

# 2018 AOCs Annual Meeting & Expo

May 6–9 | Minneapolis Convention Center | Minneapolis, Minnesota, USA



## Industrial Oil Products (IOP) Interest Area Tentative Technical Program

As of February 25, 2018

*This presentation list is not final and is subject to change.*

*The presenter is the first author, or the author indicated with an asterisk (\*).*

### Monday Afternoon

#### **BIO 1.1 / IOP 1: Biorenewable Polymers**

*Chairs: Richard Ashby, USDA, ARS, ERRC, USA; and Baki Hazer, Kapadokya University and Bülent Ecevit University, Turkey*

**Synthesis of Resinic Acid and Lignin Derivative Dimers for Copolymerization with Vegetable Oil-based Monomers.** Audrey Llevot, LCPO, France

**Dual Cure Alkyds.** Mark D. Soucek, University of Akron, USA

**Reflection of Structural Features of Oils on Properties of Polymeric Materials.** Zoran Petrovic, Pittsburg State University, USA

**Bio-based Oil Potential in Additive Manufacturing.** Ivan Javni<sup>1</sup>, Olivera Bilic<sup>2</sup>, Jian Hong<sup>2</sup>, Vivek Sharma<sup>1</sup>, Xianmei Wan<sup>1</sup>, and Jamie M. Messman<sup>3</sup>, <sup>1</sup>Pittsburg State University, USA; <sup>2</sup>Kansas Polymer Research Center/PSU, USA; <sup>3</sup>Department of Energy's National Security Campus, managed by Honeywell FMT, LLC, USA

**Multifunctional Fatty Acid Macroperoxide Initiators Obtained by the Autoxidation. Synthesis of Block/Graft Copolymers via Free Radical and Ring Opening Polymerization.** Baki Hazer, Kapadokya University and Bülent Ecevit University, Turkey

**Super Palm Stearin from Enzymatic Directed Interesterification of Palm Oil.** Noor Lida Habi Mat Dian<sup>1</sup>, Miskandar Mat Sahri<sup>1</sup>, Tan Chin Ping<sup>2</sup>, and Lai Oi Ming<sup>2</sup>, <sup>1</sup>Malaysian Palm Oil Board, Malaysia; <sup>2</sup>Universiti Putra Malaysia, Malaysia

**Transesterification of Waste Vegetable Oil using Spent FCC Catalyst-based Solid Base Catalyst.** Zakir Hussain and Rakesh Kumar, Rajiv Gandhi Institute of Petroleum Technology, India

### Tuesday Morning

#### **IOP 2: Biofuels**

*Chairs: Lieve Laurens, National Renewable Energy Laboratory, USA; and Steve Howell, M4 Consulting, Inc., USA*

**Technical Needs for Biodiesel Blends Over B20.** Steve Howell, M4 Consulting, Inc., USA

**The Equilibrium Solubility Behavior of Glycerol in Biodiesel Fuels at Reduced Temperatures.** Richard W. Heiden<sup>1</sup> and Martin Mittelbach<sup>2</sup>, *RW Heiden Associates LLC, USA*; <sup>2</sup>*Institute of Chemistry, University of Graz, Austria*

**Green Diesel by Hydrotreatment of Vegetable Oils: Effect of Oil Quality on Hydrocarbon Yield and Composition.** Elisa Volonterio, Juan Bussi, Jorge Castiglioni, Ignacio Vieitez, and Iván Jachmanián\*, *Facultad de Química, Universidad de la República, Uruguay*

**Biodiesel Production Using Agricultural Waste Derived Solid Acid Catalyst.** Zakir Hussain and Rakesh Kumar, *Rajiv Gandhi Institute of Petroleum Technology, India*

**Spent FCC Catalyst-based Solid Catalyst for Efficient Biodiesel Production.** Zakir Hussain and Rakesh Kumar, *Rajiv Gandhi Institute of Petroleum Technology, India*

**Extractability and Quality of Lipids in Algae, a Study of Species-specific Lipase Activation.** Ryan A. Herold and Lieve Laurens\*, *National Renewable Energy Laboratory, USA*

**Correlating the Cold Flow Properties of Biodiesel to the Melting Properties of the FAME Components.** Robert O. Dunn, *USDA, ARS, NCAUR, USA*

