

2018 AOCs Annual Meeting & Expo

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



Processing (PRO) Interest Area Tentative Technical Program

As of March 9, 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

PRO 1: Processing ABC — Part I

Chairs: Farah Skold, Solex Thermal Science Inc., Canada; and Naudy Suarez, Richardson Oilseed Ltd., Canada

Advancements in Vegetable Oil Extraction and Oil Processing. Mohammad S. Alam, *Texas A&M University, USA*

Screw Press Technology for Oil Extraction. Eric D. Stibora, *Anderson International, USA*

Pilot Plant Concept “EthaNa” for Ethanolic Extraction of Dehulled Canola Seeds. Gunter Börner and Bernd Steinhauer, *B+B Engineering GmbH, Germany*

Energy Optimization in Soybean Processing. Mohamed Abid, *Solex Thermal Science Inc., Canada*

Oilseed Conditioning and Effects on Extraction. William C. Morphew, *Crown Iron Works, USA*

Solvent Extraction Overview. Timothy G. Kemper, *Desmet Ballestra, USA*

Tuesday Morning

BIO 2.2 / PRO 2: Advances in Enzyme Processing Technologies

Chairs: Xuebing Xu, Wilmar Global Research and Development Center, China; and Flavio Galhardo, Bunge Global Innovation, USA

Overview and Recent Developments in Degumming, Interesterification and Biodiesel. Hans Christian Holm, *Novozymes A/S, Denmark*

Design and Synthesis of New Lipid Molecules by Assembling Nature Segments for Multi-functionalities. An Enzymatic Solution. Zheng Guo, *Aarhus University, Denmark*

Value and Potential of Phospholipase C Assisted Enzymatic Degumming in Vegetable Oils. Ying Zha¹, Arjen Sein², Steve Gregory³, Greg LeFebvre⁴, and Michael Jung⁵, ¹*DSM, Netherlands*; ²*DSM Biotechnology Center, The Netherlands*; ³*DSM, USA*; ⁴*DSM Food Specialties, Inc, USA*; ⁵*DSM, USA*

Enzymatic Interesterification. Chris Dayton, *Bunge Limited, USA*

Enzymatic Modification of Menhaden Oil to Incorporate Caprylic and/or Stearic Acid. Sarah A. Willett¹, Casimir C. Akoh¹, and Silvana Martini², ¹*University of Georgia, USA*; ²*Utah State University, USA*

Cold Enzymatic Degumming on Sunflower Seed Oil. Ling Hua and Alexey Shevchenko, *Alfa Laval Copenhagen A/S, Denmark*

How to Overcome the Barrier of Mucilage for Extraction of Omega 3 from Chia Oil? Gwendoline Gravé¹, Sidrine Koumba¹, Jean-Francois Fabre², Eric Lacroux³, Muriel Cerny⁴, Romain Valentin⁵, Othmane Merah¹, and Zéphirin Mouloungui⁴, ¹*INP - ENSIACET, France*; ²*LCA UMR1010 INRA-INP/ENSIACET, France*; ³*Chimie Agro-Industrielle, France*; ⁴*Laboratoire de Chimie Agro-Industrielle, France*; ⁵*INRA, France*

Pilot Enzymatic Production of Medium- and Long-Chain Triacylglycerols Using a Solvent-free Packed Bed Reactor. Zhen Zhang¹, Siwen Zhang², Xiaodong Xie², Xiang Ma³, Huihua Huang¹, and Yong Wang^{2*}, ¹*School of Food Science and Engineering, South China University of Technology, China*; ²*Guangdong Saskatchewan Oil Seed Joint Laboratory, Dept. of Food Science and Engineering, Jinan University, China*; ³*Research School of Chemistry, The Australian National University, Australia*

Lipid Modification by Enzymes and Engineered Microbes. Uwe T. Bornscheuer, *University of Greiswald, Germany*

Recent Progress of Enzymatic Synthesis of Polymers. Douglas G. Hayes, *University of Tennessee, USA*

PRO 2.1: Environment, Health, Safety and Sustainability

Chair: Richard Barton, N. Hunt Moore & Associates, USA

Managing Environmental Challenges in Uncertain Times. Michael J. Boyer, *AWTMS, USA*

