

# 2022 AOCS Annual Meeting & Expo

## Technical Program

*As of March 24, 2022. Subject to change.*

Monday | Early Morning

### 25th Anniversary of the *Journal of Surfactants and Detergents*

#### FEATURED SESSION

*Organizers: Douglas G. Hayes, University of Tennessee, USA; and Nancy A. Falk, Formulation Consulting LLC, USA*

Monday, May 2, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*For 25 years, AOCS's Journal of Surfactants and Detergents has published the latest scientific contributions in the surfactants and detergents area. We're celebrating this milestone year with a special session on topics such as smart sustainable emulsions for cosmetics; the mixing behaviour of the Gemini surfactants and DOPE; a simplified HLDN linear equation for surfactant mixtures; CO<sub>2</sub>-switchable viscoelastic surfactants; and surfactant micelle structure and composition.*

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**CO<sub>2</sub>-switchable viscoelastic surfactants.** Yujun Feng\*, *Polymer Research Institute, Sichuan University, China (People's Republic)*

**Surfactant micelle structure and composition.** Samhitha Kancharla<sup>1</sup>, Dengpan Dong<sup>2</sup>, Dmitry Bedrov<sup>2</sup>, Marina Tsianou<sup>1</sup>, Paschalis Alexandridis\*<sup>1</sup>, *University at Buffalo, The State University of New York (SUNY), United States; <sup>2</sup>University of Utah, United States*

**Design of smart sustainable emulsions for cosmetic applications.** Samiul Amin\*, *Chemical Engineering, Manhattan College, United States*

**Miscibility of Gemini surfactants and DOPE in binary mixed monolayers: Implications for DNA transfection.** Shawn Wettig\*, Scott Gillis, Gurmeet Lall, *School of Pharmacy, University of Waterloo, Canada*

**How to use in practice a simplified HLDN linear equation for surfactant mixtures.** Jean-Louis Salager\*<sup>1</sup>, Ronald Marquez<sup>2</sup>, Jesus F. Ontiveros<sup>3</sup>, *<sup>1</sup>FIRP Laboratory, Universidad de Los Andes, Venezuela, Venezuela; <sup>2</sup>Laboratoire Physico-Chimie des Interfaces Complexes, TotalEnergies, Lille University, ESPCI, France; <sup>3</sup>ENSCL, France*

**Biobased emulsions for lubrication applications.** Brajendra K. Sharma\*<sup>1</sup>, Derek Vardon<sup>2</sup>, *<sup>1</sup>SBCP, USDA-ARS-ERRC, United States, <sup>2</sup>Alder Fuels, United States*

### Dutton Award Symposium

#### FEATURED SESSION

Organizers: *Giorgia Purcaro, University of Liège, Belgium; and Michal Holčapek, University of Pardubice, Czech Republic*

Monday, May 2, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*Each year, the AOCs Analytical Division assigns the Herbert J. Dutton Award to professionals who have made significant contributions in the analysis of oils, fats and lipids. This year's speakers will share career insights on lipids as biomolecules; chromatography and mass spectrometry; metabolome and lipidome atlas; foodomics; and lipodomic analysis in food.*

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**Comprehensive analysis of lipids: From plant oil analysis towards lipidomic cancer screening.** Michal Holčapek\* (**Herbert J. Dutton Award Winner**)

, Department of Analytical Chemistry, University of Pardubice, Czech Republic

**Adventures in multiple dimensions of chromatography and mass spectrometry for lipidomic**

**Analysis.** William C. Byrdwell\*<sup>1</sup>, Hari Karin Kotapati<sup>2</sup>, <sup>1</sup>*Methods and Application of Food Composition Lab, USDA ARS BHNRC MAFCL, United States;* <sup>2</sup>*University of Maryland, Nutrition and Food Science, United States*

**MetaboAtlas21: A comprehensive metabolome and lipidome atlas of mouse tissues and biofluids.**

Tomas Cajka\*, Lucie Rudl Kulhava, Michaela Novakova, Jiri Hricko, Ondrej Kuda, Michaela Paucova, *Institute of Physiology of the Czech Academy of Sciences, Czech Republic*

**Lipidomic analysis in food: The role of a detailed elucidation of intact lipids in functional foods for investigating on nutritional aspects.** Paola Dugo\*, Francesca Rigano, Luigi Mondello, *Universita Di Messina, Italy*

**Foodomics study of the neuroprotective potential of natural products.** Alberto Valdés\*, Rocío Gallego,

Zully J. Suárez-Montenegro, José David Sánchez-Martínez, Elena Ibañez, Miguel Herrero, Alejandro Cifuentes, *Institute of Food Science Research (CIAL-CSIC), Spain*

## Microbial Lipids for Foods as a Solution

FEATURED SESSION

Organizer: *Saeed M. Ghazani, Food Science Department, University of Guelph, Canada*

Monday, May 2, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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*Details coming soon.*

## Climate Change: What Can the Vegetable Oil and Related Industries Do About It?

HOT TOPIC SYMPOSIA

Organizers: *Alan Paine, Consultant, ARP Lipids Consulting, UK; and Richard H. Barton, President, N Hunt Moore & Associates Inc., USA*

Monday, May 2, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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*Details coming soon.*

# Sustainability Opportunities in Edible Oils and Fats Supply Chain—from Farm to Fork

## HOT TOPIC SYMPOSIA

Organizers: Serpil Metin, Principal Scientist, Cargill Inc., USA; Megan Leill, Customer Innovation Technical Services Specialist, Cargill Inc, USA; and Beatriz Bettler, National Account Manager, Cargill Inc., USA  
Monday, May 2, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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*Details coming soon.*

## Monday | Late Morning

### AOCS Official Methods

#### ANALYTICAL

Chairs: Susan Seegers, Bunge North America, USA; and Mark Collison, Retired ADM, USA  
Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The AOCS Official Methods session includes updates and changes to AOCS Official Methods and Procedures: Antioxidants, Liquid Chromatographic Method; Writing and Approval of Methods and Certified Laboratories (Criteria); Standardized Method to Quantify MCPDE and GE in edible oils.*

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**Changes to AOCS evaluation and design of test methods.** Scott Bloomer\*, Technical Services, American Oil Chemists' Society, United States

**Ce 6a-2021 HPLC analysis of phenolic antioxidants: A successful collaborative trial during the Covid pandemic.** Mark Collison\*, Retired, United States

**Development of ISO18363-4/AOCS Cd29f-2021: A new standardized method to quantify MCPDE and GE in edible oils.** Ralph Zwagerman\*, Analytical Development, Loders Croklaan BV, Netherlands

**New AOCS Methods and Methods under development.** Xin Wu\*, Fiona Liu, Scott Bloomer, Technical Services, American Oil Chemists' Society, United States

### General Biotechnology

#### BIOTECHNOLOGY

Chairs: Todd Underiner, Procter & Gamble, USA; and Sarah Willett, Kerry Group, USA  
Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

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**Enzyme-based soy processing.** Lu-Kwang Ju\*<sup>1</sup> (**Biotechnology Division Ching Hou Biotechnology Award Winner**), Abdullah Al Loman<sup>2</sup>, Qian Li<sup>3</sup>, S. M. Mahfuzul Islam<sup>4</sup>, Ashwin Sancheti<sup>5</sup>, Md Fauzul Kabir<sup>1</sup>,  
<sup>1</sup>Department of Chemical, Biomolecular, and Corrosion Engineering, University of Akron, United States;  
<sup>2</sup>Technical Development, Biogen, United States; <sup>3</sup>Catalent, United States; <sup>4</sup>Archer Daniels Midland Company, United States; <sup>5</sup>CMC, DermBiont Inc, United States

**Simultaneous loading of (–)-epigallocatechin gallate and ferulic acid in chitosan-based nanoparticles as effective antioxidant and skin-whitening agent.** Guanghui Li\*<sup>1</sup>, Chaoying Qiu<sup>1</sup>, Ning Liu<sup>2</sup>, Xuanxuan Lu<sup>1</sup>, Yong Wang<sup>1</sup>, <sup>1</sup>Food Science and Engineering, Jinan University, China (People's Republic); <sup>2</sup>Shaanxi University of Science and Technology, China (People's Republic)

**ISO TC 34/SC 16 Horizontal methods for molecular biomarker analysis—international standards for molecular biomarker analysis/isothermal nucleic acid amplification methods.** Michael Sussman\*, ISO/USDA, AMS, L&P, Agricultural Analytics Division, United States

