrocarbon Production and Processing Technology and Related Environmental Issues* *$**Riazi MR** <Kuwait University, Kuwait>

08:40 0048 *The Clean Green Coal Project - A New Energy System Paradigm* **Peachey BR** <New Paradigm Engineering Ltd>, Budwill K, Mkandawire M

09:00 0049 *Mass Transfer Equipment Design: From the Phase Equilibrium Model to an Operating Unit, a 100 Year Search for the Optimal Device* **Krela M** <Koch-Glitsch>, *Shah M

09:20 0050 *Greenhouse Gas Emissions Associated to Natural Gas Production in Western Canada and the Role of Emerging Technologies* **Liu R** <University of Calgary>, *Bergerson J

09:40 0051 *Comparative Analysis of the Extraction, Transportation, Upgrading and Shipping of Canadian Oil Sands Products from Production Site to the Asia Pacific Region: A Techno-economic Assessment* **Sapkota K** <University of Alberta>, Oni AO, *$Kumar A

10:00 End of Session

Environment

ENV2 204B

Trends in Wastewater Mitigation and Water Quality

Organizer(s) - Madhumita B Ray, Rafael M Santos and Peter Vanrolleghem
Chair(s) - José Herrera, Mehrab Mehrvar

08:00 0055 *Adsorption of Problematic Organic Compounds from Wastewater Using Hybrid Pyroxene Nanoparticles* **Nafie G** <University of Calgary>, *$Nassar N, Vitale G

08:20 0052 *Gas and Liquid Backwash for Flux Restoration and Irreversible Fouling Remediation in Latex Paint Effluent Ultrafiltration* ***Abdelrasoul A** <Ryerson University>, $Doan H, Lohi A, Cheng C-H

08:40 0053 *Fabrication of Polysulfone /Metal-Organic Framework Hybrid Nanofiber Membrane via Electro-spinning and Electro-spraying for Removal of Heavy Metal Ions from Aqueous Solution* **Johnson E** <University of Ottawa>, *Rana D, Lan C, $Matsuura T

09:00 0054 *1D Nanomaterials Synergistically Improve the Mechanical Properties and Contaminant Adsorption Capacity of Graphene Oxide Hydrogels* ***Yousefi N** <McGill University>, Wong KKW, $Tufenkji N

09:20 0056 *Development and Treatment Procedures of Water Contaminated by Arsenate Using Chitosan Support Derivative* **Brion-Roby R** <Université du Québec à Rimouski>, Deschênes J-S, Gagnon J, Chabot B

09:40 0057 *Modification of Pristine Sponge and its Applications for Oil Spill Remediation* **Oribayo S** <Soochow University, China>, Feng X, Rempel G, $Pan Q

10:00 End of Session

Macromolecular Sciences and Engineered Polymers

MSP1 202

Advances in Macromolecular Science and Engineering

Organizer(s) - Josée Brisson, Denis Rodrigue and João Soares
Chair(s) - Josée Brisson

08:00 0058 *Precursor Effects on the Structure and Properties of Polymer Networks Synthesized Using Molecular Dynamics* Zhang S, *$**Xi L** <McMaster University>

08:20 0059 *Sorption of Water/Methanol on Teflon and Hydrocarbon Proton Exchange Membranes (PEMs)* **He C** <Université Laval>, Mighri F, *Guiver MD, $Kaliaguine S

08:40 0060 *Gas Separation Properties of Mixed Matrix Membrane from Poly(amide-b-ethylene oxide) and MIL-53* ***Meshkat S** <Université Laval; CREPEC>, Kaliaguine S, *Rodrigue D

09:00 0062 *Modelling and Experimental Investigation of the AGET ATRP of Butyl Acrylate in a Two-stage Dispersed System* ***Massicotte E** <Ryerson University>, Duever T, *Dhib R

09:20 0063 *Synthesis and Characterisation of a Natural Gum Obtained from Crotalaria juncea: Effect of Various De-gumming Processes* $Sadhukhan S, ***Sarkar U** <Jadavpur University, India>

09:40 End of Session

Systems and Control

SYC3 203

Process Optimization and Predictive Control

Organizer(s) - Carl Duchesne and Luis Ricardez-Sandoval
Chair(s) - Chris Swartz, Xiang Li

08:00 0065 *Global Optimization of a Power Distribution System* Li DL, *$**Li XL** <Queen's University>

08:20 0066 *A Parameter Adaptation Scheme for the Batch-to-batch Optimization of Bioprocesses Under Model-plant Mismatch* **Hille R** <University of Waterloo>, Mandur J, *Budman H

08:40 0067 *Coordinated Distributed MHE for Linear Systems* **An T** <University of Alberta>, *Liu J, $Forbes JF

09:00 0068 *Towards a Fully Decentralized Model Predictive Control Technique* **Skoko S** <Queen's University>, *Guay M

09:20 0069 *Multi-rate Subspace-based System Identification and Economic Model Predictive Control of the Electric Arc Furnace* **Rashid MM** <McMaster University>, *$Mhaskar P, Swartz CLE

09:40 0064 *Global Optimization of Nonlinear Gasoline Blend Planning and Scheduling Problems* **Castillo Castillo PA** <McMaster University>, *Mahalec V, Castro PM

10:00 End of Session

Monday PM

Plenary Lectures

PLS 2000AB

Plenary Lectures

13:00 Introductory Remarks

13:05 0070 *Yesterday, Waste was a Problem. Today, it is a Valuable Resource* *$**Chaouki J** <Polytechnique Montréal>

Questions

14:00 End of Session

Special Symposia - Carbon Capture, Utilization and Storage

CCS2 207

New opportunities in CO2 Utilization/Conversion

Organizer(s) - Éric Croiset and Maria C Iliuta
Chair(s) - Éric Croiset, Marzieh Shokrollahi

14:00 0071 *Carbon Storage and Utilization in Canada: Applications to Energy and Environment* ***Zendehboudi SZ** <Memorial University of Newfoundland>, James LJ

14:20 0072 *Shell Quest Project - Comparing Options for CO_2 Storage* **Peachey BR** <New Paradigm Engineering Ltd>, Lee P, Liu CJ, Lu P, Sharma RI, Vashisht D, Wang YB

14:40 0073 *Hydrated Magnesium Carbonates, Formation and Stability in Ambient Conditions* **Entezari Zarandi A** <Université Laval>, *Larachi F, Beaudoin G, Plante B, Sciortino M

15:00 0074 *Improved Solvents for CO_2 Capture by Molecular Simulation Methodology* *$Smith WR, **Qi W** <University of Guelph>, Kelly B

15:20 End of Session

Special Symposia - Process Safety and Loss Management

PSM1 204A

Audits and Corrective Actions

Organizer(s) - François Roche and Melanie Wilson
Chair(s) - Mireille Busque

14:00 0075 *Consistent Risk Assessments in a Worldwide Diversified Organization* **Roche F** <Air Liquide Canada>

14:30 0076 *Condensate Induced Water Hammer Risks as Related to Steam Assisted Gravity Drainage Plants in the Oilsands* **Dancey JJ** <BakerRisk>

15:00 0077 *The Use of Bowtie Analysis in Process Safety Auditing* **Ramsden M** <ERM, UK>, *Pettit G, Anderson D, Caulfield M

15:30 Coffee Break

16:00 0078 *Industrial Auditing in a World Scale Organization* **Drolet P** <Air Liquide Canada>

16:30 0079 *Lessons Learned from Safety Audit of College of Engineering Facilities* *$**Houache O** <Sultan Qaboos University, Oman>

17:00 0080 *An Analysis of CSB Investigation Reports* **Irvine Y** <Dalhousie University>, *$Amyotte PR, Khan FI

17:30 End of Session

Biomedical Engineering

BME2 307B

Functional Biomaterials and Molecular Therapeutics

Organizer(s) - Corinne Hoesli and Patrick Vermette
Chair(s) - Patrick Vermette, Mark Ungrin

14:00 0081 *Experimental Techniques to Study the Blood Dynamics and the Blood Rheology in the Microcirculation* *$**Fenech M** <University of Ottawa>

14:40 0082 *Surface Endothelialization of Vascular Substitutes by a Combinatorial Peptide-antibody Functionalization Approach* **Boulanger M** <McGill University>, Elkhodiry M, Vanslambrouck S, Tanguay JF, Laroche G, Hoesli C

15:00 0083 *Development of Bone Substitute: Poly(ε-caprolactone) Scaffold Functionalized by Adhesive Peptides in Combination with Soluble BMP-9* **Drevelle O** <Université de Sherbrooke; Polytechnique Montréal>, Sarazin P, Virgilio N, *Faucheux N

15:20 0084 *Peptide-based Biomimetic Approach to Enhance the Re-endothelialization of Vascular Substitutes* *$**Elkhodiry MA** <McGill University , >, Boulanger M, Brassard J, Tanguay JF, Laroche G, $Hoesli CA

15:40 Coffee Break

16:00 0085 *Conducting Polymer Films for Stretchable Bioelectronics* Zhang S, Tomasello G, Kumar P, Boubée F, Valitova I, Yi Z, *$**Cicoira F** <Polytechnique Montréal>

16:20 0086 *Decoration of Biomaterials with Growth Factors via Amphiphilic Coil-tags* **Murschel F** <Polytechnique Montréal>, Zaimi A, Noel S, Jolicoeur M, *De Crescenzo G

16:40 0087 *Guar Gum-sodium Borohydride System to Prepare Self-healing and Stimuli-responsive Hydrogels* *$**Dai L** <University of New Brunswick>, Nadeau B, An X, Cheng D, Ni Y

17:00 0088 *Functionalized Magnetic Nanoparticles for Targeted Drug Delivery* *Nui P X, $Son LV, **Thi T** <Hue University, Vietnam, >

17:20 End of Session

Biotechnology/Bioengineering

BBE4 2101

Renewable Chemicals/Bio-products/Bio-therapeutics

Organizer(s) - Bruno Gaillet and Denis Groleau
Chair(s) - Alain Garnier, Mario Jolicoeur

14:00 0090 *Hydrothermal Liquefaction of Wheat Straw in Mixture of Ethanol and Water for the Preparation of Bio-based Rigid Polyurethane Insulation Foams* *$**Li H** <Western University; Northwest A&F University, China>, Yuan Z, Mahmood N, Wei Q, *Xu C

14:20 0091 *Mechanical Pretreatment Based on TMP Refining System for the Sugars Production from Lignocellulosic Biomass* *$**Chen J** <Polytechnique Montréal>, Adjalle K, Paris J, Perrier M, Barnabe S

14:40 0092 *Modified Lignin: A Biobased Antioxidant for Polyolefins* **Kabir A** <Western University>, Mahmood N, Yuan Z, Kuboki T, *$Xu C

15:00 0093 *Enzymatic Approaches to Produce Bioactive Oligosaccharides* *$**Cabrera JC** <Unité de biotechnologie-Materia Nova, Belgium >, Falcón A, Costales D, Napoles MC, González L, Cabrera G, De Winter J, Gerbaux P, Tanghe A, Wégria G, Onderwater RCA, Wattiez R

15:20 0094 *Towards Complete Biosynthesis of Adipic Acid in Saccharomyces cerevisiae (Baker's Yeast)* **Venkatesan K** <University of Toronto>, *$Mahadevan R

15:40 Coffee Break

16:00 Hatch Innovation Award Lecture

16:00 0095 *Can Natural Extracts Help Us in the Fight against Antibiotic Resistance?* *$**Tufenkji N** <McGill University>, Maisuria V, Hidalgo G, O'May C

16:40 0096 *Anticancer Activity of Ontario Grown Onions* **Murayyan A** <University of Guelph>, Manohar C, *$Neethirajan S

17:00 0097 *Final Optimization of a Serum-free Medium for the Multiplication of Human Myoblasts* **Côté A** <Université Laval>, Gaillet B, Juneau PM, Trenblay J, *$Garnier A

17:20 0098 *Screening Ontario Grown Onion Varieties for its Antioxidant Properties* **Manohar M** <University of Guelph>, Xue J, $Neethirajan S, Murayyan A, Shi J

17:40 End of Session

Catalysis and Catalytic Reaction Engineering

CCR1 205A

Catalysis for Sustainable Systems

Organizer(s) - Mladen Eic and Jan Kopyscinski
Chair(s) - Jan Kopyscinski

14:00 0099 *Dual Function Adsorbent/Catalysts Materials for CO_2 Capture and Conversion* *$**Farrauto R** <Columbia University, USA>

14:40 0100 *Hydrogen Production by Glycerol Steam Reforming Using an Industrial Residue-based Catalyst* $**Ali Zadeh Sahraei O** <Université Laval>, Abatzoglou N, Larachi F, *Iliuta MC

15:00 0101 *Hydrogen Generation from Biomass Residues via Catalytic Supercritical Water Gasification* *$**Dalai AK** <University of Saskatchewan, >, Kang K, Azargohar R, Wang H

15:20 0102 *Dry and Steam Reforming of Methane with a New Catalyst Derived from a Negative Value Mining Residue Spinellized with Nickel* **Chamoumi M** <Université de Sherbrooke>, *Abatzoglou N, Iliuta MC, Larachi F

15:40 Coffee Break

16:00 0103 *Glucose to 6-C Carboxylic Acids* *Carnevali D** <Polytechnique Montréal>, $Patience GS

16:20 0104 *Determination of the Best NiMo/OCP_f Catalyst for Hydrotreating: Effects of Varying Metal Compositions in Catalyst Formulation* **Aryee E** <University of Saskatchewan>, Dalai AK, Adjaye JD

16:40 0105 *Resolving the Electronic Structure of the Vanadia-Titania System: Catalytic Consequence of Domain Size and Composition* **Yun DM** <Western University>, *Herrera JE

17:00 0106 *Single-even Microkinetic Model for Fisher-Tropsch Synthesis on Co-based Catalyst* *$**Maya-Yescas R** <Universidad Michoacana de San Nicolás de Hidalgo, México, >, Díaz-Trujillo LA, Toledo-Chávez G, Jiménez-García G, Hernández-Escoto H

17:20 0107 *Cobalt-mediated Cyclization of Benzyl Halide, Imine and Carbon Monoxide* **Liu R** <Soochow University, China>, Lin S, Pan Q

17:40 End of Session

Chemical Engineering Education

CEE1 307A

Chemical Engineering Curriculum: Optimus Liber Est Magister

Organizer(s) - Suzanne Kresta and Michel Perrier
Chair(s) - Michel Perrier, Suzanne Kresta

14:00 0108 *Instructional Strategies to Drive Engagement, Curiosity, & Reflection* *$**Nychka JA** <University of Alberta>

14:40 0109 *Rethinking Materials Science for Chemical Engineers with Problem-based Learning* *$**Braidy N** <Université de Sherbrooke>, Bédard D

15:00 0110 *Continuous Course Improvement across Instructors and Sections: Let's Stop Reinventing the Wheel* *$**Kresta SM** <University of Alberta>

15:40 Coffee Break

16:00 0111 *Team Midterm in An Introductory Process Design Course* *$**Jamieson MV** <University of Alberta>, Shaw JM

16:20 0112 *A Dynamic Simulator for Active Learning* **Marcotte E** <Polytechnique Montréal>, Aubé M, Farand P, Fradette L, Perrier M, Tavares JR, Joao S

16:40 0113 *Using One-minute Quizzes to Continually Assess Student Knowledge and Promote Student Engagement* *$**Sowinski A** <University of Ottawa>

17:00 0114 *Research Methodology Course for Graduate Chemical Engineering Students: A Case Study* *Abdelrasoul A <Ryerson University>, Upreti S

17:20 0115 *Chemical Engineering in Lebanon: Best Practice and Innovative Teaching* *Manneh R <University of Balamand, Lebanon>, El Zakhem H

17:40 End of Session

Chemical Engineering Foundations

CEF1 2105

Colloids and Interfaces

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Ayodeji A JeJe, A Eslami

14:00 0116 *A Microfluidics-based Technique for Passive Non-intrusive Tracking of Biofilm Viscosity in Time* *$**Greener J** <Université Laval>, Taghavi SM, Paquet-Mercier F, Parvinzadeh Gashti M, Eslami A

14:20 0117 *Investigation on Effect of Moisture Content on Tribocharging Behaviour and Volume Resistivity of Pharmaceutical Granules* Choi K, **Taghavivand M** <University of Saskatchewan>, *Zhang L

14:40 0118 *Ionic-liquid Self-aggregation on Rare-earth Semi-soluble Mineral Surfaces in Aqueous and Non-aqueous Systems* *$**Azizi D** <Université Laval>, Larachi F