Creating Triple Win Sustainability Programs. William S. Minor, *CHS, USA*

Test Tube to Tanker: Stage Gate Engineering as a Guide to Process Development. Cecil T. Massie, *Wood, USA*

Challenges and Opportunities in Effluent Water Treatment for Oil Seed Processing Plants. Rakesh Patel, *ADF Engineering, USA*

Creating an Effective Dust Hazard Analysis for NFPA 652 Compliance. Matthew Williamson, *ADF Engineering, USA*

Towards Sustainable Production of Structured Lipids for the Food Industry. Suzana Ferreira-Dias, *Universidade de Lisboa, Instituto Superior de Agronomia, Portugal*

Challenges of the Palm Oil Industry. Peter J. Clarke, *The Tintometer Ltd., United Kingdom*

The Compliance Audit—A Challenge to Your Process Safety Management Program. John Mulholland, *N. Hunt Moore & Associates, USA*

Tuesday Afternoon

PRO 3: By-product Processing

Chairs: Norman Smallwood, The Core Team, USA; and Samia Mezouari, Canada

Current Situation for Spent Bleaching Earth Disposal. Norman J. Smallwood, *The Core Team, USA*

Processing of Atlantic Salmon (*Salmo salar*) Heads for the Extraction of Proteoglycans. Subin R.C.K. Rajendran¹, Aishwarya Mohan², Zied Khiari³, and Beth Mason², ¹*Department of Chemistry, Dalhousie University, Canada;* ²*Verschuren Centre for Sustainability in Energy and the Environment, Canada;* ³*Lethbridge College, Canada*

Oil Recovery from Palm Kernel Meal using Subcritical Water Extraction in a Stirred Tank Reactor. Johnnys A. Bustillo Maury¹, Andres F. Aldana Rico*¹, Jerry W. King², Cindy L. Garcia Pinto¹, Ingrid N. Hernandez Medina¹, Jose Urbina³, Juan C. Urueta³, Marco E. Sanjuan Mejia⁴, and Antonio J. Bula Silvera¹, ¹*Universidad del Norte, Colombia;* ²*Critical Fluid Symposia, USA;* ³*PALMACEITE SA, Colombia;* ⁴*msanjuan@uninorte.edu.co, Colombia*

Use of Lipids for Enhancing the Nutritional Value, Digestibility and Health Safety of Hay. William J. Hausmann, *The Core Team, USA*

Investigation of the Selective Extraction of Non-polyisoprenic Compounds from *Parthenium argentatum* Biomass with Pressurized Fluids. Teerasak Punvichai*¹, Daniel Pioch², Serge PALU², and Eric Tardan², ¹*Prince of Songkla University, Thailand;* ²*CIRAD, UR 114 Biowoob, TA-B 114/16, 34398, Montpellier, France, France*

Orange Oil-based Highly Flame-retardant Rigid Polyurethanes Foams for Industrial Applications. Sanket Bhoiyate, Mihail Ionescu, Pawan Kahol, and Ram Gupta*, *Pittsburg State University, USA*

Impact of Heat and Pressure on the Polyphenol Composition of Plant Extracts. Michael Eskin and Usha Thiyam*, *University of Manitoba, Canada*

Challenges of Extraction and Downstream Processing of Polyunsaturated Oils from Microbial Biomass. Thushan S. Withana-Gamage, and Udaya N. Wanasundara, *POS Bio-Sciences, Canada*

BIO 3.1 / PRO 3.1: Biodiesel

Chairs: Casimir Akoh, University of Georgia, USA; and Per Munk Nielsen, Novozymes, Denmark

Improving Pre-treatment Efficiency of Oil Feedstock using Adsorbent Filter Aids. David Gittins, Li-Chih Hu, and Nathan Dias*, *Imerys Filtration Minerals Inc., USA*

Online Real-time Quality Control of Biodiesel using Near-Infrared Spectroscopy. Dominik Margraf, *BUCHI NIR-Online GmbH, Germany*

FFA Reduction and Production Control. Frankie Mathis and Bo Munk, *Tactical Fabrication LLC, USA*