**Lipozyme TL IM-catalyzed synthesis of  $\gamma$ -linolenic acid rich triacylglycerol from borage oil as a novel strategy.** Hui su Yoon\*<sup>1</sup>, In-Hwan Kim<sup>2</sup>, <sup>1</sup>Department of Integrated Biomedical and Life Sciences, Graduate School, Korea University/BK21FOUR R&E Center for Learning Health Systems, Korea University, Republic of Korea; <sup>2</sup>Korea University, Republic of Korea

**Concentration of eicosapentaenoic acid via *Candida rugosa* lipase-catalyzed esterification with phytosterol and fatty acid from anchovy oil.** Jeanne Kang\*<sup>1</sup>, In-Hwan Kim<sup>2</sup>, <sup>1</sup>Department of Integrated Biomedical and Life Science, Graduate School, Korea University/BK21FOUR R&E Center for Learning Health Systems, Korea University, Republic of Korea; <sup>2</sup>Korea University, Republic of Korea

**Engineering of microalgae toward biodiesel: Facts and prospects.** F. Xavier Malcata\* (**Stephen S. Chang Award Winner**), Department of Chemical Engineering—LEPABE, FEUP, Portugal

## General Edible Applications Technology

EDIBLE APPLICATIONS TECHNOLOGY

Chairs: Supratim Ghosh, University of Saskatchewan, Canada; and Filip Van Bockstaele, Ghent University, Belgium

Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

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**Tuning plant protein for improved functionality and flavor profile: From field to application.** Jiajia Rao\* (**AOCS Young Scientist Research Award Winner**), North Dakota State University, United States

**Incorporating heterogeneous stress translation in a fractal structural-mechanical theory of particle-filled colloidal networks.** Andrew J. Gravelle\*<sup>1</sup>, Alejandro G. Marangoni<sup>2</sup>, <sup>1</sup>Food Science and Technology, University of California, Davis, United States; <sup>2</sup>Food Science Department, University of Guelph, Canada

**Attrition of fully hydrogenated soybean oil-coated micronutrient granules during mixing.** Kiki Chan\*, Gladys Olubowale, Yu-Ling Cheng, Levente Diosady, Chemical Engineering and Applied Chemistry, University of Toronto, Canada

**The physicochemical and sensory characteristics of yoghurt fortified with encapsulated fish oil/milkfat.** Mitra Nosratpour\*<sup>1</sup>, Yong Wang<sup>2</sup>, Jisheng Ma<sup>3</sup>, Victoria Haritos<sup>4</sup>, Cordelia Selomulya<sup>2</sup>, <sup>1</sup>Chemical Engineering, Monash University/Riverina oils and Bio energy, Australia; <sup>2</sup>School of Chemical Engineering, UNSW, Australia; <sup>3</sup>Monash X-Ray Platform, Monash University, Australia; <sup>4</sup>Chemical Engineering, Monash University, Australia

**Enhancing the quality of fried food and frying oil by adjusting the frying processing.** Junmei Liang\*, Fuhuan Niu, Lingling Wei, Yuanrong Jiang, Wilmar Global R&D Center, China (People's Republic)

## Biofuels I

INDUSTRIAL OIL PRODUCTS

Joint session with the Processing Division

Sponsored by Desmet Ballestra North America, Inc.

Chairs: Bruce Patsey, Oil-Dri Corp of America, USA; and Robert O. Dunn, Jr., USDA ARS NCAUR, USA  
Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The first Biofuels session includes these topics: the pretreatment of HVO feedstocks; developments in enzymatic production of biodiesel; novel process to enhance biodiesel production from PFAD; innovations in soybean oil pretreatment; and new HCU pretreatment units.*

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**Scale up biodiesel production from palm fatty acid distillate at palm oil refining plant.** Teerasak Punvichai\*<sup>1,2</sup>, <sup>1</sup>Faculty of Innovative Agriculture and Fisheries Establishment Project/Integrated High-Value Oleochemical Research Center, Prince of Songkla University, Thailand; <sup>2</sup>Faculty of Science and Industrial Technology, Prince of Songkla University, Thailand

**Renewable diesel pretreatment: Focus on soybean oil.** Patrick Harrington\*, Crown Iron Works Co, United States

**New developments in enzymatic biodiesel.** Rasmus B. Hansen\*, Per M. Nielsen, Oils & Fats R&D, Novozymes AS, Denmark

**Requirements and solutions for the pretreatment of HVO feedstocks.** Wim de Greyt\*, Desmet Ballestra, Belgium

**Updates on hydrothermal cleanup (HCU) pretreat.** Jocelyn Goodwin\*, Better Fuels Group, Applied Research Associates, United States

## Identification of novel antioxidants and their efficacies

LIPID OXIDATION AND QUALITY

Sponsored by Kalsec

Chairs: Ignacio Vieitez Osorio, Universidad de la República, Uruguay; and Ruchira Nandasiri, University of Manitoba, Canada

Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*This session includes topics such as underexplored nuts; plant food and aquatic species; extraction of phenolics/anthocyanins; epigallocatechin as alternative to synthetic antioxidants; the antioxidant effect of quercetin in muscle foods; and the potential of rapeseed meal for developing food chelator peptides.*

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**Antioxidants from plant food and aquatic species.** Fereidoon Shahidi\*, Biochemistry, Memorial University of Newfoundland, Canada

**Effect of pressurized fluids on the extraction of phenolics/anthocyanins from crops and by-products.** Marleny D.A. Saldana\*, Agricultural, Food and Nutritional Science, University of Alberta, Canada

**Bioactive ingredients from underexplored nuts.** Jane Mara Block\*<sup>1</sup>, Gerson Teixeira<sup>2</sup>, Gabriela Polmann<sup>1</sup>, <sup>1</sup>Food Science and Technology, Universidade Federal De Santa Catarina, Brazil <sup>2</sup>UFSC, Brazil

**Antioxidant activity of EGC (epigallocatechin) ester derivatives in food and biological model system.** Han Peng\*<sup>1</sup> (**Honored Student Award Winner**), Fereidoon Shahidi<sup>2</sup>, <sup>1</sup>Memorial University, Canada; <sup>2</sup>Memorial University of Newfoundland, Canada

**Antioxidant chelating peptides production from Rapeseed meal proteins proteolysis.** Erwann Durand\*<sup>1</sup>, Pierre Villeneuve<sup>2</sup>, Nathalie Barouh<sup>2</sup>, Nastassia Kaugarenia<sup>3</sup>, Sophie Beaubier<sup>4</sup>, Romain Kapel<sup>5</sup>,

<sup>1</sup>CIRAD/UMR QUALISUD, France; <sup>2</sup>CIRAD, France; <sup>3</sup>LRGP, France; <sup>4</sup>University of Lorraine, LRGP CNRS, France; <sup>5</sup>CNRS, LRGP, France

## Biofuels I

### PROCESSING

*Sponsored by Desmet Ballestra North America, Inc.*

*Chairs: Bruce Patsey, Oil-Dri Corp of America, USA; and Robert O. Dunn, Jr., USDA ARS NCAUR, USA*

*Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)*

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Joint session with the Industrial Oil Products Division. See page 4 for details.