15:00 0119 *Preparation and Characterization of Tuneable Hydrophobic Graphene-based Thin Films* **Gallerneault M** <Queen's University>, Osazuwa O, Giglio C, Truica-Marasescu F, *$Docoslis A

15:20 0120 *Directed Synthesis of Silica Particles via Microfluidic Platform for Nanofluid Improved Oil Recovery* **Bazazi P** <University of Calgary>, *$Hejazi SH

15:40 End of Session

CEF2 206A

Fluid Flow and Mixing in Continuous and Discrete Systems

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Anthony Wachs, Seyed M Taghavi

14:00 0121 *Effects of the Immiscible Liquid Phase Properties on Particle Agglomeration due to Liquid Bridging in a Slurry Bubble Column* $MacIntyre S, Atkinson M, *Pjontek D <Western University>

14:20 0122 *Quantitative Mixing Assessment of Non-cohesive Powders in Convective Blenders by Incorporating the Discrete Element Method (DEM)* **Yaraghi A** <Ryerson University>, Ebrahimi M, Ein-Mozaffari F, Lohi A

14:40 0123 *Use of Electrical Resistance Tomography (ERT) to Investigate the Effect of the Rheological Parameters on the Quality of Distributive Mixing in the SMX Static Mixer* **Jegatheeswaran S** <Ryerson University>, Ein-Mozaffari F, Wu J

15:00 0543 *The Effects of Geometry Movement on non-Newtonian Displacement Flows* Amiri A, Larachi F, *$**Taghavi SM** <Université Laval>

15:20 0125 *Effects of Drag-reducing Polymers on the Transition and Growth of Turbulent Coherent Structures* Bai X, *$**Xi L** <McMaster University>

15:40 Coffee Break

16:00 0126 *EPIC-Enabling Process Innovation through Computation* *$**Nandakumar K** <Louisiana State University, USA>

16:40 0127 *CFD Modeling of Oil-water Annular Flow across a Sudden Contraction in Horizontal Circular Pipe* *$**Belgacem I** <University of Science and Technology Houari Boumediene, Algeria; UAMOB, Algeria>, Si-Ahmed E-K, Legrand J

17:00 0128 *Comparison Electrical Signals Response for Different Multiphase Flow Arrangement* **Saied M** <Dalhousie University>, Donaldson A

17:20 0129 *The Effect of Biomass Volume Fraction on Bubbles in Sand-biomass Fluidized Beds* **Jalalinejad F** <University of Saskatchewan>, *Zhang L, Spiteri RJ

17:40 End of Session

Electrochemistry and Electrochemical Engineering

EEE3 205B

Fuel Cells

Organizer(s) - Zhongwei Chen and Elöd Gyenge
Chair(s) - Jesse Greener, Jeff Gostick

14:00 0130 *An Analysis of Monolithic Biochar Properties and Supercapacitor Performance Relationships* **Ngan A** <University of Toronto>, *$Jia CQ

14:20 0131 *Electrical Conductivity of Photosynthetic Biomass-derived Nanoporous Biochar* **Gabhi RS** <University of Toronto>, *$Jia CQ, Kirk DW

14:40 0132 *The Significance of Precursor Structure on Monolithic Wood-derived Biochar Supercapacitor Electrode Performance* **Caguiat JN** <University of Toronto>, *$Jia CQ, Kirk DW

15:00 0133 *In situ Active Chlorine Production Capacity: Experimental Modeling and Optimization of Online Electrochemical Process* *$**Zaviska F** <Université de Montpellier, France>, Brosillon S, Delgado L

15:20 0134 *Pitting Corrosion Evaluation of Austenitic Stainless Steel Types 304 and 316 in Saturated KCl and Potash Brine* *$Tolouei M, Ding Y, Kennell G, **Evitts R** <University of Saskatchewan>

15:40 End of Session

Energy Resources

ENR2 205C

Forest Biomass Refinery

Organizer(s) - Nicolas Abatzoglou, Cédric Briens and Jinwen Chen
Chair(s) - Louis Fradette

14:00 0135 ~~*Solvent Losses in the Tailings Generated from a Hybrid Bitumen Extraction Process*~~ ~~*$**Lin F** <Natural Resources Canada>, Xu Y, Dabros T, Xu Z, Nelson R~~ WITHDRAWN

14:20 0136 *Performance Enhancement of Solvent-Assisted Gravity Drainage Process by Periodic Variation of Air Injection Temperature* **Khodaei Booran S** <Ryerson University>, *Upreti SR, $Ein-Mozaffari F

14:40 0137 *Innovative Hybrid Extraction Process of Bitumen from Athabasca Oil Sands* $**Zhu Y** <University of Alberta>, *Xu Z, Masliyah J

15:00 0138 *Phase Inversion of Solid-stabilized Emulsions with Application to Crude Oil Dewatering* **Wan B** <Polytechnique Montréal>, *Fradette L

15:20 0139 *FTIR Quantification and Characterization to Bitumen Remediated by Green Solvent from Alberta Tailing Soils* *$**Gan QJ** <McGill University>, $Ismail AA

15:40 Coffee Break

16:00 0140 *Assessment of an Organosolv Biorefinery Integrated at a Softwood Kraft Pulping Mill Located in a Mixed Forest* $**Jeaidi J** <Natural Resources Canada>, Gilani B, Ajao O, Mansoorneejad M, *Benali M

16:20 0141 *Hemicellulose Extraction from Process Waste Streams and its Use to Enhance the Properties of NBSK Pulp* **Rangu V** <University of British Columbia>, *Trajano HL, $Beatson R, Chen J, Chen X, Chang XF

16:40 Award Lecture for Best Graduate Student Paper Published in CJChE

16:40 0142 *Multi-objective Optimization of Biobutanol Production* **Sharif Rohani A** <University of Ottawa>, $Mehrani P, *Thibault J

17:20 0143 *Multi-objective Optimization of the Ammonia Converter at Different Catalyst Lifetime Stages* *$**Ivanov SY** <Western University>, $Ray AK

17:40 End of Session

Environment

ENV2 204B

Trends in Wastewater Mitigation and Water Quality

Organizer(s) - Madhumita B Ray, Rafael M Santos and Peter Vanrolleghem
Chair(s) - Madhumita B Ray, Joao Soares

14:00 0144 *Characterization and Bioavailability of Silver Nanoparticles towards the Green Alga, Chlamydomonas reinhardtii in Wastewaters* **Azimzada AA** <McGill University>, Wilkinson KJW, *$Tufenkji NT

14:20 0145 *The Influence of Water Quality on the Characteristics of Lead Corrosion Scales* **Guo D** <Western University>, *Herrera JE, Robinson C

14:40 0625 *Optimization of a Combined UV-C/H_2O_2-VUV System for the Treatment of an Actual Slaughterhouse Wastewater* Naderi KV, **Bustillo-Lecompte CF** <Ryerson University>, Mehrvar M, Abdekhodaei MJ

15:00 0147 *Biodegradation of Naphthenic Acids in Microbial Fuel Cell Type Bioreactors* **Valdes Labrada G** <University of Saskatchewan>, *$Nemati M

15:20 0148 *Bioremediation of Waters Contaminated with Phenol and Cresols* **Zhou Y** <University of Saskatchewan>, *$Nemati M

15:40 Coffee Break

16:00 0151 *Evaluation of Biosurfactant and Biodegradation Treatment on the Removal of Petroleum Hydrocarbons from Drill Cuttings and Oil-contaminated Soils* **Olasanmi IO** <University of Northern British Columbia>, Thring RW

16:20 0152 *Removal of Sulfide Wastewater by Alginate-iron Oxide Magnetic Nanoparticles* *$**Banat F** <The Petroleum Institute, United Arab Emirates>, Pal P, Edathil A

16:40 0149 *Ultraviolet Light Emitting Diode: A New Technology for Water Treatment* *$**Taghipour F** <University of British Columbia>

17:00 0153 *Evaluation and Optimization of a Spinning Disc Photoreactor for the Degradation of Phenol* $Mirzaei M, *Dabir B, Dadvar M, **Jafaraikojour M** <Amirkabir University of Technology, Iran; University of British Columbia>

17:20 0150 *A New Design Photoreactor for Water Treatment Using Impinging Jet Stream on a Flat Disc* $**Jafarikojour M** <Amirkabir University of Technology, Iran; University of British Columbia>, *Dabir B, Sohrabi M, Royaee SJ

17:40 End of Session

Macromolecular Sciences and Engineered Polymers

MSP2 202

Bio-based, Biomedical and Green Polymers

Organizer(s) - Josée Brisson, Denis Rodrigue and João Soares
Chair(s) - Michel Huneault

14:00 0154 *Determining Kinetics of Bio-renewable Butyrolactone Monomers in Aqueous Solutions Using in-situ NMR and PLP-SEC* $**Luk S** <Queen's University>, Kollar J, Lacik I, Monascek J, *Hutchinson RA

14:20 0155 *Conjugated Linoleic Acid/Styrene/n-Butyl Acrylate Emulsion Terpolymerization for Adhesive Applications* *$**Dubé MA** <University of Ottawa>, Roberge S

14:40 0156 *Adhesive Performance Modification in Core-shell Latex Films Using d-Limonene as a Chain Transfer Agent* **Ren S** <University of Ottawa>, *$Dubé MA

15:00 0157 *Carbon Dioxide as both Feedstock and Blowing Agent for the Formation of Biobased Microcellular Non-isocyanate Polyurethane Materials or Foams* *$**Poussard L** <University of Mons & Materia Nova, Belgium>, Grignard B, Detrembleur C, Park CB, Raquez JM, Dubois P

15:20 0158 *The Effect of Drying Method on Porosity in Reticulated Sorbent Biofoams* *$**Outhwaite A** <Dalhousie University>, Donaldson A

15:40 End of Session

MSP3 202

Novel Functional Polymeric Materials

Organizer(s) - Josée Brisson, Denis Rodrigue and João Soares
Chair(s) - Michel Huneault

16:00 0159 *Stress-sensitive Color-changing Polymers and their Application in Structural Materials* *$**Li M** <McMaster University>, Zhang Q, $Zhu S

16:20 0160 *Porous Environmentally Sensitive Hydrogels with Tunable and Enhanced Response Properties* **Gancheva T** <Polytechnique Montréal>, *$Virgilio N

16:40 0161 *Development of Thermoplastic Reversible and Multiple Shape Memory Polymer Systems* **Gao Y** <McMaster University>, Liu W, $Zhu S

17:00 0162 *Microfluidic Synthesis of Highly Porous Non-spherical Particles and their Optical Modulation by Swelling* **Li M** <Ryerson University; St. Michael's Hospital>, Jung D, Kozinski JA, *$Hwang DK

17:20 0163 *Gas-switchable Microgels' Application on High Internal Phase Emulsion with Double Emulsion Morphology and Gas-switchable Microgel-colloidosome* **Lei L** <McMaster University>, *$Zhu S

17:40 End of Session

Nanomaterials and Nanotechnology

NNT1 2105

Nanomaterials: New Applications and Enhancing Conventional Processes

Organizer(s) - Trong-On Do and Aiping Yu
Chair(s) - Nadi Braidy, Trong-On Do

16:00 0164 *Effects of Self-assembly Monolayer on Photoelectrical Properties of Polymer/Benzothienobenzothiophene Blend Based Organic Thin Film Phototransistors* *$**Ljubic D** <Xerox Research Centre of Canada; McMaster University>, Jarvis V, Smithson CS, Wu Y, Hu N-X, $Zhu S

16:20 0165 *A Mechanism for the Protective Properties of Nanometric Oxide Clusters of the ODS Steels against High Temperature Creep and Radiations* *$**Reda M** <Canadelectrochim>

16:40 0166 *Investigation of Effects and Interactions of Reaction Mixture Composition Ratios on the Characteristics of NaA Zeolite Nanoparticles* *$**Mirfendereski SM** <Shahid Beheshti University, Iran>, Mohammadi T

17:00 0167 *Surface Modifying Macromolecules: Synthesis, Characterizations and Applications for Nano-porous Materials* *$**Rana D** <University of Ottawa>, $Matsuura T

17:20 End of Session

Systems and Control

SYC2 203

Applied Statistics and Multivariate Methods in Process Systems

Organizer(s) - Carl Duchesne and Luis Ricardez-Sandoval
Chair(s) - Carl Duchesne, Ryan Gosselin

14:00 0169 *Future of Latent Variable Methods in the Process Industry 4.0* **Ferrer A** <Universitat Politècnica de València, Spain>

14:40 0170 *A Data-driven Approach to Establish a Design Space for Raw Materials Properties and Manufacturing Conditions for Pharmaceutical Drug Stability Assurance* *$**Ghasemzadeh-Barvarz M** <Université Laval,>, Duchesne C, Cournoyer A

15:00 0171 *Revisiting Dynamic PLS: Creating Meaningful Models for Process Monitoring* **Lavoie FB** <Université de Sherbrooke>, *Gosselin R, Muteki K

15:20 0172 *Curve Fitting Regression: Getting More from your WD-XRF* **Kikongi P** <Université de Sherbrooke,>, *$Gosselin R, Salvas J, Simard J-S, Blais S

15:40 Coffee Break

16:00 0173 *Handling Class Imbalance and Multiple Objectives in the Design of Industrial Inspection Systems* *$**Liu J** <Pukyong National University, South Korea>

16:20 0174 *Application of Markov Random Field Based Image Segmentation for Oil Water Interface Detection* **Liu Z** <University of Alberta>, *Huang B, Afacan A, Kodamana H, Ibrahim F

16:40 0175 *3D Mapping of Pharmaceutical Tablets by Coupling Raman and Color Imaging* **Fauteux-Lefebvre C** <Université de Sherbrooke; Pfizer Canada Inc>, Guay J-M, *$Gosselin R

17:00 0176 *Map and Quantify Components in Low-count Spectral Images* **Lavoie FB** <Université de Sherbrooke>, Braidy N, $Gosselin R

17:20 0177 *Inspection of PLA Films Using NIR Chemical Imaging and Multivariate Image Analysis* **Amirabadi S** <Université Laval>, *$Duchesne C, Rodrigue D

17:40 End of Session

SYC4 207

Systems and Process Design and Simulation

Organizer(s) - Carl Duchesne and Luis Ricardez-Sandoval
Chair(s) - Tom A Adams, Luis Ricardez-Sandoval

16:00 0178 *Optimal Design of Integrated Upgrading Plant and Utility System for the Oil Sands Industry* Shahandeh H, *$**Li Z** <University of Alberta>

16:20 0179 *Simultaneous Design and Control of Chemical Processes under Uncertainty Using a New Back-off Approach* **Rafiei M** <University of Waterloo>, Mehta S, *Ricardez-Sandoval L

16:40 0180 *Design and Assessment of Novel Second Generation Biobutanol Plants Based on a Thermochemical Route* $Okoli CO, *__Adams TA__ <McMaster University>

17:00 0181 *Biofuel and Bioenergy Production from Brown Algae through Biochemical Conversion Pathways* *__Liu JJ__ <Pukyong National University, South Korea>, $Fasahati P

17:20 0182 *Modelling the Intrinsic Behaviours of Selected Solvents in the Extraction of Naphthenic Acids from Crude Oil* *$**Okeke EO** <MERCOGAS Limited>

17:40 End of Session

Poster Symposium

POS 2000C

Poster

From **17:40** until **19:30**

0183 *Controlled Release of Growth Factors from Biomaterials Using Coiled-coil Interactions* **Murschel F** <Polytechnique Montréal>, Fortier C, Hodges RS, Jolicoeur M, *De Crescenzo G

0184 *New Approach for the Evaluation of Aorta Stenosis* *$**Belgacem I** <University of Science and Technology Houari Boumediene, Algeria; 2UAMOB, Algeria>, Latreche S, Si-Ahmed E-K, Legrand J

0185 *In situ Preparation of Surface-enhanced Raman Scattering (SERS) Substrates for Ultrasensitive Analyte Detection in Food and Water* Dies H, Escobedo C, *$**Docoslis A** <Queen's University>

0186 *Alginate Scaffolds for 3D Cell Culture Systems* **Drevelle O** <Université de Sherbrooke; Polytechnique Montréal>, Sarazin P, Faucheux N, *Virgilio N

0187 *Production and Optimization of Bacterial Cellulose Tubes: A Promising Platform for Spinal Cord Injuries* *$**Stumpf TR** <University of Ottawa>, Tang L, Cao X

0188 *Composition of Organic Acids in Anaerobic Acidogenic Reactor: Effect of Different Temperatures* **Wassila A** <École de Technologie Supérieure>

0189 *In vitro Characterization of Camelina Sativa Antitumor Peptides against Colorectal Adenocarcinoma Cells* Thevathasan I, *__Murayyan A__ <University of Guelph>, $Neethirajan S