Integrating Conventional and Enzymatic Approaches Towards Industrial Biodiesel Production. Marcelo Cantele, *Tranfertech Gestão de Inovações LTDA, Brazil*

Enzymatic Esterification to Handle the FFA in Biodiesel Production. Per Munk Nielsen, *Novozymes, Denmark*

Liquid Lipases for Enzymatic Refining: Technical Advantages Beyond Green Technology. Zheng Guo, *Aarhus University, Denmark*

A New Enzymatic Biodiesel Polishing Process Based on Esterification of FFA into Methyl Esters. Anders Rancke-Madsen, *Novozymes, Denmark*

Soapstock Acidulation using Carbon Dioxide. Rusty Sutterlin, *Inventure Renewables, USA*

LOQ 3a / PRO 3.2a: Effect of New Processing Technologies on Lipid Oxidation

Chairs: David Johnson, Kalsec Inc., USA; and Antonios Papastergiadis, Desmet Ballestra, USA

Oxidative Stability of Tomato-based Matrices Enriched with n-3-LC-PUFA Derived from Microalgae. Lore Gheysen¹, Nele Lagae², Jolien Devaere³, Koen Goiris⁴, Luc De Cooman⁴, and Imogen Foubert¹, ¹*Katholieke Universiteit Leuven Kulak, Belgium*; ²*KU Leuven University KULAK, Belgium*; ³*KU Leuven Technology Campus Ghent, Belgium*; ⁴*Katholieke Universiteit Leuven, Technology Campus Ghent, Belgium*

Oxidation and Hydrolysis of Lipids in Marine Edible Shellfishes During Hot Drying Process. Dayong Zhou¹, Zhongyuan Liu², Kaiqi Gang³, Fereidoon Shahidi⁴, and Tong Wang⁵, ¹*Dalian Polytechnic University, China*; ²*College of Food Science & Technology, Dalian Polytechnic University, China*; ³*School of Food Science and Technology, Dalian Polytechnic University, China*; ⁴*Memorial University of Newfoundland, Canada*; ⁵*Iowa State University, USA*

Effect of Spray-Dried Flavonoid Microparticles on Oxidative Stability of Methyl Linoleate as Lipid Model System. Manuel J. Palma¹, Gloria Márquez-Ruiz², Paula García³, Francisca Holgado⁴, Cristina Vergara³, Begoña Giménez⁵, and Paz S. Robert¹, ¹*Universidad de Chile, Chile*; ²*Instituto de Ciencia y Tecnología de Alimentos y Nutrición (ICTAN-CSIC), Spain*; ³*Departamento de Ciencia de los Alimentos y Tecnología Química, Facultad de Ciencias Químicas y Farmacéuticas, Universidad de Chile, Chile*; ⁴*Instituto de Ciencia y Tecnología de Alimentos y Nutrición (ICTAN-CSIC)*; ⁵*Departamento de Ciencia y Tecnología de los Alimentos, Facultad Tecnológica, Universidad de Santiago de Chile, Chile*

The Impact of Diacylglycerol on Association Colloids Formation and Lipid Oxidation. Mizue Ouchi*¹, Eric A. Decker², and D. Julian McClements², ¹*Kao Corporation, Japan*; ²*University of Massachusetts Amherst, USA*

Wednesday Morning

PRO 4: Processing ABC — Part II

Chairs: Bruce Patsey, Oil-Dri Corporation of America, USA; and Kris Knudson, Crown Iron Works Co., USA

The Use of Controlled Flow Cavitation to Improve the Performance of Degumming, Refining and Biodiesel Operations. Darren J. Litle¹, Peter Reimers¹, and Oleg Kozyuk², ¹*Arisdyne Systems, Inc., USA*; ²*ASI Chief Technology Officer, Ukraine*

Centrifuge Equipment in Fats and Oils Processing. William Younggreen, *Alfa Laval Inc., USA*

Composite Adsorbent - Filter Aid for High Performance Oil Purification. Li-Chih Hu, David Gittins, and Nathan Dias, *Imerys Filtration Minerals Inc., USA*

Low Color Bodies During Bleaching Impacting Refining Cost. Jorge Bello, *EP Engineered Clays, USA*