## Application of Advanced Green Processing for the Preparation and Utilization of Food Proteins

### PROTEIN AND CO-PRODUCTS

*Chairs: Lamia L'Hocine, Agriculture & Agri-Food Canada, Canada; Mehmet Tulbek, Saskatchewan Food Industry Development Centre, Canada; and Md Mahfuzur Rahman, Kraft Heinz Food Company, USA*  
*Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)*

*This session includes: technologies for extraction such as solubility, foaming/emulsion, gelation; plasma-activated water treatment; high-power sonication application; maximizing protein in herring co-products; and tribo-electrification separation process for dry fractionation.*

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**Conventional and novel technologies for extraction of protein and their impact on structure and functionality as ingredient.** Md Mahfuzur Rahman<sup>1</sup>, Buddhi Lamsal<sup>\*2</sup>, <sup>1</sup>Kraft Heinz Food Company, United States; <sup>2</sup>Iowa State University (ISU), United States

**Effects of high-power sonication and atmospheric cold plasma on the dispersions and gelling properties of mung bean protein.** Md Mahfuzur Rahman<sup>\*1</sup>, Buddhi Lamsal<sup>2</sup>, <sup>1</sup>Kraft Heinz Food Company, United States; <sup>2</sup>Iowa State University (ISU), United States

**Functional properties of faba bean proteins extracted by different aqueous processes for food applications.** Brasathe Jeganathan\* (**Canadian Section Student Support Grant Winner**), Thavaratnam Vasanthan, Feral Temelli, *Department of Agricultural, Food and Nutritional Science, University of Alberta, Canada*

**Impact of plasma-activated water treatment on physicochemical and functional properties of Bambara globulin.** Opeyemi Alabi<sup>\*1</sup>, George Annor<sup>2</sup>, Eric O. Amonsou<sup>1</sup>, <sup>1</sup>Biotechnology and Food Technology, Durban University of Technology, South Africa, South Africa; <sup>2</sup>Food Science and Nutrition, University of Minnesota, United States

**Development and statistical optimization of a tribo-electrification separation process for dry fractionation of yellow pea flour.** Sama Ghadiri Gargari<sup>\*1</sup>, Jamaka Thomas<sup>2</sup>, Solmaz Tabtabaei<sup>2</sup>, <sup>1</sup>Civil and Environmental Engineering, Howard University, United States; <sup>2</sup>Chemical Engineering, Howard University, United States

**Creating functional protein ingredients by cross-processing herring co-products with lingonberry press-cake, shrimp shells or green seaweed.** Jingnan Zhang<sup>\*1</sup> (**Protein and Co-Products Division Student Travel Grant Winner**), Anna Ström<sup>2</sup>, Romain Bordes<sup>3</sup>, Marie Alminger<sup>1</sup>, Ingrid Undeland<sup>1</sup>, Mehdi Abdollahi<sup>1</sup>, <sup>1</sup>Department of Biology and Biological Engineering-Food and Nutrition Science, Chalmers

University of Technology, Sweden; <sup>2</sup>Department of Chemistry and Chemical Engineering-Pharmaceutical Technology, Chalmers University of Technology, Sweden; <sup>3</sup>Department of Chemistry and Chemical Engineering-Applied Surface Chemistry, Chalmers University of Technology, United States

## General Surfactants and Detergents

SURFACTANTS AND DETERGENTS

Sponsored by Testfabrics Inc.

Chairs: Adriana Sanchez Cruz, Sanchez Y. Martin SA De CV, Mexico and Sanja Natali, ExxonMobil Chemical, USA

Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

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**Metal salt-induced hydrogelation of biosurfactants.** Alexandre Poirier\*<sup>1</sup>, Niki Baccile<sup>2</sup>, <sup>1</sup>Sorbonne Université, United States; <sup>2</sup>Laboratoire de chimie de la matière condensée de Paris, France

**New high-performance starch-based emulsifiers using amylose inclusion complexes.** Gordon Selling\*<sup>1</sup>, Milagros P. Hojilla-Evangelista<sup>2</sup>, William Hay<sup>3</sup>, <sup>1</sup>USDA/ARS, United States; <sup>2</sup>USDA ARS NCAUR Plant Polymer Research, United States; <sup>3</sup>USDA/ARS/NCAUR/MPM, United States

**Effect of the addition of tetramethyl ammonium chloride on the solubility and interfacial activity of a sodium linear alkylbenzene sulfonate surfactant.** José Alvarado\*<sup>1</sup>, Naycarí Forfora<sup>2</sup>, Luz Meza<sup>2</sup>, Franklin Salazar-Rodríguez<sup>3</sup>, Ana Forgiarini<sup>4</sup>, <sup>1</sup>Industrial and Applied Chemistry, FIRP Laboratory, Venezuela; <sup>2</sup>FIRP Laboratory, Venezuela; <sup>3</sup>Unit Operations, FIRP Laboratory, Venezuela; <sup>4</sup>FIRP Laboratory, Universidad de Los Andes, Venezuela, United States

**Study on the application of surfactin for enhanced oil recovery.** Yuichi Sugai\*<sup>1</sup>, Nao Miyazaki<sup>2</sup>, Yoshifumi Okamoto<sup>3</sup>, Satoshi Yanagisawa<sup>3</sup>, <sup>1</sup>Faculty of Engineering, Kyushu University, Japan; <sup>2</sup>Graduate School of Engineering, Kyushu University, United States; <sup>3</sup>New Business Development Department, Kaneka Corporation, Japan

## Next Generation Ingredients

SURFACTANTS AND DETERGENTS

Sponsored by Testfabrics Inc.

Chairs: Scott Backer, Dow Chemical Co., USA; and Amir Ghayour, Syngenta, Canada

Monday, May 2, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The Next Generation Ingredients session covers fatty acid methyl ester ethoxylates as sustainable surfactants; probiotic ingredients and bio-based surfactants; DIPA alternative to DEA; polymer performance in laundry; and a clothes washing solution for effective cleaning and fabric care.*

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**Evaluation of in-situ synthesized DIPA in plant-based surfactants as Cocamide DEA alternatives in personal care formulations.** Gabriel Ortego\*, George Smith, Research & Development, Sasol Chemicals, United States

**Redeposit or not? Not a question for sustainable fabric cleaning!** Robert Nolles\*, Cosun Biobased Experts, United States

**Linking care to clean, naturally.** Paulo Cesar Barjona\*<sup>1</sup>, Jatin Sharma<sup>2</sup>, <sup>1</sup>Novozymes North America Inc., United States; <sup>2</sup>Consumer Biosolutions, Novozymes North America, Inc., United States

**Fatty acid methyl ester ethoxylates: New sustainable surfactants for next generation crop protection formulations.** Dean Oester\*<sup>1</sup>, Timothy Anderson<sup>1</sup>, Mel Long<sup>2</sup>, Rodney Klima<sup>1</sup>, <sup>1</sup>AgChem Additives Development, BASF Corporation, United States; <sup>2</sup>AgChem Additives Technical Service, BASF Corporation, United States

**Sustainable approaches to cleaning and deodorizing with probiotic ingredients.** Scott Jaynes\*, Home Care, Croda, Inc., United States

**Biosurfactants for Home Care Applications.** Aslin Izmitli\*<sup>1</sup>, Tim Young<sup>1</sup>, Daniel S. Miller<sup>2</sup>, <sup>1</sup>Home and Personal Care, Dow Inc., United States; <sup>2</sup>Core R&D, Formulation, Automation & Material Science, Dow Inc., United States

## Monday | Early Afternoon

### Authentication of Olive Oil

ANALYTICAL

*Chairs: Selina Wang, University of California, Davis, USA; and Enrico Valli, Università di Bologna, Italy*  
Monday, May 2, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Authentication of Olive Oil session highlights an easier and greener way to accurately measure peroxide content; an overview of the results of the EU H2020 OLEUM project for the authenticity of olive oils; a new method for detecting lower-grade soft-deodorized olive oil contamination; and the use of AI olfactometry instruments to quantify sensory defects and more.*

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**The results of the EU H2020 OLEUM project for the authenticity of olive oils.** Tullia Gallina Toschi\*, Department of Food and Agriculture Sciences, University of Bologna, Italy

**Metabolic fingerprinting strategies for authentication challenge: EVOO adulterated by soft deodorized olive oil.** Jana Hajslova\*<sup>1</sup>, Klara Navratilova<sup>1</sup>, Enrico Valli<sup>2</sup>, Tullia Gallina Toschi<sup>3</sup>, <sup>1</sup>Department of Food Analysis and Nutrition, University of Chemistry and Technology, Prague, Czech Republic; <sup>2</sup>Department of Agricultural and Food Sciences and Interdepartmental Centre of Agri-Food Industrial Research, Alma Mater Studiorum—Università di Bologna, Italy; <sup>3</sup>Department of Food and Agriculture Sciences, Università di Bologna, Italy

**Artificial Intelligence smelling machines based on multidimensional gas chromatography: Capturing extra-virgin olive oil aroma blueprint and unique identity.** Chiara Emilia Cordero\*<sup>1</sup>, Simone Squara<sup>1</sup>, Federico Stilo<sup>1</sup>, Erica Liberto<sup>1</sup>, Carlo Bicchi<sup>1</sup>, Stephen Reichenbach<sup>2</sup>, Luis Cuadros Rodriguez<sup>3</sup>, Humberto Bizzo<sup>4</sup>, <sup>1</sup>Dipartimento di Scienza e Tecnologia del Farmaco, Università Degli Studi di Torino, Italy; <sup>2</sup>University of Nebraska Lincoln, United States; <sup>3</sup>Univesity of Granada, Spain; <sup>4</sup>Embrapa Agroindústria de Alimentos, Brazil