0191 *Synthesis and Characterization of Surface Functionalized Fe_3O_4 and its Application for Immobilization of Cytochrome P450 BM3 from Bacillus megaterium* **Bahrami A** <Université Laval>, Garnier A, Larachi F, *Iliuta MC

0192 *Optimization of the Extraction of Bioactive Polyphenolic Compounds from Cranberry Pomace by Untargeted Profiling Approach and Response Surface Methodology* *__Belair V__ <McGill University>, $Orsat V, Maheux M

0193 *A Microfluidic Device for Constraining Upstream Spreading of Bacterial Biofilm* **Asayesh F** <Université Laval>, *Greener J

0194 *A Novel Strategy for Desorption of Cellulases from Delignified Wheat Straw for Production of Biofuel* *__Baig KS__ <Ryerson University>, Turcotte G, Doan H

0195 *Tuning Salt-responsive Antifouling Properties of PMTAC Brush Coating* **Han L** <University of Alberta>, Yan B, Huang J, *Zeng H

0196 *Spectroscopic Imaging in Microchannels for High-throughput Studies of Biofilms and their Biocatalytic Properties* **Pousti M** <Université Laval>, Paquet-Mercier F, Vicent-Langlois R, *Greener J

0197 *Cloning, Expression and Production of a Novel Codon-optimized pH Stable Fungal Xylanase in Pichia pastoris* **Yang Z** <University of Ottawa, >, *Zhang Z

0198 *Effect of the Microenvironment of Ni on Thiophene Catalytic Adsorption Desulfurization Activity* **Qiuqiao J** <SINOPEC Research Institute of Petroleum Processing, China>

0199 *Kinetic Performance of Iron Doped Ceria Catalyst for Soot Oxidation* **Li B** <University of Waterloo>, *Wen J, Croiset E

0200 *Electrospun Ceria Nanofibers for Diesel Soot Filtration* *Tan ZT, $__Ahne JA__ <University of Waterloo>

0202 *Key Metal Oxide Catalysts for Ammoxidation of Acrolein to Acrylonitrile* **Thanh-Binh N** <Université Laval>, $Dubois J-L, *Kaliaguine S

0203 *Visible Light Photocatalytic Conversion of Wet Biomass to Valorized Products Using Nanostructured WO_3* **Imbault AL** <University of Toronto>, $Farnood R

0205 *Transesterification of Vegetable Oil by Homogeneous Organic Strong Base Catalysts via Ultrasonic Process* *Kalliaguine S, **Mighri N** <Université Laval>, Hoang V-T

0207 *Preparation of Templated Mesoporous c-alumina Catalysts Supports, Synthesis, Structural Properties and Catalytic Activity for Triglycerides Hydrogenation* **Afshar Taromi A** <Université Laval>, *Kaliaguine S

0208 *Separation of Valuable Components in Foods and their Separability Evaluation Using Hansen Solubility Parameters* **Sato T** <Kansai University, Japan>, *$Yamamoto H

0209 *Study on the Separation of Hafnium (Hf) from Zirconium (Zr) Compounds Using Crystallization Method* **Matsuno H** <Kansai University, Japan>, *$Yamamoto H, Wang J

0210 *Evaluation of Physical Property for Zeolite Surface Using Hansen Solubility Parameter* **Yamane S** <Kansai University, Japan>, *$Yamamoto H

0211 *Synthesis and Characterizaiton of Titanium Chabazite without Aluminum by Hydrothermal Treatment* **Ishii H** <Kansai University, Japan>, Imasaka S, Araki S, *$Yamamoto H

0212 *Development of Falling Needle Rheometer Using Blood Collecting Tube* **Horikawa D** <Kansai University, Japan>, *$Yamamoto H, Tamura E, Kawamura K

0213 *Determination of Fluorine Parameter(-F) of Group Contribution Method for Hansen Solubility Parameter Estimation* **Fukatsu N** <Kansai University, Japan>, *$Yamamoto H

0214 *Regeneration of HF from Acid Waste Discharged from Semiconductor Manufacturing Process* **Toyozono S** <Kansai University, Japan>, *$Yamamoto H

0215 *Measurement of Hansen Solubility Parameter of Ionic Liquids* **Agata Y** <Kansai University, Japan>, *$Yamamoto H

0218 *Measurements for the Phase Equilibrium and Formation Kinetics for Methane and Carbon Dioxide Hydrates in the Presence of Additive Materials* *__Chen YP__ <National Taiwan Universityi, Taiwan>, Tang M

0219 *CFD Study of Shear Thinning Fluid Flows in a Vessel Stirred by Flat-blade Impellers* *$__Ameur H__ <University Center Ahmed Salhi, Algeria>

0220 *Incorporation of Multi-walled Carbon Nanotubes to Enhance Performance of Microbial Fuel Cells* **Abbaszadeh Amirdehi M** <Université Laval>, Zarabadi MP, *Greener J

0221 *Hydrodynamic Effects on Electrode Respiration of an Anaerobic Bacterium - Toward Improvement of Future Microbial Fuel Cells (MFCs)* **Zarabadi MP** <Université Laval>, *Greener J

0223 *Real-time Temperature Monitoring for Traditional and Extensive Green Roofs: A Lebanese Case Study* *El Bachawati MB, **Manneh RM** <University of Balamand, Lebanon>, Belarbi RB, El Zakhem HZ

0225 *Hollow Fiber Membrane Desiccant for Vacuum Desiccant Cooling Application* Yang Y, $Lan C, **Rana D** <University of Ottawa>, Matsuura T

0227 *Optimization and Modeling of Hemicellulose Oligomers Production from Pulp Mill Residues for Use as Pulp Strength Additives* **Chen J** <University of British Columbia>, Chang XF, Chen X, Beatson RP, *$Trajano HL

0228 *Spacer Geometry Design Influence and Modelling of Feed Flow in Ultrafiltration Channel using Computational Fluids Dynamics CFD* *__Abdelrasoul A__ <Ryerson University>, $Doan H, Lohi A, Cheng C-H

0229 *The Critical Effect of Fossil Fuels Produced Acidic Gases (S(IV) and Nitrogen Oxides) on the Resident Time of CO_2 in the Atmosphere* *$__Reda M__ <Canadelectrochim>

0230 *Development and Treatment Procedures of Water Contaminated by Molybdenum Using a Chitosan Support Derivative* **Brion-Roby R** <Université du Québec à Rimouski>, Deschênes J-S, Gagnon J, Chabot B

0232 *Biosorption of Atrazine by Moringa oleifera Lam in Aqueous Solutions Using Fixed-bed Column* *Homem NC, **Andrade MB** <State University of Maringá, Brazil, >, Santos TRT, Bergamasco R, Vieira MF

0233 *Graphene-iron Oxide Nano-composite for Pesticide Removal from Water* **Santos TRT** <Université Laval; Universidade Estadual de Maringá, Brazil>, Andrade M, Bergamasco R, *$Hamoudi S

0234 *Use of Isotope Marking to Evaluate the Effect of Different Structures on the Composting Degradability of Energetic Materials* *__Araya M__ <Polytechnique Montréal>, $Dubois C

0235 *Study on the Valorization of Brewer's Spent Grains* *$__Ostojic S__ <Royal Military College of Canada>, *Zeman F

0236 *Double Emulsion Systems for Liquid-liquid Extraction Processes* *$Freitas HFS, **Bezerra VMF** <Federal University of Rio Grande do Norte, Brazil>, Paulo JBA

0237 *Filtration and Centrifugation of Oil Sands Tailings Treated with Hyperbranched Functionalized Polyethylenes (HBfPE)* **Nguyen B** <University of Alberta>, Davey S, *Botha L, $Soares J

0238 *Treatment of Polluted Air Using Biofilter Based S. griseous Species* *$__Awad G__ <National Research Centre, Egypt, >, Mohamed EF, El-Diwany AI

0239 *Adsorption Performance of Packed Bed Column for the Removal of Glyphosate from Aqueous Solutions Using $MnFe_2O_4$-graphene Composite Supported on Activated Carbon* Marin P, Bergamasco R, Paraiso PR, *$__Hamoudi S__ <Université Laval>

0240 *Comparative Study of Activated Babassu Coconut Carbon and Activated Bone Carbon and its Use Removing the Yellow Dye Tartrazine* *$Reck IM, Paixão RM, **Santos TRT** <State University of Maringa, Brazil>, Andrade MB, Vieira AMS, Vieira MF, Bergamasco R

0241 *Removal of Pharmaceutical and Personal Care Products from Drinking Water by Adsorption Using a Composite Carbon Nanoparticle Electrospun Nanofiber Membrane* **Soberman MJ** <University of Toronto>, Feng C, $Farnood RR

0242 *Refuse Derived Fuel from Montreal Municipal Solid Waste: Comparing Thermal Valorization Alternatives* **Girard C** <Polytechnique Montréal>, *Legros R

0246 *Producing Value-added Mineral Products from Metallurgical Slag* *$**Santos RM** <Sheridan Institute of Technology>, Georgakopoulos E, Chiang YW, Manovic V

0247 *Hydrochar Production from Neutral Sulfite Semi-chemical Red Liquor* Gamgoum R, Dutta A, **Santos RM** <Sheridan Institute of Technology>, *$Chiang YW

0249 *Waterborne Biobased Polyurethane or Polyurethane-urea: Which of Both Has the Better Anti-corrosion Properties?* *$**Poussard L** <University of Mons & Materia Nova, Belgium>, Mariage J, Sénéchal T, Raquez JM, Dubois P

0250 *The Mechanism and Kinetics of Poly (Lactic Acid) Chemical Modification with Various Coagents and Peroxides* **Dawidziuk K** <Queen's Univeristy>, *Kontopoulou M, $Parent J

0251 *Carbon Nanomaterials Reinforced Polyurethane Composite as Coating for Oil Pipelines and Flanges* **Um JG** <University of Waterloo>, *Yu A, Krithivasan H

0252 *Electrospun Nanofibers for Enhanced Flocculation and Dewatering of Mature Fine Tailings* **Zhang D** <University of Alberta>, $Thundat T, *Narain R

0254 *Development of Colloidal Polymeric Nanocarrier for Topical Meglumine Antimoniate Delivery* *$**Horoiwa TA** <Institute of Technological Research of São Paulo, Brazil>, Oliveira AM, Cerize NNP

0255 *Graphene Associated with Iron Oxide Nanoparticles for Pesticide Removal from Water* *$**Santos TRT** <Université Laval; Universidade Estadual de Maringá, Brazil>, Andrade MB, $Hamoudi S, Bergamasco R

0256 *Heavy Metals, PPCPs, and Pathogen Removal from Wastewater Using Electrospun Nanofiber Membranes* **Amerian TA** <University of Toronto>

0257 *Graphene-Iron Oxide Nanoparticles Composite for Atrazine Removal* *$**Andrade MB** <Université Laval; Universidade Estadual de Maringá, Brazil>, Santos TRT, $Hamoudi S, Bergamasco R, Vieira MF

0259 *Functionalizations of Nanobiochar for Laccase Immobilization* $**Naghdi M** <Université du Québec>, Taheran M, *Brar SK, Verma M, Surampalli RY, Valéro JR

0261 *A Universal Approach in Developing Antibiofouling Membranes* Kim Y, *$**Rana D** <University of Ottawa>, $Matsuura T, Chung W-J

0262 *Field Scale Injection of a Nano Iron-dithionite Treatment for in situ Remediation* **Nunez Garcia A** <Western University>, Boparai H, de Boer C, Chowdhury A, Kocur C, Gabayet J, Herrera J, *$O'Carroll DM, Austrins L, Peace C, Johnson R

0263 *Highly Conductive and Interconnected Graphene Foam Based Polymer Composite* $**Jun YS** <University of Waterloo>, Sy S, Rasenthiram L, Tjandra R, *Yu A

0264 *Novel Functionalized Electrospun Nanofibrous Membranes for Virus Adsorption in Drinking Water Applications* **Liegey S** <University of Toronto>, $Farnood R, Feng C

0265 *Hydrophilic SiO_2, CuO, and $CaCO_3$ Nanoparticles Incorporated Membranes for Desalination by Membrane Distillation* *$**Baghbanzadeh M** <University of Ottawa>, Rana D, Matsuura T, Lan C

0267 *Multimodel Based Control of pH Neutralization Process* *$**Kanagalakshmi S** <UNKNOWN>, Manamalli D, Mageshwari S

0268 *Development of FT-NIR Based Monitoring Method of Amine Weight Percent and Degree of Neutralization in Flotation Applications in Potash Processing* *Hussein M, $**Donaldson A** <Dalhousie University; Mosaic Inc>

0269 *Degradation of Glyphosate in Aqueous Solutions over Graphene-based Photocatalyst* Feriani M, Belkacemi K, *$**Hamoudi S** <Université Laval>

0270 *Glycerol Acetalization with Formaldehyde Using Supported Heteropolyacid Salts on 3D Mesoporous Silica* **Chen L** <Université Laval>, *Kaliaguine S

0272 *Methanol Synthesis by Intensified Sorption Enhanced CO_2 Conversion* *$**Iliuta MC** <Université Laval>, Bougie F, Iliuta I, Fongarland P

0274 *Kinetic Modeling of NiO-based Oxygen Carriers Reduction* Ipsakis D, Antzara A, Heracleous E, Silvester L, Bukur DB, *$**Lemonidou AA** <Aristotle University of Thessaloniki, Greece>

0275 *Permselective Sod Zeolite Membranes for the Reverse Water Gas Shift Reaction with In-situ Water Removal* $Bougie F, **Iliuta MC** <Université Laval>, Iliuta I, Guilhaume N, *Fongarland P

0276 *Microalgae Dewatering by Electrocoagulation to Produce Multi-purpose Bio-solid Feedstock for Cement Plants* **Khafhafera AK** <Queen's University>

0279 *Wet Extraction of Lutein and Lipids from Microalga by Quantitative Determination of Polarity* **Gong M** <Western University, >, Bassi A

0282 *How Can Regulatory Prosecution Improve Workplace Safety?* *$**Umme AM** <University of Alberta>, $Lefsrud LM

0283 *Successfully Impementing Lean Six-sigma in Non-chemical Industries for Sustainability and Prosperity. Eliminating Losses and Increasing Overall Equipment Efficiencies* **Pasha M** <Society for Maintenance and Reliability Professionals>, *Ali M

0285 *Simple Microfluidic Approach for the Generation of Water-in-water Droplets* **Moon BU** <Ryerson University,; Keenan Research Centre for Biomedical Science, St. Michael's Hospital; Institute for Biomedical Engineering, Science and Technology (iBEST) - a partnership between Ryerson University and St. Michael's Hospital>, Abbasi N, Jones SG, Tsai SH, $Hwang DK

0286 *Investigation on the Performance of the Counter Flow Technique for the Cooling of Complex Fluids inH eat Exchangers* *$**Ameur H** <University Center Ahmed Salhi , Algeria>

0638 *Ultrasound Process for Fischer-Tropsch Catalyst Design* **Louyot P** <Polytechnique Montréal>, Boffito DC, Patience GS, Neagoe C

0639 *Shape Selectivity Effects of Wire Gauzes in Ammonia Oxidation* *$**Hayes RE** <University of Alberta>, Fadic A, Votsmeier M

0640 *Crude Glycerol Purification in a Semi-continuous Membrane Apparatus* **Dhabhai R** <University of Saskatchewan>, Nguyen T, Chol CG, *$Dalai AK

0641 *Biochar from Non-conventional Biomasses - A Potential Substitute for Coal* **Regmi B** <University of Guelph>, $Zhang B, *Dutta A

0645 *Phosphate Recycling from Municipal Waste* **Meouch O** <University of Ottawa>, $Omelon S

0646 *Phosphorite (Phosphate Rock) Production from Municipal Wastewater Sludge Polyphosphate* **Gao L** <University of Ottawa>, *$Omelon S

Tuesday AM

Plenary Lectures

PLS 2000AB

Plenary Lectures
11:00 Introductory Remarks

11:05 0287 *Bridges in Modelling and Simulation of Steam-cracking: From Fossil to Renewable Feedstock and from Molecule to Furnace* *$**Marin GB** <Ghent University, Belgium>, Van Geem KM

Questions

12:00 End of Session

Honourary Symposia

SKS1 205B

Honourary Symposium in Recognition of Professor S Kaliaguine for Outstanding Contributions in Catalysis

Organizer(s) - Freddy Kleitz and Sébastien Royer

08:30 0288 *Organic Materials: Self Assembled Monolayers and Mesoporous Materials* *$**Crudden CM** <Queen's University>