Removal of Biofuel Feedstock Trace Elements by Bleaching Clays. David Brooks and Sajjo Naik, *Oil-Dri Corporation of America, USA*

An Alternative Filtration in Bleaching. Tony Dinsbach, *Filtration Group BV, The Netherlands*

Glycidyl Ester Formation and Mitigation. Linsen Liu, Stephen Lumor, and Tri Le, *IOI Lodders Croklann, USA*

Results of Experiments to Reduce MCPD and Glycidyl Esters in Edible Fats and Oils by Ionic Liquid Treatment. Frank Pudel¹, Jennifer Heymann², and Bertrand Matthäus³, ¹*Pilot Pflanzenöltechnologie Magdeburg e.V., Germany;* ²*Evonik Creavis GmbH, Germany;* ³*Max-Rubner-Institut, Germany*

What is Your Best Deodorizer Choice? Developments in Deodorization Process. Leon Pablo Espinosa, *Desmet Ballestra, USA*

Wednesday Afternoon

PRO 5: New Technologies for Oil Processing

Chairs: Darren Litle, Arisdyne Systems, Inc., USA; and Gijs Calliauw, Desmet Ballestra Group, Belgium

Enzymatic Degumming with Expanders for Maximum Oil Yield. Steve Gregory, *DSM, USA*

Recent Developments in Hydrodynamic Nanocavitation in Oil Refining: The Next Best Thing. Marc J. Kellens, *Desmet Ballestra Group, Belgium*

Elimination of MCPDs and GEs in Edible Oils. Joseph Rongione, *Stepan Company, USA*

Dry Condensing in Oil Refining: Latest Improvements to Further Enhance Oil Quality, Plant Safety, Process Efficiency and Overall Sustainability. John A. Weston^{*1}, Jelle L. Nijdam², and Pieter Jellema², ¹*Desmet Ballestra, USA;* ²*Solutherm, The Netherlands*

New Applications for Controlled Flow Cavitation in the Refining of Edible Oils. Dr. Peter Reimers¹, Oleg Kozyuk², and Darren J. Litle¹, ¹*Arisdyne Systems, Inc., USA;* ²*ASI Chief Technology Officer, Ukraine*

New Developments in Physical Refining and Removal of Contaminants in Edible Oils. Perry Alasti, *Artisan Industries Inc., USA*

Soy and Other Protein Concentrates. Alexander M. Danelich, *Crown Iron Works, USA*

Enzymatic Gums Deoiling. Antonios Papastergiadis, *Desmet Ballestra, USA*

PRO 5.1: General Processing

Chairs: Mohammad Alam, Texas A&M University; and Richard Clough, Texas A&M University, USA

Selectively Extracting Triglycerides by Chain Length and Saturation from Microalgae with Supercritical Carbon Dioxide. Thomas A. Kwan, Qingshi Tu, and Julie B. Zimmerman, *Yale University, USA*

Enzymatic Degumming and Expanders for Oil Yield Gain. Steve Gregory, *DSM, USA*

Reduction of Toxins in Fish Oil from PPM to PPB in a Specialized Passive Stripper at Micron-level Vacuum. Caitlin A. Davis^{*}, *Artisan Industries Inc., USA*

Formation of 3-MCPD and Glycidyl Esters in Palm Oil using Different Laboratory-scale Refining Units. Biow Ing Sim and Chin Ping Tan^{*}, *Universiti Putra Malaysia, Malaysia*

Synthesis of Esters from Chia Seeds Mucilage and Saturated Fatty Acids of *Irvingia gabonensis* Kernels. Sidrine Kerthy Koumba Ibinga¹, Gwendoline Gravé¹, Jean-Francois Fabre², Eric Lacroux³, Muriel Cerny⁴, Romain Valentin⁵, Raphaël Bikanga⁶, and Zéphirin Mouloungui⁴, ¹INP - ENSIACET, France; ²LCA UMR1010 INRA-INP/ENSIACET, France; ³Chimie Agro-Industrielle, France; ⁴Laboratoire de Chimie Agro-Industrielle, France; ⁵INRA, France; ⁶USTM, France