**Easy and green method for the peroxide value determination in olive oil.** Francesco Longobardi\*<sup>1</sup>, Vito Michele Paradiso<sup>2</sup>, <sup>1</sup>Chemistry, University of Bari A. Moro, Italy; <sup>2</sup>Università del Salento, Italy

**Panel discussion**



## Fat Crystallization I—Microstructure and Polymorphic Transition

### EDIBLE APPLICATIONS TECHNOLOGY

*Chairs: Alejandro Marangoni, University of Guelph, Canada; and Eckhard Flöter, Technical University Berlin, Germany*

Monday, May 2, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Fat Crystallization sessions feature talks concerning cupuassu fat; oil binding capacity and oil loss; examples of x-ray scattering; the filterability of oil slurries; Monte carlo simulations and comparison with x-ray scattering; TAG molecular composition; semi-liquid shortenings; alkyl chains in crystals; and isotropic liquid state of triacylglycerols.*

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**Effects of processing conditions and emulsifiers addition of crystallization kinetics and polymorphism of cupuassu fat and its fractions.** Maria Lidia Herrera\*<sup>1</sup> (**Timothy L. Mounts Award Winner**), Maria R. Ramos<sup>1</sup>, Victor Alonso Garcia Londoño<sup>1</sup>, Karina Dafne Martinez<sup>1</sup>, Maria Jose Rodríguez Batiller<sup>1</sup>, Virginia Borroni<sup>1</sup>, Roberto Candal<sup>2</sup>; <sup>1</sup>*Institute of Polymer Technology and Nanotechnology, University of Buenos Aires-CONICET, Argentina;* <sup>2</sup>*Institute of Research and Environmental Engineering, University of San Martin, Argentina*

**Relationship between oil binding capacity, oil loss, and the physical properties of an interesterified palm-based fat—influence of high-intensity ultrasound, cooling rate, and saturation level.** Melissa Marsh\* (**Thomas H. Smouse Memorial Fellowship Winner**), Silvana Martini, *Utah State University, United States*

**Filterability of oil slurries as a function of particle-size distribution.** Jeppe Hjorth\*, *Product and Technology Development, AAK Denmark AS, Denmark*

**Microstructure development in semi-liquid shortenings upon storage.** Kato Rondou\*, *UGent, Belgium*

**Relating polymorphic transition and triglyceride composition.** Julia Seilert\*, Eckhard Flöter, *Food Process Engineering, Technical University of Berlin, Germany*

## General Health and Nutrition I

### HEALTH AND NUTRITION

*Chairs: Matthew Picklo, USDA ARS, USA; and Ambria Crusan, St. Catherine University, USA*

Monday, May 2, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

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**Improved Mediterranean diet pattern scores by increasing Omega-3 containing foods in U.S. adult diets.** Ambria Crusan\*<sup>1</sup>, Francine Overcash<sup>2</sup>, <sup>1</sup>*Nutrition and Dietetics, St. Catherine University, United States;* <sup>2</sup>*Department of Food Science and Nutrition, University of Minnesota—Twin Cities, United States*

**New methods using natural abundance carbon isotope ratio analysis to measure the turnover of docosahexaenoic acid in preclinical models.** Richard Bazinet\*, *Nutritional Sciences, University of Toronto, Canada*

**Wheat bran protects vitamin A from oxidation during storage.** Eline Van Wayenbergh\*, Niels A. Langenaeken, Imogen Foubert, Christophe M. Courtin, *KU Leuven, Belgium*

**Targeting inflammation and mitochondria with dietary linoleic acid for cardiometabolic health—when research comes full circle.** Martha A. Belury\* (**Ralph Holman Lifetime Achievement Award Winner**), *Nutritional Sciences, Ohio State University, United States*

## Green Chemistry and Oleochemicals I

### INDUSTRIAL OIL PRODUCTS

Chairs: Helen Ngo, USDA ARS ERRC, USA; and Majher Sarker, USDA, USA

Monday, May 2, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Green Chemistry and Oleochemicals sessions cover topics such as chemically modified animal fats; biosurfactants and ecolabels; soluble soybean polysaccharide film; green engineering in process assessment; bio-derived epoxy-amine formulations; potential of birch bark extracts; p-cymene applications; estolides; corrosivity of biofeedstocks; utilization of soapstock; and environmentally acceptable lubricants.*

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**Innovations in high performance, environmentally acceptable lubricants (EALs) in lubricant applications.** Mark Miller\*, *Biosynthetic Technologies, United States*

**Serendipitous production of industrially useful p-cymene by catalytic dehydration and isomerization of perillyl alcohol.** Bryan R. Moser\*<sup>1</sup>, Michael A. Jackson<sup>2</sup>, Kenneth M. Doll<sup>1</sup>, <sup>1</sup>*Bio-Oils Research Unit, USDA ARS NCAUR, United States*; <sup>2</sup>*Renewable Product Technology Research Unit, USDA ARS NCAUR, United States*

**Investigation of the physical and tribological properties of alkyl-branched chicken fat.** Majher I. Sarker\*<sup>1</sup>, Hailemichael Yosief<sup>2</sup>, Grigor Bantchev<sup>3</sup>, Robert Dunn<sup>2</sup>, Steven Cermak<sup>2</sup>, <sup>1</sup>*Sustainable Biofuel and Co-Product Research Unit, USDA, United States*; <sup>2</sup>*USDA, United States*; <sup>3</sup>*NCAUR, USDA/ARS, United States*

**Quantifying corrosive behavior of triacylglycerol feedstocks under elevated temperature and pressure.** Deborah Liu\*, Nathan Levandovsky, Soheil Daryadel, Samyukta Shrivastav, Jiahui Li, Zhiheng Lyu, Qian Chen, Jessica Krogstad, Daniel Krogstad, *University of Illinois, United States*

**Sustainability aspects of the production and life stages of surfactants.** Douglas Hayes\*, *Biosystems Engineering and Soil Science, University of Tennessee, United States*

**Green engineering approach with microstructured coiled flow inverter for CMF and HMF continuous flow synthesis.** Frank Schael\*<sup>1</sup>, Patrick Rojahn<sup>1</sup>, Krishna Nigam<sup>2</sup>, <sup>1</sup>*Department of Chemical Engineering and Biotechnology, Hochschule Darmstadt University of Applied Science, Germany*; <sup>2</sup>*Department of Chemical Engineering, Indian Institute of Technology Delhi, India*

## How Processing Affects Emerging Economies

### PROCESSING

Sponsored by *Desmet Ballestra North America, Inc.*

Chairs: Juan Andrade, *University of Florida, USA*; and Annette Donnelly, *Soybean Innovation Lab, USA*

Monday, May 2, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*This session includes talks related to plant protein processing; mechanically expelled soy cake; a project to produce animal and human food from soy in Madagascar; USAID's perspective on oilseed production; and AOCS' program to connect agro-processors in Africa with volunteers in the processing industry.*

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**Oilseeds, innovation and the 4th agricultural revolution: USAID's perspective.** Michael Michener\*, *Bureau for Resilience and Food Security, U.S. Agency for International Development, United States*

**Improving and developing sustainable methods for plant protein processing.** Keshun Liu\* (**Alton E. Bailey Award Winner**), *Agricultural Research Service, US Dept. of Agriculture, United States*

**Evaluation of an alternative low-resource soy protein production method.** Ece Gulkirpik\*<sup>1</sup>, Juan E. Andrade Laborde<sup>2</sup>, Kephass Nowakunda<sup>3</sup>, <sup>1</sup>*University of Illinois at Urbana–Champaign, United States;* <sup>2</sup>*Food Science and Human Nutrition, University of Florida, United States;* <sup>3</sup>*National Agricultural Research Laboratories, United States*

**Supporting argo-processing in Africa.** Marjatta Eilitta\*<sup>1</sup>, Michael Boyer<sup>2</sup>, <sup>1</sup>*Cultivating New Frontiers in Agriculture, United States;* <sup>2</sup>*AWT Management Services, Inc., United States*

**Opportunity to assist in the expansion of high-quality soybean feed and edible oil production in Madagascar.** Bob Andriamifidy\*, *Agrival/Agrifarm, Agrival, Madagascar*

