C-CJCBERI 2017 Annual Workshop

China-Canada Joint Centre for BioEnergy Research and Innovation (C-CJCBERI)

August 21st 2017 9:00 am – 4:30 pm

202-2360 East Mall, Dept. of Chemical and Biological Engineering

www.ccjcberi.center

info@ccjcberi.center

C-CJCBERI 2017 Annual Workshop Agenda
Monday, August 21, 2017

Room 202, UBC Dept. of Chemical and Biological Engineering, 2360 East Mall, Vancouver, V6T 1Z3, Canada

8:30 to 9:00	Registration and Breakfast
9:00 to 9:30	Opening **Helen Burt, UBC** **Fei Liu, Consulate-General of China in Vancouver** **James Olson, UBC Faculty of Applied Science**
9:30 to 10:00	Review Progress from the Past Year **Xiaotao Tony Bi, C-CJCBERI, UBC**
10:00 to 10:30	Coffee Break (Solar Eclipse)
10:30 to 10:40	BC Bioenergy Network New Mandate and Mission **Scott Stanners, BC Bioenergy Network**
10:40 to 10:50	Biocrude Upgrading and Co-processing to Produce Low-Carbon Fuels - Research Overview at CanmetENERGY in Devon **Jinwen Chen, CanmetENERGY, Natural Resources Canada**
10:50 to 11:00	Update of IEA Bioenergy Task 39 (Drop-in Biofuels) Report **Susan van Dyk, UBC, International Energy Agency**
11:00 to 11:10	Lignin Utilization: from Lignin to Aromatics and Hydrocarbon Fuel **Xinghua Zhang, Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences**
11:10 to 11:20	Pelletization Research at UBC **Shahab Sokhansanj, UBC**
11:20 to 11:30	The Possibilities of Biochar **Naoko Ellis, UBC**
11:30 to 11:40	The Forest Biorefinery: Biochemical Pathways **Heather Trajano, UBC**
11:40 to 12:10	Discussion 1 **All attendees**

12:10 to 1:10	Lunch at the Atrium
1:10 to 1:20	Canadian Biomass to High Value Materials, Chemicals, and Fuels **David Bressler, University of Alberta**
1:20 to 1:30	Catalytic Conversion of Biomass and the Derived Molecules to Fuel and Chemicals **Ying Zhang, University of Science and Technology of China**
1:30 to 1:40	Molybdenum Carbide Catalysts Supported on Carbon for Bio-oil Hydrotreating **Kevin Smith, UBC**
1:40 to 1:50	Biomass Conversion to Transportation Fuels **Ajay Dalai, University of Saskatchewan**
1:50 to 2:00	Highlight of a Few Commercialized Biomass Thermal Conversion Technologies Developed in IPE **Guangwen Xu, Institute of Process Engineering, Chinese Academy of Sciences**
2:00 to 2:10	Biomass-to-Liquids at Highbury Energy Inc. **Paul Watkinson, Highbury Energy Inc.**
2:10 to 2:20	Torrefaction and Microwave Pyrolysis of Biomass **Xiaotao Tony Bi, C-CJCBERI, UBC**
2:20 to 2:50	Discussion 2 **All attendees**
2:50 to 3:20	Coffee Break
3:20 to 4:20	Discussions on Future R&D Collaborations, Research Opportunities, and Funding Plans **All attendees**
(5:00 to 6:00)	Management Committee and Advisory Committee Meeting **Committee members only**
6:30	Dinner Social 5 Tastes Chinese Bistro (UBC Campus), 2158 Western Pkwy, Vancouver, BC V6T 1W6

Helen Burt, PhD

Associate Vice-President Research & Innovation, UBC

Dr. Burt's major research involve the development of polymer-based drug delivery systems for controlled and localized drug delivery. She has published more than 140 peer-reviewed papers and holds eight patents. She has been the recipient of several teaching prizes and research awards, including the UBC Killam Teaching Prize and Killam Faculty Research Prize, NSERC Synergy Award for Innovation, CSPS Award of Leadership in Canadian Pharmaceutical Sciences and YWCA Woman of Distinction Award for Science, Research and Technology. She is a founding scientist in the Centre for Drug Research and Development (CDRD), a member of the Canadian Academy of Health Sciences and has served on the Board of Directors of the Provincial Health Services Authority.