09:10 0289 *Site Dispersion Using Molecular Stencil Patterning and Catalytic Epoxidation Activity in Mesoporous Template Silica* *$**Bonneviot LHR** <ENS de Lyon, France>, Fang L, Li C, Albela B, Yang B, Zheng Y, Wu P, He MY

09:30 0290 *Tailoring Morphology of SiO_2 Materials Using Statistic Design of Experiments on Synthesis Variables* *$**Maya-Yescas R** <Universidad Michoacana de San Nicolás de Hidalgo, México>, Paniagua-Rodríguez JC, Rangel-Segura R, Quintana P, Huirache-Acuña R

09:50 0291 *Novel Gas Chromatographic Method for Measuring Multi-component Gas Adsorption Isotherms in NaY Zeolite* **Shirani B** <University of New Brunswick>, *Eic M

10:10 0647 *Niobium Oxide as a Promoter for Base Metal Oxides for Carbon Monoxide and Propane Oxidation for Environmental Applications* *$**Farrauto RJ** <Columbia University, USA>

10:30 End of Session

Special Symposia - Carbon Capture, Utilization and Storage

CCS1 207

Advances in Carbon Capture

Organizer(s) - Éric Croiset and Maria C Iliuta
Chair(s) - Angeliki Lemonidou, Maria C Iliuta

08:10 0293 *Novel CO_2 Capture Process for H_2 Production Combining Ca and Ni Chemical Loops* *$**Lemonidou A** <Aristotle University Thessaloniki, Greece>

08:50 0294 *High Purity Hydrogen Production by Intensified Sorption Enhanced Steam Glycerol Reforming* $**Shokrollahi Yancheshmeh M** <Université Laval>, Radfarnia HR, *Iliuta MC

09:10 0295 *Modified Thermodynamic Equilibrium Modelling of Chemical Looping Combustion (CLC) with NiO as Oxygen Carrier* Mostafavi E, **Manafi Rasi N** <University of Calgary>, Khakpoor N, *$Mahinpey N

09:30 0296 *The Preparation of Alumina Aerogel as a High Surface Area Support for the Chemical Looping Process* **Karami D** <University of Calgary>, Soleimanisalim AH, *Mahinpey N

09:50 0297 *The Synthesis of Oxygen Carriers with Impregnation of Active Metals over Modified Alumina Using Sol-gel Technique* **Soleimanisalim A H** <University of Calgary>, Sedghkerdar M, Karami D, *Mahinpey N

10:10 0298 *A Mechanism for the Reactivation of Sintered CaO Based Sorbent during Carbonation* $**Reda M** <Canadelectrochim>

10:30 End of Session

Special Symposia - Challenges and Opportunities for Micro-algal Technologies

MAT1 307A

Challenges and Opportunities for Micro-algal Technologies

Organizer(s) - Amarjeet Bassi, Hector De La Hoz Siegler, Jean-Sébastien Deschênes and Wei Liao
Chair(s) - Hector De la Hoz Siegler, Wei Liao

08:10 0299 *Dynamic Optimization of Biomass Productivity in Continuous Cultures of Microalgae through Modulation of Light Intensity* **Deschênes J-S** <Université du Québec à Rimouski>, Vande Wouwer A

08:30 0300 *Using Light-leaking Waveguides for Growing Algae as a Biofilm* *$**Azimi Y** <University of Toronto>, Genin SN, Aitchison JS, $Allen DG

08:50 0301 *Combining Electrocoagulation and Algal Cultivation to Accumulate Algal Biomass and Reclaim Water from Liquid Anaerobic Digestion Effluent* Liu Z, Chen R, Liu Y, *$**Liao W** <Michigan State University, USA>

09:10 0302 *Enhancement of Microalgal Growth for Carbohydrate Accumulation* Wang X, Ruan Z, Sheridan P, Boileau D, Liao W, *$**Liu Y** <Michigan State University, USA>

09:30 0303 *Macroalgae: A Candidate for Wastewater Remediation and Value-added Biomass Yield for Animal Feeds and Biofuel Applications* Ge S, Qui S, Tremblay D, *$**Champagne P** <Queen's University>

09:50 0304 *Carbon Dioxide Conversion to H. Pluvialis Biomass* **Balaski M** <University of Alberta>, Sorensen J, *$Jamieson MV

10:10 0305 *Antioxidant Production in Heterotrophic Microalgal Cultures: Cultivation and Optimization Strategies* **Ibarra-Vidal M** <University of Calgary>, *$De la Hoz Siegler H

10:30 End of Session

Special Symposia - Process Safety and Loss Management

PSM2 204A

Implementing PSM

Organizer(s) - François Roche and Melanie Wilson
Chair(s) - Melanie Wilson, Jean-Paul Lacoursière

08:00 0642 *A Changing Landscape: The Pipeline Industry in Canada* **Lukaniuk C** <Canadian Energy Pipeline Association>

09:00 0306 *Development and Deployment of a Process Safety Curriculum in a North American Pipeline Company* **Viloria E** <Enbridge Liquid Pipeline>, *Uy R

09:30 0307 *Revisiting How 'Acceptable Risk' and 'Social License to Operate' Become Defined: An Incorporation of Social-psychological Processes into Technical Risk Management* *$**Lefsrud LM** <University of Alberta>, Gehman J, Jamieson MV

10:00 0308 *Pipeline Quantitative Risk Assessment* *$**Sanati SS** <Atkins Consulting Canada>

10:30 End of Session

Special Symposia - Rheology of Complex Fluids

RCF1 206B

Polymer Melts and Composites (Joint with Honourary Symposium in Recognition of Professor P Carreau for Outstanding Contributions in Rheology and Polymer Nanocomposites)

Organizer(s) - Marianna Kontopoulou and Frej Mighri Biorheology
Chair(s) - Marinna Kontopoulou

08:10 0309 *Exact Analytical Solution for Large-amplitude Oscillatory Shear Flow from Oldroyd 8-constant Model: Shear Stress* $Saengow C, *$**Giacomin AJ** <Queen's University>, Kolitawong C

08:50 0310 *Thermodynamics of Phase Inversion* **Grmela M** <Polytechnique Montréal>

09:10 0529 *Modification of the Rheological and Thermal Properties of PLA by Reactive Extrusion in the Presence of a Multifunctional Coagent* **Tiwary P** <Queen's University>, Saraf C, *$Kontopoulou M

09:30 0312 *Enhancements in the Shear-induced Crystallization Rates of Reactively Modified Branched PLA, Studied by in-situ Rheological Measurements and Optical Microscopy* **$Najafi N** <Queen's University>, *Kontopoulou M

09:50 0313 *Thermoplastic Starch Composites Using Mature Fine Tailings as Fillers* **Moran DA** <University of Alberta>, *$Soares JBP

10:10 0314 *Eccentric Cylindrical Coordinates* **Gilbert PH** <Queen's University>, Saengow C, *$Giacomin AJ

10:30 End of Session

Biomedical Engineering

BME3 307B

Tissue Engineering

Organizer(s) - Corinne Hoesli and Patrick Vermette
Chair(s) - Aris Docoslis, Patrick Vermette

08:10 0315 *Microscale Tissue Engineering for Therapeutic Applications* *$**Ungrin MD** <University of Calgary>

08:50 0316 *A Microfluidic Method of Synthesis of a Freestanding Collagen Membrane for Tissue Engineering Applications* **Rosella E** <Université Laval, >, Myrand-Lapierre ME, *Mantovani D, $Greener J

09:10 0317 *A Bioreactor Platform for the Assessment and Production of Functional Pancreatic Tissue* **Spitters TWGM** <Université de Sherbrooke>, Sharp J, Vermette P

09:30 0318 *Kinetics of Insulin Secretion from Pancreatic Islets: Effect of Islet Size and Glucose Concentration* **Guruswamy Damodaran R** <Université de Sherbrooke>, *Poussard A, Andersen P, $Vermette P

09:50 0319 *Mechanosensors: Microengineered Probes to Measure 3D Tissue Mechanics* *$**Moraes C** <McGill University>

10:30 End of Session

Biotechnology/Bioengineering

BBE2 2101

Biofuels/Bio-energy

Organizer(s) - Bruno Gaillet and Denis Groleau
Chair(s) - Denis Groleau

08:10 0320 *Novel Method for the Separation of Biofuels from Fermentation Broths* *$**Aniokete TC** <University of Aberdeen, UK>, $Euan BJ

08:30 0321 *A Kinetic Metabolic Model of Lipid Production in Chlorella protothecoides* **Ren X** <Polytechnique Montréal>, Deschenes J, Tremblay R, *Jolicoeur M

08:50 0322 *A Kinetic Model Simulating the Metabolomics of ABE (Acetone-butanol-ethanol) Fermentation Process* **Zhao X** <Polytechnique Montréal>, Peres S, *Jolicoeur M

09:10 0323 *Dehydration of Bio-alcohols by Adsorption Using Biosorbents* **Huang Q** <University of Saskatchewan>, *Niu C, $Dalai A

09:30 0324 *Bioethanol Production Using Pervaporation Membrane Bioreactor* *$**Chaurasia SP** <Malaviya National Institute of Technology, India>, Jain A, Dalai AK

09:50 0325 *Techno-economic Comparisson of Extractants for Use in Acetone-butanol-ethanol Fermentation* $Dalle Ave G, *__Adams II T__ <McMaster University>

10:10 0326 *Genome-scale Simulation of Phaeodactylum Tricornutum for Biofuels Production: Impacts of CO_2 Concentration and Light Exposure* **Chamkalani AC** <Memorial University of Newfoundland>, *Zendehboudi SZ

10:30 End of Session

Chemical Engineering Foundations

CEF1 2105

Colloids and Interfaces

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Jesse Greener, Seyed M Taghavi

08:10 0327 *Electric Field-driven, Template-free Assembly of Colloids into 3-Dimensional Structures* **Raveendran JP** <Queen's University>, Wood JA, *$Docoslis A

08:30 0328 *Design and Characterization of Surface Modified Silica Nanoparticles with Stimuli-sensitive and Reversible Aggregation/Disaggregation Behavior* **Sabri F** <Polytechnique Montréal>, Berthomier K, Marion A, Fradette L, Tavares JR, *$Virgilio N

08:50 0329 *Demulsification Mechanism of Water-in-heavy oil/Model Compound Emulsion at Elevated Temperature by EO-PO Copolymers* **Niu NZ** <University of Alberta>, *Xu ZX

09:10 0330 *Liquid Flow over Laser-patterned Superhydrophobic Surfaces* **Ahmmed KMT** <McGill University>, *Kietzig A-M

09:30 The Canadian Journal of Chemical Engineering Lectureship Award Lecture

09:30 0331 *Understanding Hydrophobic Interactions at Solid/Water/Oil/Air Interfaces and Probing Surface Interaction Mechanisms of Deformable Emulsion Droplets/Air Bubbles* *$**Zeng H** <University of Alberta>

10:10 End of Session

CEF4 206A

Thermodynamics and Kinetics

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Ali Lohi, Anthony Wachs

08:10 0332 *Investigation of Hydrothermal Synthesis Parameters on Characteristics of Zeolite 13X Nanocrystal Structure* *$**Mirfendereski SM** <Shahid Beheshti University, Iran>, Mohammadi T

08:30 0333 *Kinetic of Polystyrene Pyrolysis in Microwave Thermogravimetric Analyzer* **Leclerc P** <Polytechnique Montréal>, Doucet J, *Chaouki J

08:50 0334 *Aqueous Electrolyte Property Prediction via Molecular Simulation* *$Smith WR, Qi W, **Kelly B** <University of Guelph>

09:10 0335 *A New Model to Predict Carbon Dioxide and Steam Solubility in Bitumen* *$Heidaryan E, **Jarrahian A** <University of Tehran, Iran>

09:30 0336 *Thermodynamics of Boric Acid in High Temperature Water by AC Conductivity and Raman Spectroscopy* *__Arcis H__ <University of Guelph>, Ferguson JP, Applegarth LMSGA, Zimmerman GH, $Tremaine PR

09:50 0337 *Numerical Study of Steady Thermal Convection in Commercial Liquid Storage Tanks* *$**Pletnyov FM** <University of Calgary>, Jeje AA

10:10 0338 *Development of a Novel Silica Based Carbon Coated Receptor for High Temperature Microwave Processing Applications* **Hamzehlouia S** <Polytechnique Montréal>, Latifi M, Legros R, *Chaouki J

10:30 End of Session

Energy Resources

ENR3 205C

Fossil Energy

Organizer(s) - Nicolas Abatzoglou, Cédric Briens and Jinwen Chen
Chair(s) - Handen Tezel

08:30 0339 *Reactivity of Asphaltenes at Low Temperature* **Naghizada N** <University of Alberta>, Carvalho Do Prado G, De Klerk A

08:50 0341 *Coal Beneficiation of Pakistani Coal by Sodium Hydroxide (NaOH)* *$**Tahir MS** <University of Gujrat, Pakistan>, Haris E, Sagir MM

09:10 0343 *Pattern Recognition Insight into Drilling Optimization of Shaly Formations* **Chamkalani AC** <Memorial University of Newfoundland>, *Zendehboudi SZ, James LJ, Dusseault MD

09:30 0344 *Potential of Cation-exchanged Clinoptilolite for the Adsorption Separation of Nitrogen from Natural Gas* **Mujcin MM** <University of Ottawa>, Kennedy DA, *$Tezel FH

09:50 End of Session

Environment

ENV3 204B

Waste Management and Recovery: Concepts and Solutions

Organizer(s) - Madhumita B Ray, Rafael M Santos and Peter Vanrolleghem
Chair(s) - Rafael M Santos, Emily YW Chiang

08:10 0346 *Scaling up Mineral Carbonation, Challenges and Achievements* *$**Pasquier LC** <Institut National de la Recherche Scientifique>, Kemache N, Cecchi E, Blais JF, $Mercier G, Kentish S

08:50 0347 *Dry Slag Granulation: An Inherently Safe Process Creating Value in Slag By-products for the Metallurgical Sector* *$Faucher S, So LC, Mostaghel S, **Mahdi MJ** <Hatch Ltd>, Oh S-Y

09:10 0348 *Creating Value from Waste: Meeting the Challenges of Sustainable Tailings Management in Oil Sands* *$**Moran K** <Titanium Corporation>, Oxenford J, Nelson S

09:30 0349 *Synergistic Bioenergy Recovery from Co-digestion of Food Wastes with Biosolids* **Kim M** <Western University>, Chowdhury MMI, Nakhla G, Keleman M

09:50 0350 *Renewable Fertilizers from Digested Waste: Nutrient Recovery Techniques and End-products* *$**Vaneeckhaute C** <Université Laval>, Meers E, Vanrolleghem PA

10:10 0351 *Valorisation of Chicken Feathers: Characterization of Physical Properties and Morphological Structure* **Yimer TT** <University of KwaZulu-Natal, South Africa, ; Ethiopian Institute of Textile and Fashion Technology, Ethiopia , >, *$Sithole BB, Ramjugernath D

10:30 End of Session

Macromolecular Sciences and Engineered Polymers

MSP3 202

Novel Functional Polymeric Materials

Organizer(s) - Josée Brisson, Denis Rodrigue and João Soares
Chair(s) - Shiping Zhu

08:10 0352 *Towards Gold Nanoparticles Film Growth on Microstructured Porous Hydrogel Surfaces* **Gazil O** <Polytechnique Montréal>, Gancheva T, *$Virgilio N

08:30 0353 *Multifunctional Upper Critical Solution Temperature (UCST) Polymer for the Point-of-use Treatment of Fresh Oil Sands Tailings* **Gumfekar SP** <University of Alberta>, Pennetta L, *$Soares JBP

08:50 0354 *Core Cross-linked DHBC Micelles Based on Multiple Hydrogen Bonds* **Chen J** <University of Alberta>, Yan B, Thundat T, *Zeng H

09:10 0355 *Sponge-based Peel-able Functionally Graded Dry Adhesives for Mounting Applications* **Liew K** <University of Waterloo>, *Shahsavan H, $Zhao B

09:30 0356 *Smart Magneto-responsive Hydrogels Triggered by Low Frequency Rotating Magnetic Fields for Controlled Release Applications* $**Boroun S** <Université Laval>, *Larachi F

09:50 0357 *Tetrazole Polyelectrolytes: Nitrogen-rich Energetic Polymers for New Explosives and Composite Propellants* **St-Charles J** <Polytechnique Montréal>, Dubois C

10:10 0358 *Microfluidics-based Synthesis of Polymeric Porous Membranes with Advanced Features* **Li M** <Ryerson University; Keenan Research Centre for Biomedical Science - St. Michael's Hospital; Institute for Biomedical Engineerig, Science and Technology (iBEST), a partnership between Ryerson University and St. Michael's Hospital>, Humayun M, Kozinski JA, *$Hwang DK