**Hydroprocessing Algal Lipids to Renewable Diesel Blend Stock.** Jake Kruger, Earl Christensen, Tao Dong, Gina Fioroni, Robert McCormick, and Philip Pienkos, *National Renewable Energy Laboratory, USA*

## Tuesday Afternoon

### **IOP 3: Green Chemistry**

*Chairs: Nurhan Dunford, Oklahoma State University, USA; Dharma Kodali, University of Minnesota, USA; and Jerry King, Critical Fluid Symposia, USA*

**Oil and Oilseed Processing with Sustainability in Mind.** Nurhan T. Dunford, *Oklahoma State University, USA*

**Biobased Surfactants: A Useful Biorefinery Product That Can be Prepared Using Green Manufacturing.** Douglas G. Hayes, *University of Tennessee, USA*

**Eastern Red Cedar: Critical Fluid Extraction and Bioactivity of Extracts.** Fred J. Eller, *USDA, ARS, NCAUR, USA*

**Synthesis of Biobased Building Blocks from Cashew Nutshell Liquid: A Chemical Platform Approach for Polymer Synthesis.** Sylvain Caillol, *Institut Charles Gerhardt, France*

**Feruloylated Soy Glycerides: UV Absorbance Capacity and Photostability.** David L. Compton<sup>1</sup>, John R. Goodell<sup>2</sup>, and Kervin O. Evans<sup>3</sup>, <sup>1</sup>*USDA-ARS-NCAUR, USA*; <sup>2</sup>*Active Naturals, USA*; <sup>3</sup>*USDA-ARS-NCAUR, USA*

**Subcritical Water Hydrolysis of Hemp Seed Oil in a Continuous Flow Coil Reactor.** Andres F. Aldana Rico<sup>1</sup>, Ruben O. Morawicki<sup>2</sup>, Jerry W. King<sup>3</sup>, Marco E. Sanjuan Mejia<sup>1</sup>, and Antonio J. Bula Silvera<sup>1</sup>, <sup>1</sup>*Universidad del Norte, Colombia*; <sup>2</sup>*University of Arkansas, USA*; <sup>3</sup>*Critical Fluid Symposia, USA*;

**Green Chemistry in Cannabis “Oils” Extraction, Processing and Derived Products.** Jerry W. King, *Critical Fluid Symposia, USA*

**Oil Quality of Sesame was Improved by the Application of Bio-inoculants under Reduced Amount of Agrochemicals.** Asia Nosheen, *COMSATS Institute of Information Technology, Pakistan*

Wednesday Morning

#### **IOP 4: Oleochemicals**

*Chairs: Xiaofei Ye, University of Tennessee, USA; and Franck Dumeignil, Université de Lille, France*

**The Global Challenges in Chemicals and Energy.** Mischa Schneider, *Chemspeed Technologies AG, Switzerland*

**Effective Magnesium Oxide-Zeolite Catalysts to Produce Iso-Oleic Acid, Precursor of Isostearic Acid.** Helen Ngo Lew, Jianwei Zhang, and Robert A. Moreau, *USDA, ARS, ERRC, USA*

**Synthesis and Modification of Africa Pear Seed Oil as Potential Basestock for Lubricating Fluid.** Matthew Menkiti<sup>1</sup> and Ochoje Ocholi<sup>2</sup>, <sup>1</sup>*Nnamdi Azikiwe University, Nigeria;* <sup>2</sup>*Nnamdi Azikiwe University, Nigeria*

**Bioplasticizers Derived from Regular and High Oleic Soybean Oil.** Lucas J. Stolp and Dharma R. Kodali, *University of Minnesota, USA*

**Innovations in Biodiesel Production Value Chain Toward Circular Economy.** Xiaofei P. Ye, *University of Tennessee, USA*

**Preliminary Confirmation on Novel Utilization of Terminalia catappa L Oil as Transformer Insulating Fluid.** Matthew Menkiti<sup>1</sup>, Chinedu Agu<sup>2</sup>, Albert Agulanna<sup>3</sup>, and Emeka Udokporo<sup>4</sup>, <sup>1</sup>*Nnamdi Azikiwe University, Nigeria;* <sup>2</sup>*Nnamdi Azikiwe University, Nigeria;* <sup>3</sup>*Project Development Institute, Nigeria;* <sup>4</sup>*University of Nigeria, Enugu Campus, Nigeria*