Fei Liu

Consul-General, P.R. of China, Consulate General of China in Vancouver

Madam LIU Fei served as Counsellor successively at the Embassy of the People's Republic of China in Papua New Guinea and Department of North American and Oceania Affairs of Chinese Foreign Ministry, the Chinese Consul General in Brisbane, Australia, Chinese Ambassador to the Federated States of Micronesia and Deputy Commissioner General for 2010 Shanghai World Expo. She assumed current the current post in November 2011.

James Olson, PhD, FCAE, PEng

Dean, Faculty of Applied Science, UBC

Dr. Olson is a professor of Mechanical Engineering and the interim dean of the Faculty of Applied Science. He was the past associate dean of Research and Industry Partnerships, director of UBC's Pulp and Paper Centre and is an internationally recognized forest products researcher who has been actively involved in the transformation of the forest sector into a vibrant diversified bio-products industry. He currently leads a $4M research consortium focused on industrial energy conservation, as well as a research group focused on the development of novel biomaterials. His research has been the recipient of 2 NSERC Synergy Awards, the 2008 Lieutenant Governor's Award for Innovation, the 2009 Fundamental Research Committee's Van den Akker Gold medal and several best paper awards.

Xiaotao Tony Bi, PhD, FCAE, PEng

Director, C-CJCBERI

Professor, Chemical and Biological Engineering, UBC

Dr. Bi is a leading expert in the field of fluidization and multiphase reactor systems. He has outstanding achievements in the advancement of fluidization engineering, particularly flow regimes, choking, electrostatics, and dynamic signal interpretation. He has also made significant contributions to broad areas of engineering practice: thermochemical conversion of forest biomass residues, development of next generation torrefied wood pellets, life cycle analysis of biomass and bioenergy systems, and integration of biomass energy systems for greenhouse gas emission reduction and local air quality improvement. He has been participating in numerous interdisciplinary programs and international collaborative programs, held multiple visiting professorships in Chinese universities, appointed as a K.C. Wong Research Fellow by Chinese Academy of Sciences in 2003, and won the AIChE Particle Technology Forum Lectureship Award in 2012.

Scott Stanners, PhD

Executive Director, BC Bioenergy Network

Prior to joining BC Bioenergy Network, Dr. Scott Stanners held key advisory positions in the biotechnology sector in Canada and Australia to government, private organizations, and industry associations. He is a member of a Scientific Advisory Committee for a Novozymes, GenomeBC and UBC collaboration, and is a mentor and judge for New Ventures BC. He received a PhD from The University of Sydney and a BSc from The University of Calgary.

Jinwen Chen, PhD

Director, Hydrocarbon Conversion, CanmetENERGY, Natural Resources Canada

As the director of hydrocarbon conversion program at CanmetENERGY Devon of NRCan, Dr. Chen is leading a group of professionals to develop innovative technologies to efficiently convert oil sands bitumen into clean transportation fuels and to minimize the associated environmental impacts. His current research projects include: 1) Oil sands bitumen upgrading, partial upgrading, petroleum refining technology development; 2) Process modeling, simulation, optimization and life cycle assessment on GHG emissions of oil sands development; 3) Multiphase reactor design and scale-up. Catalysts and catalytic processes development; 4) Biomass conversion and co-processing biocrudes with conventional and unconventional petroleum; 5) Advanced bitumen, heavy oil and petroleum chemistry. He is also honored to represent NRCan and Canada in a number of international expert panels to advance the research and technology development in his field.

Susan van Dyk, PhD

Post-Doctoral Fellow, Faculty of Forestry, UBC

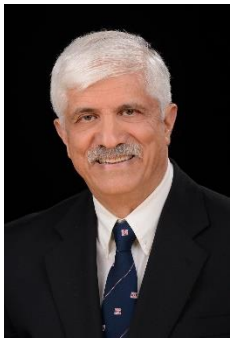
Coordinator, International Energy Agency (IEA) Bioenergy Task 39

Dr. Susan van Dyk has a Masters degree in Law and a PhD in Biochemistry. She is the Coordinator of IEA Bioenergy Task 39 (Liquid Biofuels) (www.Task39.org) and a postdoctoral fellow at the University of British Columbia. She has published extensively, including her PhD work in the bioconversion of lignocellulose/biomass. Her current work encompasses all aspects of biofuels, including conversion technologies and policy. As well as leading the UBC group's research on biojet fuels, she leads Task 39's activities in the policy and LCA areas, particularly ongoing drop-in biofuels work and low carbon aviation biofuels in particular.