10:30 End of Session

Nanomaterials and Nanotechnology

NNT1 205A

Nanomaterials: New Applications and Enhancing Conventional Processes

Organizer(s) - Trong-On Do and Aiping Yu
Chair(s) - Aiping Yu, Trong-On Do

08:10 0359 *Graphene Laminates and their Modification with Metallic Nanoparticles* *$**Fanchini G** <Western University>

08:50 0360 *Multistage Membrane System for Hydrogen Recovery from Refinery Off-gases* *$**Al-Rabiah AA** <King Saud University, Saudi Arabia>

09:10 0361 *Distinction of Surface-related Fluorescence of Aqueous and Powder NaGdF4: Yb3+, Er3+ Upconverting Nanocubes* *$**Zhang J** <Western University>, Chen A

09:30 0362 *Syngas Conversion to Higher Alcohols: Application of Novel K-promoted CoRhMo Catalysts Supported over Carbon Nanohorns (CNHs) and its By-products (OCP & OCPf)* $Boahene PE, *Dalai AK, **Ramaswami S** <University of Saskatchewan>

09:50 0363 *Measurement of Pore Size Distribution of Nanofibrous Electrospun Materials* **Kim Y** <McGill University>, *Liu SP, $Gostick JT

10:10 0364 *New Class of Nanocatalysts for Oxidative Cleavage of Vegetable Oil Feedstock into Valuable Products* **Enferadi Kerenkan A** <Université Laval>, Ello AS, Do T-O

10:30 End of Session

Systems and Control

SYC1 203

Advances in Systems and Control

Organizer(s) - Carl Duchesne and Luis Ricardez-Sandoval
Chair(s) - Nicolas Hudon, Martin Guay

08:10 0365 *Optimal Control for the Continuous Advanced Oxidation of Naphthenic Acids in Water* **Al jibouri AKH** <Ryerson University>, *Upreti SR, Wu J

08:30 0366 *Potential-based Decomposition and Stabilization of Descriptor Systems* *$**Hudon N** <Queen's University>, Guay M

08:50 0367 *Domain Reduction for Joint Decomposition Based Global Optimization* **Ogbe EO** <Queen's University>, *$Li XL

09:10 0368 *Nonlinear Robust Optimization Algorithm for Process Design and Operations* Yuan Y, *$**Li Z** <University of Alberta>, Huang B

09:30 0369 *Minmax Extremum-seeking Controller with Applications to Cyber-secure Control Systems Design* $**Guay M** <Queen's University>, *Hudon N

09:50 0370 *Challenges and Nonlinear Approaches for the Control of Plasma Fusion Tokamak Reactors* *$**Hudon N** <Queen's University>, Guay M, Vincent B, Lefevre L, Dochain D

10:10 0371 *Distributed Extremum Seeking Control over Unknown Networks* **Ebegbulem IJ** <Queen's University>, *$Guay M

10:30 End of Session

Tuesday PM

Plenary Lectures

PLS 2000AB

Plenary Lectures

13:00 Introductory Remarks

13:05 R. S. Jane Memorial Award Lecture

13:05 0372 *Polymer Reaction Engineering for Advanced Materials* *$**Zhu S** <McMaster University>

Questions

14:00 End of Session

Honourary Symposia

PCS1 2105

Honourary Symposium in Recognition of Professor P Carreau for Outstanding Contributions in Rheology and Polymer Nanocomposites

Organizer(s) - Marie-Claude Heuzey and Frej Mighri
Chair(s) - Marie-Claude Heuzey, Uttandaraman Sundararaj

14:00 0373 *Research and Discontinuities in Rheology* *$**De Kee D** <University of Toronto>

14:40 0374 *Effect of Chain Architecture on DC Electrorheological Response of Polyethylene/Organically Modified Layered Silicate Nanocomposites* *$**Sundararaj U** <University of Calgary>, Sadeghi S, Arjmand T, Li T

15:00 0375 *Rheological Properties of the Poly(D,L-lactide) Solutions Added with Metal Oxide Nanoparticles* $**Rokbani H** <Polytechnique Montréal>, *Ajji A

15:20 0376 *Gelling Properties of ENCC Suspensions in the Presence of Carboxymethyl Cellulose* **Lenfant G** <Polytechnique Montréal>, Heuzey MC, van de Ven TGM, *$Carreau PJ

15:40 Coffee Break

16:00 0377 *Self-propelling Janus Particles in Weakly Viscoelastic Fluids* *$**Natale G** <University of British Columbia>, Datt C, Elfring G, Hatzikiriakos S

16:20 0378 *Surface Modification of Multiwall Carbon Nanotubes and its Effect on Mechanical and Through-plane Electrical Resistivity of PEMFC Bipolar Plate Nanocomposites* *$**Mighri F** <Université Laval>, Athmouni N, Elkoun S

16:40 0379 *Effects of Cellulose Nanofibers on Rheological, Mechanical, Thermal and Optical Properties of Poly(ethylene oxide)* **Safdari-Shadlou F** <Polytechnique Montréal>, *Carreau PJ, Heuzey MC, Kamal MR, Sain MM

17:00 0380 *Physical and Chemical Plasticization of Polylactide* $**Shahbikian S** <Université de Sherbrooke>, Dirany M, *Huneault MA

17:20 0381 *Rheology of Complex Fluids in Nanoscale Flow Passages* *$**Nazemifard NN** <University of Alberta>, Mozaffari SM, Tchoukov PT, Czarnecki JC

17:40 End of Session

SKS1 205B

Honourary Symposium in Recognition of Professor S Kaliaguine for Outstanding Contributions in Catalysis

Organizer(s) - Freddy Kleitz and Sébastien Royer

14:00 0382 *Membranes Derived from Soluble Intrinsically Microporous Polymers* **Guiver MD** <Tianjin University, China>, *$Lee YM, Seong JG, Zhuang Y

14:20 0383 *Core and/or Shell Crosslinked Chitosan Aerogels for Catalysis* *$**Brunel D** <Université Montpellier 2, France; Euro-Mediterranean University of Fes, Morocco>, Bousmina M, El Kadib A

14:40 0384 *Fischer-Tropsch Synthesis: Stable Mesoporous Alumina Supported Cobalt Catalyst* **Vosoughi V** <University of Saskatchewan>, *Dalai A, Badoga S, Abatzoglou N

15:00 0385 *Insight into the Activity and Selectivity of Au/Ti-KIT-6 during the Epoxidation of Propene by in situ UV-vis and XANES Spectroscopies* **Talavera-Lopez A** <Universidad Autónoma Metropolitana-Iztapalapa, México>, Gomez-Torres SA, Fuentez-Zurita G, Serrano-Rosales B, Nohair B, Kaliaguine S

15:20 0386 *Chitosan-based Materials and their Graphitic Versions as Sustainable Catalytic Supports in Fine Chemical Synthesis* *$**El Kadib A** <University of Fes, Morocco, >, Bousmina M

15:40 Coffee Break

16:00 0292 *SiliaCat Pd^0 Heterogeneously Catalyzed Hydrogenation of Squalene to Squalane under Mild Conditions* **Pandarus V** <Université Laval; SiliCycle Inc>, *Béland F, Cirimina R, Pagliaro M, Kaliaguine S

16:20 0648 *A Kinetic Study of the Bio-Zconvertion of Moringa Oleifera and Jatropha Curcas Biomass into Lignocellulosic Bioethanol: the Consolidated Bioprocessing (CBP)* *$**Contreras Andrade I** <Universidad Autonoma de Sinaloa>

16:40 0388 *New Trends in Catalytic Reaction Engineering: The CREC Riser Simulator* *$**de Lasa H** <Western University>

17:00 0644 *Catalytic Upgrading of Biomass-derived 5-Hydroxymethylfurfural into 2,5-Diformylfuran and 2,5-Furandicarboxylic Acid* **Al Shaal M** <Max-Planck-Institut für Kohlenforschung, Germany>, Metzelaars M, Sahraoui L, Palkovits R, *$Schüth F

17:20 0390 *FeCralloy® partially oxidizes methane to syngas selectively* **Ma Z** <Polytechnique Montréal>, Pelegrin DC, Boffito DC, *Patience GS

17:40 End of Session

Special Symposia - Carbon Capture, Utilization and Storage

CCS1 207

Advances in Carbon Capture

Organizer(s) - Éric Croiset and Maria C Iliuta
Chair(s) - Maria C Iliuta, Angeliki Lemonidou

14:00 0391 *Nonisothermal Kinetic Mechanism of CO_2 Sorption Process over Li_4SiO_4* $**Quddus MR** <King Fahd University of Petroleum & Minerals, Saudi Arabia>, Chowdhury MBI, *de Lasa HI

14:20 0392 *Screening Tools for Adsorption Based Post-combustion CO_2 Capture* Rajagopalan A, De Pauw R, Avila A, *$**Rajendran A** <University of Alberta>

14:40 0393 *Fluidizable KLi_3SiO_4 Sorbent for CO_2 Capture* $**Zhang S** <East China University of Science and Technology, China>, Chowdhury MBI, Zhang Q, *de Lasa HI

15:00 0394 *Enhanced CO_2 Adsorption on Activated Carbon* **Shahkarami S** <University of Saskatchewan>, *$Dalai AK, Soltan J

15:20 0395 *New Physisorptive CO_2 Solid Sorbents that Function in Wet Gas Streams* *$**Shimizu GKH** <University of Calgary>, Lin JB, Akhtar F, Ramaswamy P, Taylor JM

15:40 End of Session

CCS2 207

New opportunities in CO2 Utilization/Conversion

Organizer(s) - Éric Croiset and Maria C Iliuta
Chair(s) - Maria C Iliuta, Angeliki Lemonidou

16:00 0396 *Conversion of CO_2 into Synthetic Methane in a Compact Packed Reactor* Sun D, *$**Simakov DSA** <University of Waterloo>

16:20 0397 *Biofuel Production from Isolated Composting* *__Zeman FS__ <Royal Military College of Canada>

16:40 0398 *Methanol Synthesis via Catalyst Conversion of CO_2* **Kuti YO** <Qatar University, Qatar>, *Khraisheh M, $Khader MM, Al Marri JM

17:00 0399 *Hydrophilic Materials for Preferential Adsorption of Water at High Temperature* **Ghodhbene M** <Université Laval>, Bougie F, Iliuta MC

17:20 0400 *Kinetic Model of Valorization of Biomass and CO_2* *$**Cai XS** <LSPC-INSA, France>, Zheng JL, Taouk B, Leveneur S

17:40 End of Session

Special Symposia - Challenges and Opportunities for Micro-algal Technologies

MAT1 307A

Challenges and Opportunities for Micro-algal Technologies

Organizer(s) - Amarjeet Bassi, Hector De La Hoz Siegler, Jean-Sébastien Deschênes and Wei Liao
Chair(s) - Jean-Sebastien Deschênes, Amarjit Bassi

14:00 0401 *Photo-bioreactor System for Sustainable Microalgae Cultivation* *__Adebusuyi A__ <Grande Prairie Regional College Research & Innovation>, $Tan W

14:20 0402 *Intensified Green Production of Astaxanthin from Haematococcus pluvialis* *$**Chiang YW** <University of Guelph>, Haque F, Dutta A, Thimmanagari M

14:40 0403 *Microalgae Growth on Bicarbonate Salts for Carbon Capture* **Morisset P-O.** <Université du Québec à Rimouski>, Tremblay R., *$Deschênes J-S.

15:00 0404 *Critical Assessment of Alternative Solutions for Microalgae-to-biodiesel Industrial Production Processes through a LCA Perspective* Collotta M, Busi L, Champagne P, *$**Mabee W** <Queen's University>, Tomasoni G, Alberti M

15:20 0405 *Unlocking the Potential of Photosynthesis: Cultivation of Natural Alkaliphilic Halotolerant Microbial Biofilms* Kanon-Rubio K, Sharp H, Strous M, *$**De la Hoz Siegler H** <University of Calgary>

15:40 Coffee Break

16:00 0406 *Formation Potential of Disinfection By-products after Coagulation of Algal Matters* **Hu X** <Western University>, Chen T, Zhao Z, *$Ray MB

16:20 0407 *Process Systems Engineering for the Development and Optimization of a Microalgal CO_2 Fixation and Biomass Production System in Oil Sands Process Water* Kasiri S, Li R, Huang B, Ulrich A, *__Prasad V__ <University of Alberta>

16:40 0408 *Investigation of Two-step Tretreatment for the Hydrothermal Liquefaction (HTL) of Microalgae to Bio-oil* **Hu Y** <Western University, >, *Bassi A, Xu C

17:00 Summary and Discussion on Future Directions for Microalgal Technologies

17:40 End of Session

Special Symposia - Fats & Oils: Sustainability and Innovation

FOS1 206B

Green Oleocatalysis in Food and Non-food Engineering

Organizer(s) - Khaled Belkacemi and Dérick Rousseau
Chair(s) - Khaled Belkacemi, Safia Hamoudi

16:00 0409 *Green Oleochemical Process Engineering of Non-edible Fats & Oils: Towards Improved Heterogeneously Catalyzed Metathesis* *$**Belkacemi K** <Université Laval; Centre in Green Chemistry and Catalysis>

16:40 0410 *Heterogeneous Olefin-metathesis: Comparative Study of the Activity of MTO-based Catalyst with that of the Mo_2C-based Catalyst* **Hasib-ur-Rahman M** <Université Laval>, Hamoudi S, *$Belkacemi K

17:00 0411 *Optimization of BM3 Mutants for Industrial Applications* **Vincent T** <Université Laval>, Roseberry MO, Gaillet B, *$Garnier A

17:20 End of Session

Special Symposia - Process Safety and Loss Management

PSM4 204A

Process Safety Management in Canada

Organizer(s) - François Roche and Melanie Wilson
Chair(s) - Guy Brouillard

14:00 0636 *Public Risk: How to Measure it and Evaluate it* **Oliverio M** <Enbridge Gas Distribution>, Ridpath A, Wong A

14:30 0412 *Process Safety Management in a Mining and Mineral Processing Context* **Busque M** <ERM Canada Groupe Conseil>, *Poitras D

15:00 0413 *Process Hazard Analysis Bow-Tie Methodology* **Riopel C** <Rio Tinto>, *Brouillard G

15:30 Coffee Break

16:00 0414 *PSM Division: An update on the Activities and Direction of the Division* **Pierorazio AJ** <BakerRisk>

16:30 0415 *Effective PSSR in Management of Change for Existing Plants in Canada* *$**Sanati SS** <Atkins Consulting Canada>

17:00 0416 *Mechanical Integrity versus Process Safety Management Requirements* **Julien H** <GCM Consultants>

17:30 End of Session

Biotechnology/Bioengineering

BBE1 2101

Bioengineering Process Intensification

Organizer(s) - Bruno Gaillet and Denis Groleau
Chair(s) - Céline Vaneeckhaute, Denis Groleau

14:00 0417 *Drying of Gases in a Pressure Swing Adsorption Process Using Canola Meal Biosorbent* **Dhabhai R** <University of Saskatchewan>, *$Niu CH, Dalai AK

14:20 0418 *Modeling Multiphase Loop Bioreactor for Conversion of Natural Gas to Single Cell Protein* $**Shah QE** <University of Trinidad and Tobago, Trinidad and Tobago>, *Aufderheide B, Al-Taweel AM

14:40 0419 *Microalgae in External Loop Air Lift Reactor* **Sawant S** <ICT, India>, Gosavi S, Waval A, Telli S, *Mathpati CS

15:00 0420 *Gibberellic Acid Process in an Air-lift Bioreactor* *$**Escamilla Silva EM** <Universidad Michoacana de San Nicolás de Hidalgo, México>, $Chávez Parga MC

15:20 0421 *Conversion of Crude Glycerol into Microbial Lipid - A Renewable Feedstock for Biodiesel Production* **Uprety BK** <Lakehead University>, *$Rakshit SK

15:40 Coffee Break

16:00 0422 *Enzymatic Decolorization of Dye-polluted Water Using Natural Cellular Carriers* **Mohammed I** <Technische Universität Dresden, Germany>, Schubert M, Hampel U

16:20 0423 *Amylolytic Activity of Thermus thermophilus HB8: Production, Optimization and Basic Characterization* **Akassou M** <Université de Sherbrooke, , >, *Groleau D

16:40 0424 *A Case Study of an Integrated Process Development and Scale Up of a Biosimilar Monoclonal Antibody* *Maleknia S, **Ghorbani Aghdam A** <Aryogen Pharmed Inc., Iran>, Rezaei Ravesh S, Aghajani H, $Mahboudi F