## Emerging Source of Proteins

### PROTEIN AND CO-PRODUCTS

*Chairs: James House, University of Manitoba, Canada; Rotimi Aluko, University of Manitoba, Canada; and Janelle Courcelles, Pulse Canada, Canada*

Monday, May 2, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Emerging Source of Proteins session includes: opportunities and challenges for insect protein-rich food ingredients; precision fermentation; processing opportunities and challenges; extraction and purification of lupin proteins; consumer preferences' impact on industry; and optimized infrared heat treatment and cowpea protein isolate.*

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**Combined effect of extraction and purification conditions on yield, composition, functional and structural properties of lupin proteins.** Sara Albe Slabi\*<sup>1</sup>, Odile Mesieres<sup>2</sup>, Christelle Mathé<sup>2</sup>, Mbalou Ndiaye<sup>1</sup>, Olivier Galet<sup>1</sup>, Romain Kapel<sup>2</sup>, <sup>1</sup>*Groupe AVRIL, France;* <sup>2</sup>*LRGP CNRS UMR7274, France*

**Opportunities and challenges for the development of insect protein-rich ingredients.** Alain Doyen\*, *Food Sciences, Université Laval, Canada*

**Spotlight on sustainability: How growing consumer preferences are changing the plant-based protein industry.** Jean Heggie\*<sup>1</sup>, Mac Marshall<sup>2</sup>, <sup>1</sup>*U.S. Soy, United States;* <sup>2</sup>*United Soybean Board, United States*

**Animal-free protein production using precision fermentation.** Fei Luo\*, Pratish Gawand, Ondrej Halgas, Sagar Lahiri, *Liven Proteins Corp., Canada*

**Effect of optimised infrared heat treatment on composition structure and gelation properties of cowpea protein isolate.** Opeoluwa M. Ogundele\*<sup>1</sup>, Opeyemi Alabi<sup>2</sup>, Oluwatosin A. Ijabadeniyi<sup>3</sup>, Oluwafemi A. Ogundele<sup>1</sup>, <sup>1</sup>*University of Johannesburg, South Africa;* <sup>2</sup>*Biotechnology and Food Technology, Durban University of Technology, South Africa, South Africa;* <sup>3</sup>*Durban University of Technology, South Africa*

**Processing opportunities and challenges for plant-based proteins.** Buddhi Lamsal\*<sup>1</sup>, Bibek Byanju<sup>2</sup>, <sup>1</sup>*Iowa State University (ISU), United States;* <sup>2</sup>*Food Science and Human Nutrition, Iowa State University, United States*

## Personal Care

### SURFACTANTS AND DETERGENTS

*Sponsored by Testfabrics Inc.*

*Chairs: Hongwei Shen, Colgate-Palmolive Company, USA; and Tony O'Lenick, Surfatech Corporation, USA*  
Monday, May 2, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Personal Care session features the Lamellar Gel Network model; substantiation of cosmetic claims; specialized pro-resolving mediators in skincare and skin health; new nanoemulsions developed for a facial cream and body lotion; and bar soap cracking analysis.*

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**Substantiation of cosmetic claims.** Martha L. Tate\*, *Tate Science LLC, United States*

**A novel anti-inflammatory class of lipids and their potential in Skincare and Skin Health.** Apostolos Pappas\*, *Entrinsic, United States*

**Understanding the modification of sebum cohesion upon air pollutant uptake.** Nicole Rosik\*<sup>1</sup>, Ian McRobbie<sup>2</sup>, Jon Preece<sup>3</sup>, Zhenyu Jason Zhang<sup>1</sup>, <sup>1</sup>*Chemical Engineering, University of Birmingham, United Kingdom*; <sup>2</sup>*Innospec, United Kingdom*; <sup>3</sup>*Chemistry, University of Birmingham, United Kingdom*

**Cosmetic emulsions under the new lamellar gel network model.** Ricardo Diez\*, *Master of Business and Science, Rutgers University, Canada*

**Nanoemulsion-based cosmetic containing only an extended surfactant.** Thaily Pernalete\*, Atilio Cordero, Mairis Guevara, Ana Forgiarini, *FIRP Laboratory, Universidad de Los Andes, Venezuela, United States*

**Bar soap cracking analysis by differential scanning calorimetry.** Ivan Romero\*<sup>1</sup>, Luis Miguel Lopez<sup>2</sup>, <sup>1</sup>*PD Bar Soaps, Colgate Palmolive, Mexico*; <sup>2</sup>*Early research, Colgate Palmolive, United States*

## HLD-NAC

### SURFACTANTS AND DETERGENTS

*Sponsored by Testfabrics Inc.*

*Chairs: Sanja Natali, ExxonMobil Chemical, USA; and Juliana Caixeta Guimaraes, Oxiteno, Brazil*  
Monday, May 2, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The HLD-NAC session includes mapping concentration-dependent behavior in the context of oil-in-water emulsion stability; assessment of characteristic curvature (Cc) of single surfactants; difficulties in determining the Cc; confusion in the meaning of the surfactant term in the HLD equation; HDL for advanced detergent formulation; and the HLD framework in agricultural applications.*

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**Direct assessment of the characteristic curvature (Cc) of single surfactants.** Edgar Acosta\*, Rafael Perez, Brandon Cordeiro, Carol Tan, Corrine Leng, *Chemical Engineering and Applied Chemistry, University of Toronto, Canada*

**Application of the HLD Framework to Agricultural Applications—Emulsion Concentrates.** Matthew G. Lyon\*, *Care Chemicals—Industrial Formulators, BASF, United States*

**Nonionic surfactant concentration effects in the HLD mapping of oil-in-water emulsion stability.** Gregory P. Dado\*<sup>1</sup>, Rachel M. Lang<sup>2</sup>, <sup>1</sup>*Research & Development, Stepan Co, United States*; <sup>2</sup>*Stepan Co, United States*

**Advanced detergent formulation design by progressing from hydrophilic/lipophilic balance (HLB) to hydrophilic-lipophilic deviation (HLD).** Parichat Phaodee\*<sup>1</sup>, Jeffrey Harwell<sup>2</sup>, David Sabatini<sup>2</sup>, <sup>1</sup>*Ecolab Inc., United States*; <sup>2</sup>*University of Oklahoma, United States*

**Cc variances as a result of sophorolipid lactone/lactonic acid ratios.** Eric Theiner\*<sup>1</sup>, Stephanie Hochstetler<sup>2</sup>, Christine Dunstan<sup>2</sup>, Leon Zheng<sup>3</sup>, Fiona Dong<sup>3</sup>, <sup>1</sup>*Evonik Industries, United States*; <sup>2</sup>*PL Cleaning Solutions, Evonik Corporation, United States*; <sup>3</sup>*PL Cleaning Solutions, Evonik, China (People's Republic)*

**Clearing the current confusion in the meaning of the surfactant term in the HLD equation.** Jean-Louis Salager\*, *FIRP Laboratory, Universidad de Los Andes, Venezuela*

## Monday | Late Afternoon

### General Analytical Methods

ANALYTICAL

*Chairs: Pierluigi Delmonte, US Food and Drug Administration, USA; and Lisa Clement, Cargill Inc., USA*  
Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

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**Detection of partially hydrogenated vegetable oils in food products based on fatty acid composition.** Pierluigi Delmonte\*<sup>1</sup>, Sarah Prebihalo<sup>1</sup>, Andrea Milani<sup>2</sup>, <sup>1</sup>*Office of Regulatory Science, Bioanalytical Methods Branch, U.S. Food & Drug Administration, United States*; <sup>2</sup>*U.S. Food & Drug Administration, United States*

**Analysis of hopanes by LC-GCxGC-ToF MS/FID, and their use for the confirmation of mineral oil contamination.** Carlos Martin Alberca\*<sup>1</sup>, Marian Steverink<sup>1</sup>, Torsten Tonak<sup>2</sup>, Thomas Gude<sup>2</sup>, <sup>1</sup>*Cargill, Global Edible Oils Solutions, Europe; R&D, Cargill, Netherlands*; <sup>2</sup>*Swiss Quality Testing Services (SQTS), Switzerland*

**Development of a method for the identification and quantification of terpenes and cannabinoids in hemp using multidimensional gas chromatography and quadrupole-orbitrap mass spectrometry.** Sarah Prebihalo\*, Rahul S. Pawar, Geoffrey Dubrow, Pierluigi Delmonte, *Office of Regulatory Science, Bioanalytical Methods Branch, U.S. Food & Drug Administration, United States*