**Laser-assisted Catalytic Oxidation of Glycerol over Gold Supported Catalysts.** Zeinab Chehadi<sup>1</sup>, Jean-Sébastien Girardon<sup>2</sup>, Mickaël Capron<sup>2</sup>, Franck Dumeignil<sup>\*3</sup>, and Safi Jradi<sup>1</sup>, <sup>1</sup>*Laboratoire de Nanotechnologie et d'Instrumentation Optique, Institut Charles Delaunay, UMR 6281 CNRS, Université de Technologie de Troyes, France;* <sup>2</sup>*Univ. Lille, CNRS, Centrale Lille, ENSCL, Univ. Artois, UMR 8181 - UCCS - Unité de Catalyse et Chimie du Solide;* <sup>3</sup>*Université de Lille, France*

**The Effect of Plant Oil-Based Monomer Structure on Properties of Latex Synthesized in Miniemulsion Polymerization.** Zoriana Demchuk<sup>1</sup>, Ananiy Kohut<sup>2</sup>, Ihor Tarnavchyk<sup>1</sup>, Stanislav Voronov<sup>2</sup>, and Andriy Voronov<sup>1</sup>, <sup>1</sup>*North Dakota State University, USA;* <sup>2</sup>*Lviv Polytechnic National University, Ukraine*

**Preparation of Mango Kernel Fat Stearin using 2-methylpentane and its Application in Heat-resistant Chocolate Fats.** Jun Jin, Qingzhe Jin, and Xingguo Wang, *Jiangnan University, China*

**Producing Fully Renewable Medium Chain Alpha Olefins via an Integrated Biorefinery Process.** Tao Dong, Wei Xiong, Jianping Yu, and Philip Pienkos, *National Renewable Energy Laboratory, USA*

**High Linoleic Soybean Oil a New Feedstock for Industry: Alkyd Resin and Paint Example.** Rick Heggs, *Oilseed Innovation Partners, Canada*

Wednesday Afternoon

#### **EAT 5 / IOP 5: Waxes and Phase Change Materials**

*Chairs: Nuria Acevedo, Iowa State University, USA; and Chelsey Castrodale, Clasen Quality Chocolate, USA*

**Multiple  $\beta$  Forms of Tripalmitin in Different Crystallization Pathway.** Seiya Takeguchi<sup>1</sup>, Hironori Hondoh<sup>2</sup>, Hidetaka Uehara<sup>3</sup>, and Satoru Ueno<sup>2</sup>, <sup>1</sup>*The Nisshin OilliO Group, Ltd./Hiroshima University, Japan;* <sup>2</sup>*Graduate School of Biosphere Science, Hiroshima University, Japan;* <sup>3</sup>*The Nisshin OilliO Group, Ltd., Japan*

**The Effect of Processing on Hybrid Shortenings Containing Diacylglycerols.** Iris Tavernier<sup>1</sup>, Tom Rimaux<sup>2</sup>, Koen Dewettinck<sup>3</sup>, and Ian T. Norton<sup>4</sup>, <sup>1</sup>*Ghent University, Belgium*; <sup>2</sup>*Vandemoortele R&D Centre, Belgium*; <sup>3</sup>*University of Gent, Belgium*; <sup>4</sup>*Chemical Engineering, University of Birmingham, United Kingdom*

**Engineering Lipid Properties Through Glycerolysis.** Reed A. Nicholson and Alejandro G. Marangoni, *University of Guelph, Canada*

**Developing Vegetable Oil Based Wax Coating Alternatives.** Tong Wang and Tao Fei, *Iowa State University, USA*

**An Emerging Natural Wax: Sorghum Wax from Bioethanol Production.** Jeffrey T. Cafmeyer, *Battelle, USA*

**Role of Rice Bran Wax on Crystallization and Rheological Properties of Oleogels from Rice Bran Oil.** Khakhanang Wijarnprecha<sup>1</sup>, Pravit Santiwattana<sup>2</sup>, Sopark Sonwai<sup>3</sup>, and Dérick Rousseau<sup>4</sup>, <sup>1</sup>*Department of Food Technology, Silpakorn University, Thailand*; <sup>2</sup>*Thai Edible Oil Co., Ltd., Thailand*; <sup>3</sup>*Silpakorn University, Thailand*; <sup>4</sup>*Ryerson University, Canada*