17:00 0425 *Development of an Image Analysis Method for Probiotics Quality Control* **Bélanger PL** <Université Laval; Pfizer Inc>, Cournoyer A, Juneau PM, *$Duchesne C, Gaillet B

17:20 0426 *A Novel Sparging Design for a Wave-induced Disposable Bioreactor to Improve its Oxygen Transfer Capacity* **Bai Y** <University of Waterloo>, *$Anderson WA, Moo-Young M

17:40 End of Session

Catalysis and Catalytic Reaction Engineering

CCR2 205C

Catalytic Reaction Engineering

Organizer(s) - Mladen Eic and Jan Kopyscinski
Chair(s) - Jan Kopyscinski

14:00 0427 *Gas Phase Oxidation of 2-methyl-1,3-propanediol to Methacrylic Acid over Heteropolyacid Catalysts* **Darabi Mahboub MJ** <Polytechnique Montréal>, *Patience GS, $Dubois JL

14:20 0428 *Comparison Study of Different Catalysis for Steam Reforming of Pyrolysis Oil of Plastic and Vegetal Origin* *$**Blanchard J** <Université de Sherbrooke>, Bali A, Abatzoglou N

14:40 0429 *Evaluation of Ni-Ce-Mg-Al Hydrotalcite Monolithic Catalyst for Steam Cracking of Vacuum Gas Oil (VGO)* *$**Roustapisheh M** <University of Calgary>, Bartolini M, Perez Zurita J, Pereira Almao P

15:00 0430 *Catalyst Coking in a Packed Bed Sabatier Reactor: Simulation-based Study* Sun D, *$**Simakov DSA** <University of Waterloo>

15:20 0431 *Ring-opening Metathesis Copolymerization of Dicyclopendiene and 1, 5-cyclootadiene* **Yue D** <Soochow University, China>, $Pan Q, Wang Y, Chen S

15:40 Coffee Break

16:00 0432 *Effect of Au, Ni, and Mo on Plasma-derived Co-Fe/C Bimetallic Nano-catalysts in Fischer-Tropsch Synthesis* **Aluha JL** <Université de Sherbrooke>, *$Abatzoglou N

16:20 0433 *Wet Media Milling WO_3/TiO_2 and Vanadium Phosphorous Hemi-hydrate* **Li H** <Polytechnique Montréal>, Ndjamo A, Abdul-Nour G, *Patience GS

16:40 0434 *Microstructural Investigation Ni-alumina Catalyst During Dry Reforming* *$**Braidy N** <Université de Sherbrooke>, Bastien S, Blanchard J, Achouri I, Abatzoglou N

17:00 0435 *Spray Dried Core-shell Catalysts* **Rigamonti MG** <Polytechnique Montréal>, Saadatkhah N, Song YX, Li H, Boffito DC, *$Patience GS

17:20 0436 *A Novel Process for Production of Isopropyl Alcohol* *$**Al-Rabiah AA** <King Saud University, Saudi Arabia>

17:40 End of Session

Chemical Engineering Foundations

CEF2 206A

Fluid Flow and Mixing in Continuous and Discrete Systems

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Seyed M Taghavi, Anthony Wachs

14:00 0437 *Mixing of Herschel-Bulkley Fluids with Coaxial Mixers: Two Different Central Impellers in Combination with an Anchor* **Kazemzadeh A** <Ryerson University>, *Ein-Mozaffari F, Lohi A, Pakzad I

14:20 0438 *On Film Liquid Thickness Measurements Using a Multireflection Technique* *$**Si-Ahmed EK** <Université de Nantes, France; University of Science and Technology Houari Boumediene, Algeria>, $Ouldrebai H, Legrand J, Pruvost J

14:40 0439 *Numerical Study and Structure Optimization of a Multi-tube Feeding Nozzle for Slurry Bed Hydrocracking* **Wang Z** <China University of Petroleum, China; Memorial University of Newfoundland>, *Duan X, Lei C, $Tan N, Deng W

15:00 0440 *Experimental Correlation of Gas-liquid-solid Mass Transfer Coefficients in a Stirred Tank Using Response Surface Methodology* **Zhang X** <Memorial University of Newfoundland>, *$Duan X, Muzychka Y

15:20 0441 *Multiphase Fluid Flow Modeling in Horizontal Wells* **Oluwadairo KA** <Memorial University of Newfoundland>, James LA, Johansen TE

15:40 End of Session

CEF3 206A

Physicochemical Separation

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Seyed M Taghavi, Anthony Wachs

16:00 0442 *Modeling and Site Energy Distribution Analysis of Levofloxacin Sorption by Biosorbents* **Yan B** <University of Saskatchewan>, *Niu C

16:20 0443 *High Permeable Zeolite W Membranes for CO_2/CH_4 Separation: Synthesis and Characterization* *$**Mirfendereski SM** <Shahid Beheshti University, Iran>, Mohammadi T

16:40 0444 *Tailoring the Chemistry of Copolymer-based Membrane Adsorbers for Heavy Metals Removal via High-throughput Evaluation Techniques* **LaRue RJ** <McMaster University>, Dilenschneider T, Qu S, Phillip WA, $Latulippe DR

17:00 0445 *Investigation of Diffusion Mechanisms of Ethane in Activated Carbon Using Zero-length Column (ZLC) Technique* Makhtoumi P, *$**Rajendran A** <University of Alberta>

17:20 End of Session

Electrochemistry and Electrochemical Engineering

EEE2 307B

Electrochemical Sensors and Electro-analysis

Organizer(s) - Zhongwei Chen and Elöd Gyenge
Chair(s) - Jesse Greener, Jeff Gostick

14:00 0446 *Electrochemical Imaging for Microfluidics: A Full System Approach* [*$]**Greener J** <Université Laval>, Taghavi SM, Kara A, Mathault J, Miled A

14:20 0447 *Transport Properties of Thin Fibrous Materials by Poro-elastic Response* **Unno J** <McGill University>, [$]Gostick J

14:40 0448 *Detection and Measurement of Arsenic(III) by Anodic Stripping Voltammetry and Surface Plasmon Resonance* [*]**Sarkar P** <University of Calcutta, India>, [$]Saha S

15:00 0449 *A Third Generation Xanthine Enzymatic Biosensor with Electrode Modified by Electrodeposited MWCNT on Nano-gold Polymer Composite Film* [*]**Sarkar P** <University of Calcutta, India>, [$]Sen S

15:20 End of Session

Energy Resources

ENR3 307B

Fossil Energy

Organizer(s) - Nicolas Abatzoglou, Cédric Briens and Jinwen Chen
Chair(s) - Japan Trivedi

16:00 0450 *Preparing Carbon Molecular Sieve Membrane for Natural Gas Separation* **Khan S** <The Petroleum Institute, United Arab Emirates>, [*]Wang K, [$]Wang K

16:20 0451 *Integration of Data Driven Proxy Models with Assisted History Matching Algorithm for Efficient and Fast Track History Matching of SAGD Reservoirs* **Jain T** <University of Alberta>, Patel R, [*$]Trivedi J

16:40 0453 *Settling Rates of Asphaltenes and Solids from Diluted Bitumen* **Casas YA** <University of Calgary>, Schoeggl FF, [*$]Yarranton HW

17:00 0454 *Scale-up of a Modified Soxhlet Apparatus for Extraction of Crotalaria juncea Seed Oil using Dimensional Analysis* [$]Dutta R, [*]**Sarkar U** <Jadavpur University, India>

17:20 End of Session

Environment

ENV1 204B

Industrial Ecology and Resources Conservation

Organizer(s) - Madhumita B Ray, Rafael M Santos and Peter Vanrolleghem
Chair(s) - Rafael M Santos, Emily YW Chiang

14:00 0455 *Tools in Support of Energy Use Decisions* **McKellar JM** <University of Ontario Institute of Technology>

14:20 0456 *Using Hazard Identification, Risk Assessment, and the Sustainable Design Process to Evolve Environmental Regulations* [*]**Jamieson MV** <University of Alberta>, Lefsrud LM

14:40 0457 *Uncertainty in Life Cycle Assessments of Well-to-wheel Greenhouse Gas Emissions of Transportation Fuels Derived from North American Crudes* **Di Lullo G** <University of Alberta>, Zhang H, [*$]Kumar A

15:00 0568 *Optimization and Economical Study of Integrating Biological and Advanced Oxidation Processes for the Treatment of an Actual Slaughterhouse Wastewater* **Bustillo-Lecompte CF** <Ryerson University>, Mehrvar M

15:20 0459 *Life Cycle Sustainability Assessment (LCSA): A Comparison of Oxymethyle Ether (OME) Pathway from Two Different Types of Forest Biomass* **Mahbub N** <University of Alberta>, Zhang H, Oyedun AC, [*$]Kumar A, Poganietz WR

15:40 Coffee Break

16:00 0460 *Development of a Predictive Tool Based on Material Flow Analysis for Waste Management Decision-making* **Tanguay-Rioux F** <Polytechnique Montréal, >, Legros R, Spreutels L

16:20 0461 *Greenhouse Gas Impacts of Alternative Pathways for Future Marine Fuel Desulfurization Standards* **Guo J** <University of Calgary>, [$]Bergerson J

16:40 0462 *Adsorption of CH_4 and N_2O from Livestock Using ZIF-8* [*$]**Delgado B** <Université Laval; Université Claude Bernard Lyon1, France; IRDA>, Avalos Ramirez A, Lagace R, Giroir-Fendler A, Godbout S

17:00 0463 *Mitigation of Ammonia and Hydrogen Sulphide Emissions Using TiO_2 and ZnO Nanoparticles* **Kumar S** <University of Saskatchewan>, Azar R, [*$]Nemati M, Predicala B

17:20 0464 *Synthesis and Characterization of Plasmonic and Magnetically Separable $Ag/AgCl\text{-}Bi_2WO_6$@ Fe_3O_4@SiO_2 Core-shell Composites for Visible Light-induced Detoxification* **Meng X** <University of Ottawa>, Li Z, [*]Zhang Z

17:40 End of Session

Macromolecular Sciences and Engineered Polymers

MSP5 202

Polymer Reaction Engineering

Organizer(s) - Josée Brisson, Denis Rodrigue and João Soares
Chair(s) - Marc Dubé, Robin Hutchinson

14:00 0465 *Simulation-aided Design of Liquid Crystal Elastomer-based Actuators* Neufeld RAE, Shahsavan H, Zhao B, [*]**Abukhdeir NM** <University of Waterloo>

14:20 0466 *Switchable Biomimetic Fibrillar Adhesives Based on Liquid Crystal Networks* **Shahsavan H** <University of Waterloo; Kent State University, USA>, Salili SM, Jákli A, [*$]Zhao B

14:40 0467 *CO_2-switchable, Smart Polymers for Dewatering of Oil Sands Tailings* **Nittala AK** <University of Alberta>, Gumfekar SP, [*$]Soares JBP

15:00 0468 *The Importance of Functional Group Distribution in Polymeric Dispersants* **Zhang M** <Queen's University>, [$]Yang W, [*]Hutchinson RA

15:20 0470 *Simulation of Nylon 6/6,6 Copolymerization in a Batch Reactor and Comparisons with Homopolymerization* **Liu FF** <Queen's University>, [*]McAuley KB, Hurley JB

15:40 Coffee Break

16:00 0469 *Applying Multi-Dimensional Method of Moments for Modeling and Estimating Parameters for Arborescent Polyisobutylene Production in Batch Reactor* Zhao YR, Arriola DJ, Puskas JE, [*$]**McAuley KB** <Queen's University>

16:20 0471 *Hydrophobic Polymer Exclusion Nets* Berard A, [*]**Tavares JR** <Polytechnique Montréal>, Patience GS, Chouinard G

16:40 0472 *Synthesis of Polydicyclopentadiene via Catalytic Polymerization and Thermal Polymerization Routes* **Wang Y** <Shandong Yuhuang Chemical (Group) Co. Ltd., China; College of Chemistry, Chemical Engineering and Material Science, China>, Chen S, Pan Q

17:00 0473 *Adhesive Property Modification Using Cellulose Nanocrystals* **Dastjerdi Z** <University of Ottawa, >, [*$]Dubé MA, Kedzior S, Cranston ED

17:20 End of Session

Nanomaterials and Nanotechnology

NNT1 205A

Nanomaterials: New Applications and Enhancing Conventional Processes

Organizer(s) - Trong-On Do and Aiping Yu
Chair(s) - Safia Hamoudi, Trong-On Do

14:00 0475 *Synthesis of Magnetic Hydrophobic Nanoscrolls MHNS-and their Potential Application for Oil Spillage Clean Up* $**Ramirez-Leyva JH** <University of Calgary>, *Nassar NN, Vitale G

14:20 0476 *Synthesis of Ternary TEMPO-oxidized Nano-fibrillated Cellulose/ Nickel Ferrite/ Titanium Dioxide (TNFC@$NiFe_2O_4$@TNPs) Nanocomposites and their Application in the Photocatalytic Hydrogen Generation* **An X** <University of New Brunswick; Tianjin University of Science and Technology, China>

14:40 0477 *Copper-platinum Supported Reduced $Ca_2Ta_3O_{10}$ Perovskite Nano-sheets for Sunlight-driven Conversion of CO_2 into Fuels* **Vu N-Ng** <Université Laval>, *Nguyen C-C, $Do T-O

15:00 0478 *Effects of Coating Layer Thickness and Substrate Porosity on the Structure and Performance of SiO_2 Nanocomposite Polyvinylidenefluoride Membranes for Membrane Vacuum Distillation* **Viyash M** <University of Ottawa>, Baghbanzadeh M, Rana D, $Lan C, Matsuura T

15:20 0479 *Study on Thermal Cracking of Vacuum Residue (VR) in Presence of Nanoparticles or Drill Cuttings* **Eshraghian AE** <University of Calgary>, *Husein MH

15:40 Coffee Break

16:00 0480 *Toward a Mechanistic Understanding of Oil-water Interfacial Tension Reduction by Nanoparticles for Enhanced Oil Recovery* **Jafari Daghlian Sofla S** <Memorial University of Newfoundland>, *James L

16:20 0481 *Post-calcined Carbon Nitride Nanosheets as an Efficient Photocatalyst for Hydrogen Production under Visible Light Irradiation* **Gholipour M** <Université Laval>, Béland F, *Do T

16:40 0482 *Stabilizing Silicon Dioxide Nanoparticles in Seawater Using Hydrochloric Acid with Application to Offshore Production* **Kim H** <Memorial University of Newfoundland>, Sivira D, Jafari S, *$James L, Johansen T

17:00 0483 *Hollow Rh/Sr-codoped TiO_2 Photocatalyst for Efficient Sunlight-driven Organic Pollutant Degradation* **Nguyen C-C** <Université Laval>, *Do T-O

17:20 0484 *Advanced Molecular Characterization of Cellulose Nanomaterials Employing Latest Advances in Triple Detection Size Exclusion Chromatography* **Landry E** <PolyAnalytik>, Alassuity A, Ebied AE, Koerbe D, Wan W, Karamd S

17:40 End of Session

Systems and Control

SYC2 203

Applied Statistics and Multivariate Methods in Process Systems

Organizer(s) - Carl Duchesne and Luis Ricardez-Sandoval
Chair(s) - Carl Duchesne, Yuri Shardt

14:00 D. G. Fisher Award Lecture

14:00 0485 *Data Driven Value Creation* **Nomikos P** <INVISTA Canada>

14:40 0486 *Probabilistic Optimality Assessment for non-Gaussian Multi-mode processes* *$**Sedghi S** <University of Alberta>, Huang B

15:00 0487 *Parameter and State Estimation of an Agro-hydrological System* **Nahar J** <University of Alberta>, *Liu J, $Shah SL

15:20 0488 *Mathematical Modeling and Parameter Estimation for a Side-fired Ethane Pyrolysis Furnace* $Karimi H, Cowperthwaite EV, Olayiwola B, Farag H, ***McAuely KB** <Queen's University>

15:40 Coffee Break

16:00 0489 *Uncertainty Analysis of a Stochastic Non-closed-form Multiscale System Using Power Series and Polynomial Chaos Expansions: A Comparison* **Kimaev G** <University of Waterloo>, *Ricardez-Sandoval LA

16:20 0490 *Real Time Monitoring of Feed Frame Powder Blends in the Near Infrared: Comparing Spectroscopy to Imaging* **Dalvi H** <Université de Sherbrooke>, Guay JM, *Abatzoglou N, $Gosselin R

16:40 0491 *Data-driven Generation of Online Reaction Monitoring Schemes* Tefera DT, Jaramillo LMY, Sattari F, de Klerk A, ***Prasad V** <University of Alberta>