Xinghua Zhang, PhD

Researcher, Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences

Dr. Zhang got his Bachelor's degree from Hunan Normal University and Master's and PhD degree from Guangzhou Institute of Energy Conversion (GIEC), Chinese Academy of Sciences. He now works as a researcher at GIEC. His research areas mainly include: 1) Catalytic hydrodeoxygenation of heavy oil from bio-oil to produce hydrocarbon fuels; 2) Catalytic decomposition of lignin to produce hydrocarbon fuels; 3) Catalytic hydrodeoxygenation of oxygen-containing compounds in biomass and its technology scale-up.



Shahabaddine Sokhansanj, PhD

Professor, Chemical and Biological Engineering, UBC

Dr. Sokhansanj's core research is in feedstock engineering focusing on harvesting, drying, fractionating, and densification of cellulosic biomass. The work has evolved in two fronts: (1) experimenting with innovative biomass preprocesses to acquire engineering data for design and optimum operation of individual unit operations; and (2) developing engineering models for simulation of unit operations for optimizing the entire supply chains. He has recently won the 2016 Founders' Award in Bioenergy Excellence at the 7th International Bioenergy Conference and Exhibition, the ASABE (American Society of Agricultural & Biological Engineers) President's Citation Award in 2010, and Fellow of the American Society of Agricultural and Biological Engineers (ASABE) in 2009.

Naoko Ellis, PhD, PEng

Professor, Chemical and Biological Engineering, UBC

Dr. Ellis is the Acting Senior Research Director of Carbon Capture and Conversion Institute. Her expertise lies in the area of multiphase reaction engineering with emphasis on fluidized beds. Specifically it includes: 1) Multiphase Systems and Reaction Engineering; 2) Chemical Looping Systems; 3) Biomass Utilization; 4) Bio-Oil Upgrading; 5) Biochar Potential; 6) Biodiesel Production. She has won the Scholarship of Teaching and Learning Leadership from UBC APSC Sustainability Pathway Initiative from 2013 to 2015. She has been a UBC Sustainability Initiative Teaching & Learning Fellow since 2013. And she is passionate about engaging others on sustainability related issues, and developing ways to advance environmental literacy.

Heather Trajano, PhD

Assistant Professor, Chemical and Biological Engineering, UBC

Dr. Trajano completed her Ph.D. degree from University of California Riverside in 2012. Her research interest is on flowthrough pretreatment of softwoods: fundamentals and applications, recovery and purification of extractives, and chemocatalytic conversion of biomass. The goal of her research is to make large-scale biorefineries a reality by examining and harnessing the fundamental kinetic and transport phenomena of fractionation and catalysis for maximum economic and environmental benefit.

David Bressler, PhD

Professor, Agricultural, Life and Environmental Sciences, University of Alberta

Dr. Bressler's general research area is the industrial application of chemical, thermal, and biological systems for the conversion of biomass into higher value materials, chemicals, and value-added commodities. His work is very applied and is resourced through numerous partnerships with leading enzyme companies as well as agricultural, chemical and forestry industries. He is the holder of several patents and patent applications in the areas of renewable biofuels and in the production of renewable biomaterials. Dr. Bressler is also the inventor and technology founder behind Forge Hydrocarbons, a novel thermochemical lipid-to-hydrocarbon based technology company, with internationally awarded patents, that has commenced building commercial facilities in Sombra Ontario with expected completion fall 2018. He was named to Canada's Clean 50 for 2017 being named one of the top 50 people in clean tech in Canada.

Ying Zhang, PhD

Associate Professor, University of Science and Technology of China

Dr. Ying Zhang got her Chemical Engineering PhD in 2006 from University of Connecticut, USA and worked for Chevron as an industrial post-doc for one year. After that, she became an associate professor of Department Chemistry, University of Science and Technology of China till now. Her research interest is focus on the development of efficient catalytic systems for biomass and the derived molecules catalytic conversion and application. She has been authorized 16 patents and in past 3 years, she has published 30 papers in ACS Catalysis, ACS Sustainable Chemical Engineering, IECR, Green Chemistry, ChemCatChem, Chemical Engineering Journal, Fuel, and so on.