PRO-P: Processing Poster Session

Chairs: Ozan Ciftci, University of Nebraska-Lincoln, USA; and Ali Ubeyitogullari, University of Nebraska-Lincoln, USA

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

Enzymatic Preparation of Food and Medical Materials from Fish Oil. Kazumi Katagiri¹, Yomi Watanabe², Ryosuke Hoshina¹, and Hideaki Kobayashi¹, ¹Kewpie Corporation, Japan; ²Osaka Research Institute of Industrial Science and Technology, Japan

High Intensity Ultrasound and Bubble Dynamics does not Affect the Oxidative Stability of Soybean Oil. Juhee Lee¹, Roberta Claro da Silva², Peter Birkin³, Tadd Truscott¹, and Silvana Martini¹, ¹Utah State University, USA; ²North Carolina A&T University, USA; ³University of Southampton, United Kingdom

Method of Miscella Zenith Deacidifying Process Research. Zhao Chenwei¹, Weiguo Qin², and Jinfeng Qi³, ¹State Key Laboratory of Food Science and Technology, School of Food Science and Technology, Jiangnan University, China; ²COFCO Engineering & Technology CO., LTD, China; ³Jiangsu University of Science and Technology/Jiangnan University, China

Effects of Heat Pretreatment of Wet-milled Corn Germ on Physicochemical Properties of Oil. Liyou Zheng¹, Jianhua Huang², Jun Jin³, Xingguo Wang³, and Qingzhe Jin³, ¹State Key Laboratory of Food Science and Technology Synergetic Innovation Center of Food Safety and Nutrition School of Food Science and Technology, China; ²School of Food Science and Technology, Jiangnan University, China; ³Jiangnan University, China

Quantitative Isolation of Cannabinoids from Plant Material. Albert J. Dijkstra and Robert W. LaChance, FAOCS, France

CLA-Rich Vegetable Oil Production by Adapting a Small Scale Hydrogenation Reactor. Chaun Min Ruan¹, and Andrew Proctor^{*2}, ¹University of Arkansas, USA; ²Dept. of Food Science, University of Arkansas, USA

Large Scale Purification of Minority Fatty Acids by Liquid Chromatography: The n-3 docosapentaenoic Acid Case. Gaëtan Drouin, Etienne Guillocheau*, Daniel Catheline, Vincent Rioux, and Philippe Legrand, Agrocampus-Ouest, France

Temperature Controlled Pulsed Light Treatment: Impact on Aflatoxin Level, and Quality Parameters of Peanut Oil. George Baker¹, Basheer Iqdam, Manal Abuagela, and Andrew MacIntosh, University of Florida, USA

Development of an Extraction and Purification Process to Obtain High Purity Wax from Sorghum. Junsi Yang, Loren Isom, Curtis Weller, and Ozan N. Ciftci, University of Nebraska-Lincoln, USA

Concentration of Lignan from Defatted Sesame Meal by Supercritical Carbon Dioxide Two Step Process. No Young Kim¹, Heejin Kim², Nakyung Choi¹, Jong Hun Choi³, Chulyoung Lee³, and In-Hwan Kim¹, ¹Korea University, Republic of Korea; ²Dept. of Public Health Sciences, Graduate School, Korea University, Republic of Korea; ³R&D Center, Republic of Korea

Quality Characteristics of Cold-pressed Flaxseed Oils from Cultivars in China. Qianchun Deng, Xiao Yu, Qingde Huang, Fenghong Huang, Xiaoshan Wei, Xixi Zang, Peng Chen, and Luxi Meng, Oil Crops Research Institute,

Chinese Academy of Agricultural Sciences; Hubei Key Laboratory of Lipid Chemistry and Nutrition; Key Laboratory of Oils, China

Quality and Safety Control Technology in Wood-pressed Rapeseed Oil. Youfeng Zhang¹, Ruijie Liu², Qingzhe Jin³, and Xingguo Wang³, ¹*School of Food Science and Technology, Jiangnan University, People's Republic of China;* ²*Jiangnan University/Cornell University, China;* ³*Jiangnan University, China*

Study and Modeling of Oilseeds Continuous Pressing. Houcine Mhemdi, *University of Technology Compiègne, France*