17:00 0492 *A New Analytical Method Using Fluorescence to Determine the Concentration of an API Residue on Equipment Surfaces after Cleaning* **Guay M** <Université Laval>, Salvas J, *$Duchesne C, Simard J-S

17:20 End of Session

Wednesday AM

Honourary Symposia

SKS1 204A

Honourary Symposium in Recognition of Professor S Kaliaguine for Outstanding Contributions in Catalysis

Organizer(s) - Freddy Kleitz and Sébastien Royer

08:00 0493 *Process Intensification at Molecular Level through Cascade Engineered Catalytic Reactions* *Yadav GD, **Patankar SC** <University of British Columbia>

08:20 0494 *Thiophenic Species Removal over a New Zn-Offretite Zeolite via Selective Adsorption for FCC Processes* **Aponte Y** <Western University>, *$de Lasa H

08:40 0495 *From Pellets to Monoliths as New Catalyst Supports for Green Propulsion Applications - European H2020 Project Reform* ***Kappenstein C** <Université de Poitiers, France>, $Maleix C, Brahmi R, Batonneau Y, Beauchet R, Schwentenwein M

09:00 0496 *Methanol Conversion into Olefins (MTO): Link between Coke and Light Paraffin Formation* **Castellanos-Beltran IJ** <Université de Sherbrooke>, Assima GP, Marie-Rose S, *$Lavoie JM

09:20 0497 *Hot Gas Catalytic Clean-up of Biomass Gasification: From the Lab to the Process Intensification* Zamboni IR, Virgine M, Courson C, ***Kiennemann A** <Université de Strasbourg, France>

09:40 0498 *Zeolites for Etherification Reactions* Lanzafame P, Barbera K, Parathoner S, Centi G, Aloise A, Catizzone E, Migliori M, Nagy JB, ***Giordano G** <University of Calabria, Italy>

10:00 Coffee Break

10:20 0499 *Metal Oxide/Quantum Dot Composite Photocatalysts* *$**Balkus KJ** <University of Texas at Dallas, USA>

11:00 0201 *Synthesis of Boron-modified Hierarchical Nanocrystalline ZSM-5 Zeolite for Methanol to Propylene* $Hu Z, Zhang H, Shen W, *Tang Y, **Xu H** <Fudan University, China>

11:20 0500 *A Potpourri of Recent Works from my Laboratory* **Kaliaguine S** <Université Laval>

12:00 End of Session

Special Symposia - Carbon Capture, Utilization and Storage

CCS1 207

Advances in Carbon Capture

Organizer(s) - Éric Croiset and Maria C Iliuta
Chair(s) - Éric Croiset, Maria C Iliuta

08:00 0501 *Separation of CO_2 from Syngas Using PDMS and Mixed Matrix Membranes* *Rose L, $**Tezel FH** <University of Ottawa>

08:20 0502 *Crosslinking between Polymers and Fillers to Improve the Gas Separation Properties of Polymer Membranes* **Tien Binh N** <Université Laval>, Vinh Thang H, Kaliaguine S, Rodrigue D

08:40 0503 *Ilmenite-based Chemical Looping Combustion: Comparison of Kinetic-diffusion and Thermodynamic Models* **Khakpoor N** <University of Calgary, >, *Siegler HDH, Mostafavi E, Mahinpey N

09:00 0504 *Capture Of NOx Using Fixed Bed Packed with Activated Carbon* *Almeshragi M <Al-Mergheb University, Libya>, Ibrahim H, Amer F

09:40 0505 *A Novel Approach for the Preparation of Regenerated Cellulose Films in Organic Electrolytic Solutions Followed by Controlled Precipitation of Nanosized Calcium Carbonate* **Cheng D** <University of New Brunswick; Tianjin University of Science and Technology, China>, *Ni Y

10:00 End of Session

Special Symposia - Fats & Oils: Sustainability and Innovation

FOS2 **307A**

Moving from Synthetic to Natural Ingredients

Organizer(s) - Khaled Belkacemi and Dérick Rousseau
Chair(s) - Khaled Belkacemi, Safia Hamoudi

08:00 0506 *An Efficient Method for High-purity Anthocyanin Isomers Isolation from Wild Blueberries and their Radical Scavenging Activity* **Chorfa N** <Université Laval>, $Savard S, *Belkacemi K

08:20 0507 *Shrinkage and Porosity Evolution during Air-drying of Model Foods: Impact of Glass Transition from Shrinkage/Collapse Mathematical Modelling* **Nguyen K** <Université Laval, >, Khalloufi S, Mondor M, *$Ratti C

08:40 0508 *Influence of Cold Storage on the Separation of Vegetal Wax-like Materials from Flax and Wheat Straw* **Canizares D** <Université Laval>, Angers P, Ratti C

09:00 End of Session

Special Symposia - Process Safety and Loss Management

PSM5 **205B**

Risk Control

Organizer(s) - François Roche and Melanie Wilson
Chair(s) - Jean-Paul Lacoursière

08:00 0509 *Applying Functional Safety Engineering Technique to Optimize Defensive Fire Protection Strategy* *$**Sanati SS** <Atkins Consulting Canada>

08:30 0510 *An Innovative Risk-based Fire Analysis and Passive Fire Protection Optimization for Safer and Economical Design* *$**Sari A** <Genesis Oil and Gas, UK>, Dara S, Azimov U

09:00 0511 *Risk-based Approach to Building Designs and Decision Making* **Raibagkar A** <Baker Engineering and Risk Consultants>

09:30 0637 *Selection of Parameters to Ensure Coherent and Reproducible Quantitative Risk Assessment* **Lacoursière J-P** <Université de Sherbrooke>

10:00 Coffee Break

10:30 0512 *Risk-based Blast Design for Safer Occupied Buildings in Industrial Facilities* *$**Sari A** <Technip, France>, Azimov U, Sahasakkul W

11:00 Process Safety Management Award

11:00 0513 *Implementation of PSM Systems Rely on Strong Leadership Commitment to Succeed. Often the Need to Incorporate Strong Technical Capabilities is Forgotten* **Piette R** <Suncor Energy Inc>

12:00 End of Session

Special Symposia - Rheology of Complex Fluids

RCF2 **206B**

Solutions, Suspensions, Emulsions and Colloids

Organizer(s) - Marianna Kontopoulou and Frej Mighri Biorheology
Chair(s) - Arun Ramachandran, Nick Virgilio

08:00 0514 *The Effect of Inorganic Solids on Asphaltene-stabilized Water-in-oil Emulsions* **McGurn M** <University of Calgary>, Baydak EN, *Yarranton HW

08:20 0516 *Adsorption Kinetics of Asphaltenes at Oil/Water Interface at Elevated Temperature* **Zhang S** <University of Alberta>, *Zeng H

08:40 0517 *The Relationship between Contact Pressure and Coalescence Time for Water-in-Bitumen Emulsions* *Goel S, Ng S, $**Ramachandran A** <University of Toronto>

09:00 0518 *Build up of Yield Stress over Time in Mineral Slurries* *$**Kresta SM** <University of Alberta>, Ulrich D, Machado MB

09:20 0515 *Rheological Study of Coal Water Slurry and Effect of Dispersant* *Tahir M <University of Gujrat, Pakistan>, $Amin N

09:40 0519 *Polymer Chase Water for Micellar EOR in Bhogpara Oil Field of Upper Assam Basin, India* *Gogoi SB <Dibrugarh University, India, >, Kakoty M, Abdulaziz WMA, Hazarika K

10:00 Coffee Break

10:20 0520 *Using Sulfonated Nano-cellulose to Improve Anti-oxidation Stability of Encapsulated Tea Polyphenols* *Sun B <University of New Brunswick; Tianjin University of Science and Technology, China>, Zhang M, Si C, Liu R, Wu T

10:40 0521 *Synergistic Gelling Properties of Mixed Gelatin B and Xanthan Gum Solutions: Effects of Gelatin Concentration and Bloom Index* **Wang C-S** <Polytechnique Montréal>, *Virgilio N, Wood-Adams P, $Heuzey M-C

11:00 0522 *Rheological Behaviour of Sesame (Sesamum indicum L.) Proteins in Solution* *Escamilla Silva EM <Instituto Tecnológico de Celaya, México>, $Gómez Arellano A

11:20 0523 *Rheology and Drag Reduction Characterization of Poly (Ethylene Oxide)-water Solution Using a Rotating Disk Apparatus* **Zhang X** <Memorial University of Newfoundland>, *$Duan X, Muzychka Y, Wang Z

11:40 0524 *New Viscoelastic Model for Predicting Polymer Behaviour in Porous Media Using Capillary Breakup Extensional Rheological Data* **Sahib A** <University of Alberta>, *$Trivedi J, Dalsania Y

12:00 End of Session

Biotechnology/Bioengineering

BBE3 **2101**

Engineered Biological Systems

Organizer(s) - Bruno Gaillet and Denis Groleau
Chair(s) - Jean-Sébastien Deschênes

08:00 0525 *Microbial Degradation of Petroleum Hydrocarbons* *$**Uzukwu C** <University of Aberdeen, UK>, *Dionisi D

08:20 0526 *Analysis of Single Bacterial Cells Using Conductive Scanning Probe Microscopy and Microfluidic Platforms* **Berthelot R** <University of Guelph>, Neethirajan S

08:40 0527 *Evaluation of Immobilized Cytochrome P450 BM3 from Bacillus megaterium for Hydroxylation of 10-pNCA* **Bahrami A** <Université Laval>, Garnier A, Larachi F, *Iliuta MC

09:00 0528 *Utilizing Legacy Underground Mines as Low Cost Bioreactors for Municipalities* **Peachey BR** <New Paradigm Engineering Ltd>, Theriault Y

09:20 0530 *A Handheld Device for Rapid Detection of Food Adulterants Using Bulk Acoustic Wave Biosensors* **Lissemore M** <University of Guelph>, *Hayward G, $Neethirajan S

09:40 End of Session

Catalysis and Catalytic Reaction Engineering

CCR2 205C

Catalytic Reaction Engineering

Organizer(s) - Mladen Eic and Jan Kopyscinski
Chair(s) - Jan Kopyscinski, Gregory Patience

08:00 0531 *Synthesis and Hydrogenation of Polydicyclopentadiene* **Zhou F** <Soochow University, China>, *Pan Q

08:20 0532 *The Kinetics and Chemistry of Syngas Photo-initiated Chemical Vapor Deposition* **Farhanian D** <Polytechnique Montréal>, $De Crescenzo G, *Tavares JR

08:40 0533 *Modeling and Optimization of a Diesel Catalytic Dewaxing Unit Using Single Event Kinetics for H-ZSM5 Catalysts* $**Turco Neto E** <Memorial University of Newfoundland>, *Imtiaz S, Ahmed S

09:00 0534 *Development of Catalyst Coating for an Optically Accessible Plate Reactor* **Jiang J** <McGill University>, *$Kopyscinski J

09:20 0535 *A Parametric Study of Biodiesel Production under Ultrasounds* $**Shinde K** <Université Laval>, *Kaliaguine S

09:40 0536 *Oxidative Dehydrogenation of Propane to Propylene over VO_x/CaO-Al_2O_3 Catalysts* *$**Hossain MM** <King Fahd University of Petroleum & Minerals, Saudi Arabia>

10:00 Coffee Break

10:20 0537 *Investigation of Waste Plastic Hydrocracking Using Mesoporous Composite USY Catalysts* *$**Munir D** <University of the Punjab, Pakistan>, $Usman MR

10:40 0538 *The Effect of Diffusion on Cracking Reactions and Its Correlation with Heavy Oil Conversion over FCC Catalysts* *$**Song H** <SINOPEC Research Institute of Petroleum Processing, China>, Zheng X, Da Z, Jiang Q, Wang P, Tian H

11:00 0539 *In-situ Formed Cationic Palladium(II) Catalyzed Addition of Arylboronic Acids to Imines* **Yang Z** <Soochow University, China>, Lin S, Pan Q

11:20 0540 *A Novel Computational Approach in Modelling Fixed Beds: Aspects of Hydrodynamics and Heat Transfer* **Moghaddam EM** <London South Bank University, UK>, *Foumeny EA

11:40 0541 *Validity of a Novel Approach for Generating Random Packing Structures* **Farbod A** <University of New Castle, Australia>, *Moghaddam EM

12:00 End of Session

Chemical Engineering Foundations

CEF2 2101

Fluid Flow and Mixing in Continuous and Discrete Systems

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Seyed M Taghavi

10:20 0542 *Study the Hydrodynamics Behavior on Different Size Particles in LSCFB Riser and Modeling using Multigene Genetic Programming* *$**Razzak SA** <King Fahd University of Petroleum & Minerals, Saudi Arabia>

10:40 0124 *Mixing Energy as a Possible Scaling Variable for Drop Break-up across Geometries and from Batch to Continuous Processing* *$**Kresta SM** <University of Alberta>, Safari-Alamuti F, Machado MB, Komrakova A

11:00 0544 *Fluid Flow and Heat Transfer Characterization in a Plate-and-frame Separation System* *$**Amarante RCA** <Dalhousie University>, Donaldson AA

11:20 0545 *CFD-DEM Simulation of Particle Suspension in a Stirred Tank* **Tran C** <Ryerson University>, *Ebrahimi M, $Ein-Mozaffari F, Lohi A

11:40 End of Session

CEF3 206A

Physicochemical Separation

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Amir Motamed Dashliborun, Anthony Wachs

10:20 0552 *Disentangling the Effects of Silver and Sulphide Minerals on Gold Cyanidation* **Khalid M** <Université Laval>, *Larachi F

10:40 0553 *Separation of Complex Isomeric Mixture of a Potential Liquid Organic Hydrogen Carrier* **Aslam R** <University of the Punjab, Pakistan>, *Arlt W

11:00 0554 *Surface Modification to Alleviate PVDF Membrane Fouling during Milk Protein Adjustment* **Mirriahi D** <Ryerson University>, *$Doan H

11:20 0555 *Elucidation of Fouling Mechanisms of Hollow-fiber Membranes via High-throughput Testing* **Kazemi AS** <McMaster University>, Boivin L, $Latulippe DR

11:40 0556 *Understanding the Dynamics of High Purity Oxygen Separation Using Silver Exchanged Titanosilicates* $Hosseinzadeh Hejazi SA, Estupinan Perez L, Teruo Maruyama R, *$**Rajendran A** <University of Alberta>, Kuznicki S

12:00 End of Session

CEF4 206A

Thermodynamics and Kinetics

Organizer(s) - Seyed M Taghavi and Anthony Wachs
Chair(s) - Amir Motamed Dashliborun, Anthony Wachs

08:00 0546 *An Exponential Expression for Gas Heat Capacity, Enthalpy, and Entropy* Bruel C, Chiron F-X, Tavares J, *$**Patience G** <Polytechnique Montréal>

08:20 0548 *The Phase Behavior of Heavy Oil and Propane Mixtures* $**Mancilla-Polanco A** <University of Calgary>, Schoeggl FF, Johnston K, *Yarranton HW

08:40 0550 *Vapour-liquid Equilibria and Solvent Recovery from Oil Sands Froth Treatment Tailings Streams* *$**Moran K** <Titanium Corporation>, Peng DY

09:00 0551 *Uncertainty Analysis Applied to SAGD Plants* $**Hajipour S** <Process Ecology Inc>, Khoshkbarchi M, *Alva-Argaez A

09:20 End of Session

Energy Resources

ENR1 307B

Computational Engineered-Energy Concepts

Organizer(s) - Nicolas Abatzoglou, Cédric Briens and Jinwen Chen
Chair(s) - Naoko Ellis, Céline Vaneeckhaute

08:00 0557 *Pore-scale Characterization of Travis Peak Formation* *$**Mohammadmoradi P** <University of Calgary>, $Kantzas A

08:20 0558 *Energy Consumption and Greenhouse Gas (GHG) Emissions from the New Oil Sands Extraction Process: N-Solv* **Soiket MIH** <University of Alberta>, Zhang H, Oni AO, *$Kumar A

08:40 0559 *Development of a Bitumen Upgrading and Refining Model for Estimation of Energy Consumptions and GHG Emissions* **Oni AO** <University of Alberta>, *$Kumar A

09:00 0560 *Unveiling New Software for Petroleum Refining Production Planning and Scheduling (Implement Combination of Genetic Algorithm, Tabu Search and MILP as Novel Optimization Algorithm)* *Azarmi M, **Vakili S** <Hamian Sanaat Kimia Co.Ltd., Iran; Iran University of Science and Technology, Iran>

09:20 0561 *Sulfur Speciation and Partition in Gasoline Desulfurization Process* *$**Ha HZ** <Fluor Canada Ltd>, Stang P, Dronamraju R, Sirjue R