**Isolation and purification phenolic compounds in California olive pomace by pilot-scale C18 gel chromatography.** Hefei Zhao\*, Selina Wang, *Department of Food Science and Technology, University of California, Davis, United States*

**Enhancing techno-functional and bioactive properties of whey proteins by conjugation with quercetin using combined treatment of redox pair and ultrasonication.** Waqas N. Baba\*, Sajid Maqsood, *Food Science, UAE University, United Arab Emirates*

## Biosurfactants

### BIOTECHNOLOGY

Joint session with the Surfactants and Detergents Division

*Sponsored by Testfabrics Inc.*

*Chairs: Phil Vinson, Procter & Gamble Co, USA; George Smith, Sasol, USA; and Douglas Hayes, University of Tennessee, USA*

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Biosurfactants session highlights a method of synthesizing  $\alpha$ -monostearin for cleaner large-scale production of  $\alpha$ -monoglycerides; the potential of sophorolipids as transport carriers; overview of the properties of oleo-furan surfactants; biopolymer-biosurfactant systems; and molecular simulation for biosurfactant-based cosmetic formulations.*

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**Selective synthesis of alpha monoglycerides by clean method: Techno-economic and environmental assessment.** Ahmad Mustafa\*<sup>1</sup>, Reham Mohsen<sup>2</sup>, Fumiya Niikura<sup>3</sup>, <sup>1</sup>General Systems Engineering, October University for Modern Sciences and Arts (MSA), Egypt; <sup>2</sup>Faculty of Biotechnology, October University for Modern Sciences and Arts (MSA), Egypt; <sup>3</sup>Lion Corporation, Japan

**Sugar for hydrophobes? Fermentation to palm-free detergent alcohols at scale.** Risha Bond\*, Genomatica, Inc., United States

**Oleo-furan surfactants as fully biorenewable, carcinogen-free drop-in replacements for commercial anionic surfactants.** Shawn Eady\*, Sironix Renewables, United States

**The role of sophorolipid as carrier of active substances.** Glen Lelyn Quan\*<sup>1</sup>, Michiaki Araki<sup>1</sup>, Yoshihiko Hirata<sup>2</sup>, Kentaro Matsumiya<sup>3</sup>, Yasuki Matsumura<sup>4</sup>, <sup>1</sup>Biochemical Laboratory, Saraya Co., Ltd., Japan; <sup>2</sup>Product Development Division and Biochemical Laboratory, Saraya Co., Ltd., Japan; <sup>3</sup>Graduate School of Agriculture, Kyoto University, Japan; <sup>4</sup>Research Institute for Sustainable Humanosphere, Kyoto University, Japan

**Biosurfactants and biopolymers: Between interactions, orthogonality and mutual responsivity.** Niki Baccile\*, Chloé Seyrig, Alexandre Poirier, Sorbonne Université, France

**Molecular simulation as a tool for the design of biosurfactant-based cosmetic formulations.** Benjamin Coscia\*<sup>1</sup>, Andrea Browning<sup>1</sup>, Jeffrey Sanders<sup>2</sup>, Mat Halls<sup>1</sup>, <sup>1</sup>Schrodinger, United States; <sup>2</sup>Materials Science, Schrodinger, United States

## Fat Crystallization II—Solid-state Structure

### EDIBLE APPLICATIONS TECHNOLOGY

*Chairs: Alejandro Marangoni, University of Guelph, Canada; and Eckhard Floter, Technical University Berlin, Germany*

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Fat Crystallization sessions feature talks concerning cupuassu fat; oil binding capacity and oil loss; examples of x-ray scattering; the filterability of oil slurries; Monte carlo simulations and comparison with x-ray scattering; TAG molecular composition; semi-liquid shortenings; alkyl chains in crystals; and isotropic liquid state of triacylglycerols.*

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**Exploring lipid structure and phases with x-ray scattering.** Scott Barton\*, Xenocs Inc., United States

**Isotropic liquid state of triacylglycerols: The starting point of fats and oils crystallization.** Daniel Golodnizky\*<sup>1</sup>, Yulia Shmidov<sup>2</sup>, Ronit Bitton<sup>3</sup>, Carlos E. S. Bernardes<sup>4</sup>, Maya Davidovich-Pinhas<sup>5</sup>, <sup>1</sup>*Biotechnology and Food Engineering, Technion Israel Institute of Technology, Israel;* <sup>2</sup>*Duke University, Israel;* <sup>3</sup>*Ben-Gurion University of the Negev, Israel;* <sup>4</sup>*Faculdade de Ciências Universidade de Lisboa, Portugal;* <sup>5</sup>*Technion Israel Institute of Technology, Israel*

**USAXS and SAXS data: Their interpretation and the organization of alkyl chains in crystals.** Fernanda Peyrone<sup>1</sup>, David A. Pink<sup>2</sup>, Joseph Cooney<sup>3</sup>, Silvana Martini<sup>3</sup>, <sup>1</sup>*Food Science, University of Guelph, Canada;* <sup>2</sup>*Physics/Food Science, St. Francis Xavier University/University of Guelph, Canada;* <sup>3</sup>*Utah State University, United States*

**Molecular structures of triacontane, stearic acid and behenyl lignocerate crystals: Monte Carlo simulations and comparison with x-ray scattering.** David A. Pink<sup>1</sup>, Joseph Cooney\*<sup>2</sup>, Fernanda Peyrone<sup>3</sup>, Silvana Martini<sup>4</sup>, <sup>1</sup>*Physics/Food Science, St. Francis Xavier University/University of Guelph, Canada;* <sup>2</sup>*Department of Nutrition, Dietetics and Food Sciences, Utah State University, United States;* <sup>3</sup>*Food Science, University of Guelph, Canada;* <sup>4</sup>*Utah State University, United States*

## Novel Edible Application of Food Proteins

### EDIBLE APPLICATIONS TECHNOLOGY

Joint session with the Protein and Co-Products Division

*Chairs: Pulari Krishnankutty Nair, Danone North America, USA; and Serpil Metin, Cargill Inc, USA*

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Novel Edible Application of Food Proteins session features the impact of cold plasma on protein structural and functional characteristics; replacing animal fat with faba bean emulsions; physicochemical properties of buckwheat albumin; and the use of pea proteins as emulsifiers in beverages.*

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**Plant protein functionalization: Exploring cold plasma.** Pam Ismail\*, *Department of Food Science and Nutrition, University of Minnesota, United States*

**Physicochemical properties of buckwheat albumin.** Rio Ogawa\*<sup>1</sup>, Kazumi Ninomiya<sup>2</sup>, Yusuke Yamaguchi<sup>1</sup>, Hitoshi Kumagai<sup>2</sup>, Hitomi Kumagai<sup>1</sup>, <sup>1</sup>*Bioresource Sciences, Nihon University, Japan;* <sup>2</sup>*Food Science and Nutrition, Kyoritsu Women's University, Japan*

**Utilization of mildly fractionated pea proteins for the development of heat-stable beverage emulsions.** Neksha Devaki\*, Supratim Ghosh, *University of Saskatchewan, Canada*

**Utilization of faba bean protein-stabilized structured emulsions in the replacement of animal fat in beef burgers.** Breann Squires<sup>1</sup>, Oluwafemi J. Coker<sup>2</sup>, Phyllis J. Shand<sup>2</sup>, Supratim Ghosh\*<sup>1</sup>, <sup>1</sup>*University of Saskatchewan, Canada;* <sup>2</sup>*Department of Food & Bioproduct Sciences, University of Saskatchewan, Canada*

### Panel discussion

## Omega-3s: How much do we currently know about omega-3 fatty acids?

### HEALTH AND NUTRITION

*Chairs: Ignacio Vieitez Osorio, Universidad de la República, Uruguay; and Rinat Rivka Ran-Ressler, Nestle Health Science, USA*

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*This session highlights recent research related to Omega-3s and the food system; conflicting information about Omega-3s and cardiovascular disease; challenges with Omega-3 dietary recommendations; the role of VLC-FA in skin tissue; and producing bioactive lipids from microalgae.*

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**How does knowledge of omega-3 fatty acids inform the food system?** J. Thomas Brenna\*, *Pediatrics, Chemistry, Nutrition, University of Texas, United States*

**Omega-3 and cardiovascular disease.** William S. William\*, *Fatty Acid Research Institute, United States*

**Challenges in proposing omega-3 fatty acid recommendations for the public.** Kristina Jackson\*, *Research, Omegaquant Analytics, LLC, United States*