**Phase Change Analysis of Waxes and Wax Blends by Thermal Microstructure Evolution Analysis.** Matt Vanden Eynden<sup>1</sup>, Roland Ramsch<sup>2</sup>, Giovanni Brambilla<sup>2</sup>, Pascal Bru<sup>2</sup>, and Gerard Meunier<sup>2</sup>, <sup>1</sup>*Formulaction, Inc., USA*; <sup>2</sup>*Formulaction, France*

#### **IOP-P: Industrial Oil Products Poster Session**

*Chair: Jerry King, Critical Fluid Symposia, USA*

*Posters will be available for viewing from noon on Monday, May 7 through 2:00 p.m. Wednesday, May 9, 2018.*

**An Emerging Natural Wax: Sorghum Wax from Bioethanol Production.** Jeffrey T. Cafmeyer, *Battelle, USA*

**Soy-based Polyester Polyols for Flexible Polyurethane Foams and Elastomers.** Dragana Radojic, and Mihail Ionescu, *Pittsburg State University, USA*

**Algal Oil Derived Polyurethane Foams.** Olivera Bilic<sup>1</sup>, Zoran Petrovic<sup>2</sup>, Ivan Javni<sup>3</sup>, Milica Lovric<sup>3</sup>, and Scott Franklin<sup>4</sup>, <sup>1</sup>*Kansas Polymer Research Center/PSU, USA*; <sup>2</sup>*Pittsburg State University, USA*; <sup>3</sup>*Pittsburg State University, USA*; <sup>4</sup>*Checkerspot, Inc., USA*

**Copolymers from Photochemical Thiol-ene Polycondensation of Fatty Dienes with Alkyl Dithiols.** Bryan R. Moser, *USDA Agricultural Research Service, USDA*

**Polyol and Polyurethane Prepared from Rubber Seed Oil by Hydroformylation.** Jian Hong<sup>1</sup>, Xiao-Qin Yang<sup>2</sup>, Xianmei Wan<sup>3</sup>, Zhifeng Zheng<sup>2</sup>, and Zoran Petrovic<sup>3</sup>, <sup>1</sup>*Kansas Polymer Research Center, Pittsburg State University, USA*; <sup>2</sup>*Southwest Forestry University, China*; <sup>3</sup>*Pittsburg State University, USA*

**Chemometric Comparison of Neutral Lipids in Camellia Oil with Other Cooking oils.** Ling Peng<sup>1</sup>, Chi Chen, and Yiwei Ma, *University of Minnesota, USA*

**Improved Synthesis and Cost Estimates for the Production of Saturated Branched-Chain Fatty Acids from Vegetable Oils.** Jianwei Zhang, Winnie Yee, Robert A. Moreau, and Helen Ngo Lew, *USDA, ARS, Eastern Regional Research Center, USA*

**Study of Physical and Tribology Properties of Soybean Oil-based Grease Formulated with Polysoap.** Zengshe Liu<sup>\*1</sup>, Girma Biresaw<sup>2</sup>, Atanu Biswas<sup>2</sup>, and H.N. Cheng<sup>3</sup>, <sup>1</sup>*Food and Industrial Oil Research, NCAUR, ARS/USDA, USA*; <sup>2</sup>*NCAUR/ARS/USDA, USA*; <sup>3</sup>*SRRC/ARS/USDA, USA*

**Two-Step Temperature Extraction for the Separation of Waxes and Oil in Sorghum Bran.** Robert A. Moreau and Megan E. Hums\*, *USDA, ARS, ERRC, USA*

**Free Fatty Acid Generation during Dry-grind Corn Ethanol Fermentation.** Brett Brothers, Tong Wang, and Hui Wang, *Iowa State University, USA*

**Extraction and Characterization of Passion Fruit and Guava Oils from Industrial Residual Seeds and Their Application as Biofuels.** Paulo A.Z. Suarez, *University of Brazil, Brazil*

**Glycerolysis Reaction Under Ultrasound.** Kiran Shinde and Atul Deshmane,