09:40 0562 *Characterization of Silicalite Membranes Using Maxwell-Stefan Model* **Carter D** <University of Ottawa>, Kennedy DA, Jin W, Kruczek B, *$Tezel FH

10:00 End of Session

ENR5 307B

Thermochemical Conversion

Organizer(s) - Nicolas Abatzoglou, Cédric Briens and Jinwen Chen
Chair(s) - Naoko Ellis

10:20 0563 *Quantification of the Synergism/Antagonism Effect during Co-gasification of Potassium Rich Biomass with Non-biomass Feedstock* Fernandes R, Hill JM, *$**Kopyscinski J** <McGill University>

10:40 0564 *Hydrothermal Liquefaction of a Wastewater-native Chlorella sp.-bacteria Consortium: Biocrude Production and Characterization* *$**Boëns B** <Université du Québec à Trois-Rivieres>, Pilon G, Bourdeau N, Adjallé K, Barnabé S

11:00 0565 *Red Mud as a Catalyst for Improving Bio-oil and Biochar Properties in Microwave-assisted Pyrolysis of Biomass* $Mohamed BA, **Ellis N** <University of British Columbia, >, Kim CS, *Bi X

11:20 0566 *Development of Carbon Free Large-scale Hydrogen Production Processes at CNL* **Vega A** <Canadian Nuclear Laboratories>, Ryland D, Li H, Suppiah S

11:40 0567 *Polysaccharide Based Polymers for EOR in High Temperature and High Salinity Carbonate Reservoirs* *__Shoaib MS__ <The Petroleum Institute, United Arab Emirates>, AlSumaiti AA, Quadri SMR

12:00 End of Session

Environment

ENV2 204B

Trends in Wastewater Mitigation and Water Quality

Organizer(s) - Madhumita B Ray, Rafael M Santos and Peter Vanrolleghem
Chair(s) - Madhumita B Ray, Mehrab Mehrvar

08:40 0569 *Sequestration of Metallic Ions and Silver Nanoparticles in Aqueous Media Using Immobilized Chitosan Derivatives* *$**Gagnon J** <Université du Québec à Rimouski>

09:00 0570 *Development and Evaluation of Hyperbranched Functionalized Polyethylenes (HBfPE) for Flocculation of Oil Sands Tailings* *Botha L, Nguyen B, **Davey S** <University of Alberta>, $Soares J

09:20 0571 *Acrylamide-diallyldimethylammonium Chloride (AAm-co-DADMAC) Copolymers as Flocculants for Dewatering Oil Sands Mature Fine Tailings (MFTs): Effect of Copolymer Composition* *__Vajihinejad V__ <University of Alberta>, Guillermo R, Soares J

09:40 0572 *Biodegradation of Organic Xenobiotics with open Mixed Microbial Cultures* *__Etteh CC__ <University of Aberdeen, UK>, $Dionisi D

10:00 Coffee Break

10:20 0574 *Comparison of Two Preparation Methods for Nitrogen Doped TiO_2 Photocatalyst along with the Effect of Light Intensity and Light Wavelength in Degradation of Aqueous Organics* *__Nasirian M__ <Ryerson University>, Lin YP, Mehrvar M

10:40 0575 *Solar Photocatalytic Degradation of Acesulfame K with Titanium Dioxide* **Ghosh M** <Western University>, Ray AK

11:00 0577 *Optimization of Advanced Oxidation Process for Dynamically Varying Industrial WW via Integration of LC-OCD Analysis* Bowie D, Csordas M, **Aghasadeghi K** <McMaster University>, Mhaskar P, $Latulippe DR

11:20 End of Session

Macromolecular Sciences and Engineered Polymers

MSP4 202

Polymer Characterization and Testing

Organizer(s) - Josée Brisson, Denis Rodrigue and João Soares
Chair(s) - Michael Cunningham

10:20 0578 *Effect of Chemical Blowing Agent Concentration on the Morphological and Mechanical Properties of Linear Low Density Extruded Polyethylene Foams* **Razzaz Z** <Université Laval; CREPEC>, *Rodrigue D

10:40 0579 *Effect of Hemp Fibers Surface Modification on the Interfacial and Mechanical Behavior of Polyethylene Based Composites* **Chimeni-Yomeni D** <Université Laval>, Dubois C, *Rodrigue D

11:00 0580 *Polymer Failure Analysis: A Problem-solving Approach* *$**Rouison D** <Kinectrics Inc>, *Riahinezhad M

11:20 0581 *Direct Determination of Degree of Deacetylation of Powder Chitosan Using FT-NIR* *$**Alhulaymi A** <Dalhousie University>, Donaldson A

11:40 0582 *Effect of Acetylation on Chain Dynamics of Starch* **Nasseri R** <University of Waterloo>, *Moresoli C, Yu A, Yuan Z, Xu C

12:00 End of Session

MSP5 202

Polymer Reaction Engineering

Organizer(s) - Josée Brisson, Denis Rodrigue and João Soares
Chair(s) - Michael Cunningham

08:00 0583 *Mathematical Modeling of Chain Shuttling Copolymerization in a Semi-batch Reactor Using a Dual Catalyst: Comparison between Dynamic Monte Carlo Simulation and Method of Moments* **Maafa I** <University of Waterloo, >, *Soares J

08:20 0584 *Crystalline Nanocellulose Functionalization and Polymer Grafting via Surface Initiated Living Radical Polymerization* Arredondo J, Garcia-Valdez O, Glasing J, Jessop PG, Champagne P, *__Cunningham MF__ <Queen's University>

08:40 0585 *Thermoresponsive Catalysts in Transition Metal Mediated Miniemulsion Polymerization* Bultz E, Sawamoto M, Ouchi M, Terashima T, Nishizawa K, *__Cunningham MF__ <Queen's University>

09:00 0586 *Synthesis, Micellar Radical Polymerization Kinetics, and Performance of Cationic Hydrolytically Degradable Flocculants* **Rooney TR** <Queen's University>, Gumfekar SP, Lacik I, Soares JBP, *$Hutchinson RA

09:20 0587 *Coupling of Computational Fluid Dynamics and Population Balance Modelling for Emulsion Polymerization Process* **Aryafar S** <CNRS/ESCPE-Lyon, France>, *Othman N, $McKenna T

09:40 0588 *Comparative Analysis of Mixing Effect on Batch and Semibatch Miniemulsion Polymerization of Methyl Methacrylate* *__Fathi Roudsari S__ <Ryerson University, >, $Ein-Mozaffari F, Dhib R

10:00 End of Session

Nanomaterials and Nanotechnology

NNT1 205A

Nanomaterials: New Applications and Enhancing Conventional Processes

Organizer(s) - Trong-On Do and Aiping Yu
Chair(s) - Trong-On Do, Aiping Yu

08:00 0589 *Stability of Silica Nanoparticles (SiO_2) Dispersed in Seawater over Time at Hebron Field Reservoir Temperature for Enhanced Oil Recovery Application.* **Sivira D** <Memorial University of Newfoundland>, Kim H, Jafary S, *$James L

08:20 0590 *Fabrication of Oleophobic/ Oleophilic Ultrathin Silica Nano-membranes* **Ghuzi M** <University of Alberta>, *Liu Q

08:40 0591 *Functionalized Graphene for Glyphosate Removal from Water* Ueda Yamaguchi N, Bergamasco R, *$**Hamoudi S** <Université Laval>

09:00 0592 *Characterization of Ultrasonically Exfoliated Graphite in Surfactant-water Mixtures* **Giglio C** <Queen's University>, Kontopoulou M, *$Docoslis A

09:20 End of Session

Systems and Control

SYC2 205A

Applied Statistics and Multivariate Methods in Process Systems

Organizer(s) - Carl Duchesne and Luis Ricardez-Sandoval
Chair(s) - Carl Duchesne

10:20 0593 *Monitoring of Multivitamin Blends by PAT Tools in a Tablet Press* $**Durao P** <Université de Sherbrooke>, Lefebvre CF, Guay JM, Abatzoglou N, *Gosselin R

10:40 0594 *Fluid Bed Coating of Microspheres for Pediatric Dosage Forms* *$Santos Silva B, **Gosselin R** <Université de Sherbrooke>, Lapointe-Garant PP, Santangelo M, Bartlett JA

11:00 0595 *Fault Detection and Isolation and Optimal Parking for HVAC Systems* **Shahnazari H** <, McMaster University, >, *Mhaskar P, House J, Salsbury T

11:20 End of Session

SYC3 203

Process Optimization and Predictive Control

Organizer(s) - Carl Duchesne and Luis Ricardez-Sandoval
Chair(s) - Yuri Shardt, Prashant Mhaskar

08:00 0596 *Data-driven versus Model-based Control: Implications and Observations* **Shardt YAW** <University of Duisburg-Essen, Germany; University of Waterloo>, Hao L, Ding SX

08:40 0598 *Nonlinear Model Predictive Control with Explicit Performance Specification* **Kheradmandi M** <McMaster University>, *Mhaskar P

09:00 0599 *Real-time Production Optimization Using Non-linear Model-predictive-control: A SAGD Field Case Study* *$**Patel R** <University of Alberta>, Trivedi J

09:20 0600 *On the Utilization of Closed-loop Prediction for Dynamic Real-time Optimization* $Jamaludin MZ, ***Swartz CLE** <McMaster University>

09:40 0601 *Data-driven Predictive Control of a Seeded Batch Crystallizer* $**Garg A** <McMaster University>, *Mhaskar P

10:00 Coffee Break

10:20 0602 *High Fidelity and Reduced Order Data-driven Modeling of Hydrogen Plant* $**Garg A** <McMaster University>, Corbett B, *Mhaskar P, Hu G, Flores-Cerrillo J

10:40 0603 *Subspace Based Quality Control of Variable Duration Batch Processes* **Corbett B** <McMaster University>, *Mhaskar P

11:00 0604 *Control with Soft Sensors and Multiple Operating Points* **Shardt YAW** <University of Duisburg-Essen, Germany; University of Waterloo>, Mehrkanoon S, Zhang K, Yang X, Suykens J, Ding SX, Peng K

11:20 0605 *Mixture of Experts with Dynamic Gating Network in Process Data Analytics* **Ma Y** <University of Alberta>, *Huang B

11:40 End of Session

Wednesday PM

Special Symposia - Process Safety and Loss Management

PSM3 205B

Process Risk Assessment

Organizer(s) - François Roche and Melanie Wilson
Chair(s) - Mireille Busque

13:00 0606 *Risk Based Process Safety - Making a Step Change Improvement Sustainable Operational Excellence* *Hawkins S, **Corbit C** <ERM, Inc>

13:30 0607 *Driving Consistency in the Estimation of Severity Levels in PHA Studies* *Guindon M, **Piette R** <Suncor Energy Inc>, Wells C

14:00 0608 *Simultaneous State and Input Estimation of Non-linear Process with Unknown Inputs Using Expectation Maximization Particle Filter (EM-PF) Algorithm* **Khan MA** <Memorial University of Newfoundland>, *Imtiaz S, Khan F

14:30 Coffee Break

15:30 0610 *A Novel Approach for Risk Assessment of Large Oil Storage Tanks* *$**Sari A** <Genesis Oil and Gas, UK>, Arablouei A, Azimov U, Sahasakkul W, Dara S

16:00 0612 *CSChE Chemical Spill Environmental/ Ecological Risk Assessment Guideline Development Status* **Marta M** <Independent Process Safety Specialist>

16:30 End of Session

Energy Resources

ENR3 205C

Fossil Energy

Organizer(s) - Nicolas Abatzoglou, Cédric Briens and Jinwen Chen
Chair(s) - Gregory Patience, Nicolas Abatzoglou

16:00 0613 *A Fundamental Approach to Assessing the Energy Intensity and GHG Emissions from Oil Sands Bitumen Upgrading and Petroleum Refining* *$**Alvarez-Majmutov A** <Natural Resources Canada>, Chen J

16:20 0616 *Atomistic Modeling of Structure II Gas Hydrate Mechanics: Compressibility and Equations of State* **Vlasic TM** <McGill University>, Servio P, *$Rey AD

16:40 0617 *Multiscale Modelling of Methane Hydrate Mechanical Properties for Energy Applications* **Jendi Z** <McGill University>, Servio P, *$Rey A

17:00 End of Session

ENR4 205C

Harvesting Renewable Energy

Organizer(s) - Nicolas Abatzoglou, Cédric Briens and Jinwen Chen
Chair(s) - Gregory Patience, Nicolas Abatzoglou

13:00 Canadian Green Chemistry and Engineering Award (Individual) Lecture

13:00 0618 *Three Decades of Innovative and Engineered Green Chemistry*
*$**Gaudreault R** <TGWT Clean Technologies Inc>

13:40 0619 *Simulation of Dry Reforming of Methane in a Conventional Downfired Reformer* Zhao YR, Latham DA, *$Peppley BA, **McAuley KB** <Queen's University>, Wang H, LeHoux R

14:00 0620 *Consolidated Bioprocessing (CBP)* **Fonseca JM** <Universidad Autónoma de Sinaloa, Mexico>, $Pérez-Angel R, *Contreras-Andrade I, Picos-Corrales L, Cuevas-Rodriguez E

14:20 0621 *Adsorbent Screening for Thermal Energy Storage Application* **Amyot P** <University of Ottawa>, Lefebvre D, Godin A, *$Tezel FH

14:40 End of Session

Environment

ENV2 **204B**

Trends in Wastewater Mitigation and Water Quality

Organizer(s) - Madhumita B Ray, Rafael M Santos and Peter Vanrolleghem
Chair(s) - Madhumita B Ray, Mehrab Mehrvar

13:00 0622 *Air Injection for Flux Enhancement and Membrane Fouling Reduction in Ultrafiltration of the Latex Solution* *$**Abdelrasoul A** <Ryerson University>, $Doan H, Lohi A, Cheng C-H

13:20 0624 *Computational Fluid Dynamic CFD Modelling of the Multiphase Influences in Ultrafiltration of Latex Effluent Using Air Injection* *$**Abdelrasoul A** <Ryerson University>, $Doan H, Lohi A, Cheng C-H

13:40 0573 *Development of a Novel Photocatalyst for the Photocatalytic Wastewater Treatment Using the Hydrothermal UV Assisted Method* **Nasirian M** <Ryerson University>, Mehrvar M

14:00 0627 *Plant Uptake of Benzalkonium Chlorides in a Hydroponic System* *Khan AH, Winnick D, Libby M, Sumarah M, Macfie SM, $**Ray MB** <Western University>

14:20 0626 *New Pathways for Oxy-cracking of Solid Waste Hydrocarbons* **Manasrah A** <University of Calgary>, *$Nassar N

14:40 0623 *Study on Desalination by Vacuum Membrane Distillation Using a Tubular Polypropylene Membrane*
*$**Chaurasia SP** <Malaviya National Institute of Technology, India>, Dhyani V, Singh J, Upadhyaya S, Gupta AB

15:00 End of Session

Macromolecular Sciences and Engineered Polymers

MSP4 **202**

Polymer Characterization and Testing

Organizer(s) - Josée Brisson, Denis Rodrigue and João Soares
Chair(s) - João Soares

13:00 0628 *Effect of Clay Particle Size on Behavior of its Polymer-based Flocculation* **Gaikwad R** <University of Alberta>, Gumfekar SP, *$Soares JBP

13:20 0629 *Ultra-large Sized Graphene Nano-platelets (GnPs) Incorporated Polypropylene (PP)/GnP Composites Engineered by Melt Compounding and its Thermal, Mechanical, and Electrical Properties* $**Jun YS** <University of Waterloo>, Um JG, *Yu A

13:40 0630 *Models Physical for Asphaltenes: Synthesis and Characterization* *$**da Silva MA** <University of Alberta>, Soares JB

14:00 0631 *Development of Cellulose Microfiber/Short Carbon Fiber-reinforced Biopolyamide Hybrid Composites for High Performance Applications* *Armioun S <University of Toronto>, Panthapulakkal S, Tjong J, $Sain M

14:20 0633 *Enhancements in the Crystalline Structure and Mechanical Properties of Reactively Modified Polypropylene* **Tiwary P** <Queen's University>, Gui H, Ferreira PL, *$Kontopoulou M

14:40 Coffee Break

15:20 0634 *Synthesis of "Green" Polymeric Membrane for Organic Solvent Filtration* *Zaviska F <Université de Montpellier, France>, $Bouyer D

15:40 0635 *Impact of Temperature on Twin Screw Wet Granulation* *Liu Y <McMaster University>, $Thompson M, O'Donnell K

16:00 End of Session

INDEX of Authors

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