Kevin Smith, PhD

Professor, Chemical and Biological Engineering, UBC

The aim of Dr. Smith's research is to better understand the relationships between heterogeneous catalyst properties, reaction kinetics and reaction mechanisms, so as to assist in the design and development of improved catalysts and catalytic processes. He focuses on issues related to the Canadian energy scene. Current research activities include an investigation of hydrogen production by catalytic methane decomposition, synthesis gas conversion to alcohols and hydrocarbons, residue and bio-oil hydroconversion (upgrading) as well as hydrogen storage using heteroaromatic liquids. His group's research approach is based mainly on experimental work. Catalysts are prepared and characterized and experiments are designed to elucidate reaction kinetics and mechanisms.

Ajay Dalai, PhD, PEng, FCAE, FRSC (Canada), FRSC (UK)

Professor, Canada Research Chair, Chemical Engineering, University of Saskatchewan

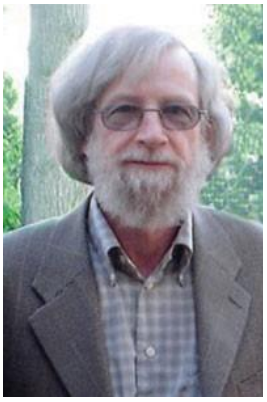
Dr. Dalai's expertise lies in: 1) Production of Biodiesel from Vegetable Oils; 2) Biochemical and Biolubricants production From Glycerol and Vegetable Oils; 3) Hydrotreating of Heavy Gas Oils and Heavy Oil Upgrading in a Fluidized-Bed Reactor; 4) Development of a Process for the Removal of Low Concentrations of H2S from Natural Gas, and Mercaptans from Hydrocarbon Fluids; 5) Gas-to-Liquid Technology for the Production of Liquid Fuels from Syngas. His work also covers novel catalysts synthesis and characterization, nanomaterials for energy, activated carbon, gasification, pyrolysis, and biomass pelletization. Dr. Dalai has published more than 300 peer reviewed papers in leading journals which have been cited more than 15,700 times with a current h-index of 60. He also has over 700 other publications. He became a Fellow of both American Institute of Chemical Engineers and Indian Institute of Chemical Engineers in 2013. He also won the Bantrel Award in Design and Industrial Practice by Chemical Institute of Canada in 2014.

Guangwen Xu, PhD

Vice President, Shenyang University of Chemical Technology

Adjunct Professor, Institute of Process Engineering, Chinese Academy of Sciences

Dr. Xu has been a Chair Scientist of the National Scientific Research Program (973), a member of Expert Team of National High-Tech Development Program (863), a board committee member of the International CFB Technology and several Chinese associations and technology innovation alliances, the principal editor of Natural Gas Chemical Industry (Chinese), and a member of editorial boards for CIESC Journal. He obtained his bachelor degrees in Engineering and Economics from Tsinghua University in 1991 and Ph.D. degree in Engineering from Chinese Academy of Sciences. Between 1996 and 2006 he has worked in Japan with NEDO, AIST and IHI as a senior researcher and in Germany as a Humboldt Fellow. Then, he has initiated and also led the Advanced Energy Technology (AET) Laboratory for about 10 years in Institute of Process Engineering, Chinese Academy of Sciences. He has published more than 240 journal papers, with citations of about 3000, applied about 90 patents, given more than 40 various invited lectures or conference reports, and been granted with several scientific prizes in China. He and his team have also several successful technology developments and demonstrations / applications in coal pyrolysis for high-efficiency production of liquid tar and gas, low-NOx biomass combustion, wide-working temperature denitration catalyst and isothermal reaction analysis using micro fluidized bed.



Paul Watkinson, PhD

Professor, Chemical and Biological Engineering, UBC

Dr. Paul Watkinson is an Emeritus Professor in the Department of Chemical and Biological Engineering at UBC. His current research falls primarily into two main areas--deposition and fouling of heat exchangers and process equipment biomass gasification. Fouling of process equipment and heat exchangers is an ubiquitous industrial problem, and is of particular importance in processing of heavy hydrocarbon streams. Current research involves experimental studies of deposition of particulates and asphaltenes, and the interaction of iron sulphide and coke formation in fouling of sour oils. Production of useful chemicals and liquid fuels from biomass via gasification is studied in bench or pilot scale equipment. Current work involves gasification of wood and agricultural wastes, and downstream steam reforming of tars.