**Omega-3 fats as pivotal elements integrating neural, immune and sympathetic nervous systems in aggression, depression and consciousness.** Joseph Hibbeln\*, *Psychiatry and Mental Health, Barton Health, South Lake Tahoe, United States*

**Novel n-3 very-long-chain polyunsaturated fatty acids and their potential role in skin tissue.** Martina Torrisen\*<sup>1</sup>, Bente Ruyter<sup>2</sup>, Elisabeth Ytteborg<sup>3</sup>, Harald Svensen<sup>1</sup>, Tone-Kari Østbye<sup>4</sup>, Astrid Nilsson<sup>4</sup>, Iren Stoknes<sup>5</sup>, Gerd Marit Berge<sup>4</sup>, Marta Bou Mira<sup>6</sup>, <sup>1</sup>*Epax, Norway*; <sup>2</sup>*Nutrition, Nofima, Norway*; <sup>3</sup>*Fish Health, Nofima, Norway*; <sup>4</sup>*Nofima, Norway*; <sup>5</sup>*R&D, Epax Norway AS, Norway*; <sup>6</sup>*Nutrition and Feed Technology, Nofima, Norway*

## New Uses of Glycerine

### INDUSTRIAL OIL PRODUCTS

*Chairs: Franck Dumeignil, University of Lille, France; and Dharma Kodali, University of Minnesota, USA*  
Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The New Uses of Glycerine session includes the topics of electro-oxidation of glycerol; N-monoallyl anilines; Ca-hydroxyapatites as glycerol polymerization catalysts; and process design for glyceric acid.*

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**Electro-oxidation of glycerol and diglycerol in the presence of Pt or Pd-based electrocatalyst follows by the reductive amination of the products obtained.** Bitty Serge Roméo Kouamé, Karine De Oliveira Vigier\*, Stève Baranton, Christophe Coutanceau, *IC2MP, Université de Poitiers, CNRS, France*

**Process design for efficient production from glycerol into high-value chemicals.** Tsutomu Chida\*<sup>1</sup> (*Industrial Oil Products Division Student Award Winner*), Kousuke Hiromori<sup>1</sup>, Naomi Shibasaki-Kitakawa<sup>1</sup>, Naoki Mimura<sup>2</sup>, Aritomo Yamaguchi<sup>2</sup>, Atsushi Takahashi<sup>1</sup>, <sup>1</sup>*Tohoku University, Japan*; <sup>2</sup>*National Institute of Advanced Industrial Science and Technology (AIST), Japan*

**Glycerol polymerization over stable and selective calcium hydroxyapatite.** Negissa Ebadi Pour<sup>1</sup>, Sébastien Paul<sup>1</sup>, Benjamin Katryniok<sup>1</sup>, Franck Dumeignil\*<sup>2</sup>, <sup>1</sup>*Centrale Lille Institut, France*; <sup>2</sup>*Univ. Lille, France*

**Selective monoallylation of anilines to form fine chemicals using allyl alcohol derived from glycerol.** Yoshihiro Kon\*, *Interdisciplinary Research Center for Catalytic Chemistry, AIST, Japan*

**Panel discussion**



## General Phospholipid

### PHOSPHOLIPID

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

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**Recent developments on thin film and short path evaporation technologies for edible oils processing.**, Ernesto Hernandez\*<sup>2</sup>, Rob Reintjes<sup>1</sup>, <sup>1</sup>Artisan Industries Inc., United States; <sup>2</sup>Advanced Lipids, United States

**Synthesis of complex phospholipid species.** Oliver Bogojevic\*<sup>1</sup>, Zheng Guo<sup>1</sup>, Carl Arevang<sup>2</sup>, <sup>1</sup>Department of Biological and Chemical Engineering, Aarhus University, Denmark; <sup>2</sup>Larodan AB, Sweden

**Demonstrating the viability of implementing phospholipases in enzymatic degumming of rapeseed oil.** Chinmayi Bhatt\*, Oils & Fats Technical Service, Novozymes, Denmark

**Enzymatic modification of lecithin for improved antioxidant activity in combination with tocopherol in emulsions and bulk oil.** Mitchell Culler\*, Ipek Bayram, Eric A. Decker, Food Science, University of Massachusetts, Amherst, United States

**Strategies for protecting functional components of chia oil by emulsion-based delivery systems with sunflower lecithin.** Luciana Julio<sup>1</sup>, Claudia Copado<sup>1</sup>, Vanesa Ixtaina<sup>1</sup>, Mabel Tomas\*<sup>2</sup>, <sup>1</sup>CIDCA-CONICET UNLP, Argentina; <sup>2</sup>CIDCA-UNLP, Argentina

## Processing Basics—Palm Oil

### PROCESSING

Sponsored by Desmet Ballestra North America, Inc.

Chairs: Alan Paine, ARP Lipids Consulting, UK; Leon Pablo Espinosa, Desmet Ballestra North America Inc, USA; and Syed Mohd Hadi Syed Hilmi, Sime Darby Plantation Research Sdn. Bhd., Malaysia

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Processing Basics—Palm Oil session includes: fractionation; high oleic palm oil; sustainability; basic steps of processing; the industry in Ecuador and Latin America; and deodorization.*

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**Sustainability and oil palm practices.** Syed Mohd Hadi Syed Hilmi\*<sup>1</sup>, Nurul Hayati Ibrahim<sup>2</sup>, <sup>1</sup>Processing Technology, Sime Darby Plantation Research Sdn. Bhd., Malaysia; <sup>2</sup>Sustainability Compliance, Sime Darby Plantation Sdn Bhd, Malaysia

**The palm oil crop in Ecuador and its extraction.** Sebastian Alzamora\*, Extractora la Joya, Ecuador

**Palm oil basic steps to process this oil.** Anibal Urizar\*, Sales, Desmet Ballestra Latin America sa de CV, Mexico

**Fractionation of palm and palm kernel oils for designing high quality commodity and specialty fats.** Veronique J. Gibon\*<sup>1</sup>, Marc Kellens<sup>2</sup>, <sup>1</sup>R&D Department, Desmet Ballestra Group SA, Belgium; <sup>2</sup>Desmet Ballestra Group, Belgium

**Optimization of palm oil deodorization process conditions by RSM.** Fatma Nevin Basaran\*<sup>1</sup>, Ferda Altuner<sup>1</sup>, Özgür Anuk<sup>1</sup>, Onur Özdikicierler<sup>2</sup>, Muzaffer Kamilçelebi<sup>1</sup>, Ömer Faruk Kan<sup>1</sup>, Ali Yasin Karahan<sup>1</sup>, Onur Erdemir<sup>1</sup>, <sup>1</sup>R&D, Besler Gıda Ve Kimya San Ve Tic A.Ş., Turkey; <sup>2</sup>Faculty of Engineering—Food Engineering Department, Ege University, Turkey

**High oleic palm oil: Uses and applications.** Juan Fernando Munoz\*, *R&D-Innovation, Danec SA, Ecuador*

## Novel Edible Application of Food Proteins

PROTEIN AND CO-PRODUCTS

*Chairs: Pulari Krishnankutty Nair, Danone North America, USA; and Serpil Metin, Cargill Inc, USA*

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Edible Applications Technology Division. See page 15 for details.

## Biosurfactants

SURFACTANTS AND DETERGENTS

*Sponsored by Testfabrics Inc.*

*Chairs: Phil Vinson, Procter & Gamble Co, USA; George Smith, Sasol, USA; and Douglas Hayes, University of Tennessee, USA*

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Biotechnology Division. See page 14 for details.

## Surfactant LCA/Sustainability

SURFACTANTS AND DETERGENTS

*Sponsored by Testfabrics Inc.*

*Chairs: Julian Barnes, Shell Global Solutions International B.V., Netherlands; and Kathleen Stanton, American Cleaning Institute, USA*

Monday, May 2, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Surfactant LCA/Sustainability session includes Henkel's sustainability goals; impacts on laundry care and fabric protection; and the challenges and limitations of LCA.*

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**Henkel's sustainability goals.** Janet Coope-Epstein\*<sup>1</sup>, Thorsten Bastigkeit<sup>2</sup>, Arndt Scheidgen<sup>3</sup>, Uta Steffan<sup>4</sup>, <sup>1</sup>*Laundry & Home Care, Henkel, United States*; <sup>2</sup>*Future Science, Henkel, Germany*; <sup>3</sup>*Regulatory, Henkel, Germany*; <sup>4</sup>*Sustainability, Henkel, Germany*

**Measuring sustainability—strengths and limitations of life cycle assessments for surfactants and detergents.** Franziska Enzmann\*, *Evonik Industries, Germany*

**New developments in surfactants for laundry and hand dish detergents.** Phillip K. Vinson\*, *Procter & Gamble/Fabric & Home Care Technology, United States*

**Delivering value to home care markets through cradle-to-grave life cycle assessments (LCAs).** Scott Tuchinsky\*, *Consumer Care, Croda Inc., United States*

## Tuesday | Early Morning

### Authentication of Avocado and other High-Value Oils

ANALYTICAL

Chairs: Selina Wang, University of California, Davis, USA; and Jill Winkler-Moser, USDA ARS NCAUR, USA  
Tuesday, May 3, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Authentication of Avocado and Other High-Value Oils session discusses how avocado and other high-value oils are gaining in popularity but lack standards for purity and quality; new methods of testing for adulteration in avocado and aragon oils using LF-NMR and NMR; how region, fruit quality and other factors influence the chemical composition of avocados and affect standards; progress of the Codex Committee on Fats and Oils on the creation of world-wide standards for avocado oil.*

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**Update on the progress of the Codex Alimentarius standard for avocado oil.** Jill Winkler-Moser\*, USDA ARS NCAUR, United States

**Avocado oil chemical composition varies with harvest time, growing region, and fruit quality, demonstrating important considerations for standard development.** Hilary Green\* (**Analytical Division Student Award Winner**)

, Selina Wang, Department of Food Science and Technology, University of California, Davis, United States

**Differentiating avocado oil from other vegetable oils using low-field NMR spectroscopy and chemometrics.** Fenfen Tang\*<sup>1</sup>, Hilary Green<sup>2</sup>, Selina Wang<sup>2</sup>, Emmanuel Hatzakis<sup>1</sup>, <sup>1</sup>Department of Food Science and Technology, The Ohio State University, United States; <sup>2</sup>Department of Food Science and Technology, University of California, Davis, United States

**High throughput authenticity screening of high value edible oils with benchtop NMR.** James Sagar\*<sup>1</sup>, Marcel Lachenmann<sup>2</sup>, Rachel Brignall<sup>1</sup>, Yvonne Gunning<sup>3</sup>, Kate Kemsley<sup>3</sup>, <sup>1</sup>Oxford Instruments, United Kingdom; <sup>2</sup>Oxford Instruments Inc., United States; <sup>3</sup>Quadram Institute Bioscience, United Kingdom

Panel discussion

### Standard/Novel Analytical Methods for Protein Analysis in Food

ANALYTICAL

Joint session with the Protein and Co-Products Division

Chairs: Sneha Bhandari, Independent Consultant, USA; Janitha Wanasundara, Agriculture and Agri-Food Canada, Canada; and Frederic Baudouin, Improve SAS, France

Tuesday, May 3, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*This session features measuring chymotrypsin inhibitor activity; the need for standardization of protein functionality methodologies; nitrogen to protein conversion factors; prediction of protein and amino acid contents in lentils; and cross-reactivity risks of canary seed to related grains.*

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**Nitrogen to protein conversion factors—an update and practical guidance for their use and for determining specific factors for novel protein sources.** Elaine S. Krul\*, EKSci, LLC, United States

**Allergenicity risk assessment of glabrous canaryseed as novel food protein source.** Lamia L'Hocine\*<sup>1</sup>, Mélanie Pitre<sup>2</sup>, Emily Mason<sup>2</sup>, Allaoua Achouri<sup>2</sup>, <sup>1</sup>Saint-Hyacinthe Research and Development Centre, Agriculture & Agri-Food Canada, Canada; <sup>2</sup>Agriculture and Agri-Food Canada, Canada

**Methodological inconsistencies in novel plant protein functional properties, and improvements for water absorption capacity determinations.** Analiese Goins\*, Sara Griffin, *Department of Food Science and Nutrition, California State University, Fresno, United States*

**Developing an optimized method for measuring chymotrypsin inhibitor activity in protein products.** Keshun Liu\*, Mike Woolman, *Agricultural Research Service, US Dept. of Agriculture, United States*

**Prediction of protein and amino acid contents in whole and ground lentils using near-infrared reflectance spectroscopy.** Jiayi Hang\*<sup>1</sup>, Da Shi<sup>1</sup>, James House<sup>1</sup>, Jason Neufeld<sup>1</sup>, Kirstin Bett<sup>2</sup>, <sup>1</sup>*University of Manitoba, Canada;* <sup>2</sup>*University of Saskatchewan, Canada*

## Biorenewable Polymers

### BIOTECHNOLOGY

Joint session with the Industrial Oil Products Division

*Chairs: Eric Cochran, Iowa State University, USA; and Richard Ashby, USDA ARS ERRC, USA*

Tuesday, May 3, 2022 | 7:05–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Biorenewable Polymers session features talks covering environmentally friendly coating products using soybean oil; synthesizing monomers with fatty acids; renewable lipid-based micelle nanoparticles as amphiphilic drug carriers; photoinduced reactions to produce composites from biobased monomers; extending the lifespan of roofing shingles with soybean oil-based polymeric coatings; industrial uses of cashew nut shell liquid; and epoxy resins made from epoxidized algal, soybean, and linseed oils.*

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**Cashew NutSell Liquid (CNSL), a promising source of biobased additives and building blocks for the industry.** Benoit Briou\*, Audrey Roy, Lucas Jago, Adélaïde Gartili; *R&D, Orpia Innovation/ICGM, France*

**Plant oil based radically polymerizable monomers for sustainable polymers.** Sylvain Caillol\*, *ICGM, France*

**Epoxy materials with triglyceride structure.** Zoran S. Petrovic\*, Jian Hong, Dragana Radojic, *Kansas Polymer Research Center, Pittsburg State University, United States*

**Bio-based cationic waterborne polyurethane dispersions from high oleic soybean oil.** Jasna Djonlagic\*, Milica Lovric Vukovic, Jian Hong, Zoran S. Petrovic, *Kansas Polymer Research Center, Pittsburg State University, United States*

**Biobased composites from renewable monomers and cellulosic reinforcements by photoinduced processes.** Sara Dalle Vacche\*, *Department of Applied Science and Technology, Politecnico di Torino, Italy*

**Soybean oil-based polymeric coatings for the rejuvenation of old asphalt shingles.** Nacu B. Hernandez\*, Andrew Becker, Michael Forrester, Eric Cochran, *Chemical and Biological Engineering, Iowa State University, United States*

**Lipid derived block copolymers as amphiphilic nanocarriers for targeted delivery.** Aman Ullah\*, Huiqi Wang, Rehan Pradhan, *AFNS, University of Alberta, Canada*

## Implications of Lipids Structuring in Food Applications I

### EDIBLE APPLICATIONS TECHNOLOGY

Chairs: Nuria Acevedo, Iowa State University, USA; and Sabine Danthine, University of Liege, Belgium

Tuesday, May 3, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Implications of Lipids Structuring in Food Applications sessions highlight fat structuring; replacing semi-solid fats; developing gels from algal oils; candelilla wax, carnauba wax and beeswax emulsions; and wax-based oleogels.*

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**Fat structuring in confectionery applications: Evaluation of raw materials and its impact on processing and functionality.** Miguel Bootello\*<sup>1</sup>, Jeanine Werleman<sup>2</sup>, Imro Zand<sup>2</sup>, <sup>1</sup>Bunge Loders Croklaan, Spain; <sup>2</sup>Bunge Loders Croklaan, Netherlands

**Properties of wax-hempseed oil oleogels and their use for margarines.** Hong-Sik Hwang\*<sup>1</sup>, Sanghoon Kim<sup>1</sup>, Jill Winkler-Moser<sup>1</sup>, Suyong Lee<sup>2</sup>, Sean Liu<sup>1</sup>, <sup>1</sup>USDA ARS NCAUR, United States; <sup>2</sup>Sejong University, United States

**Characterization of the mechanical properties, freeze-thaw stability, and oxidative stability of edible, high-lipid rice bran wax-gelatin biphasic gels.** Nuria Acevedo<sup>1</sup>, Rodrigo Tarté<sup>2</sup>, Karin Cho\*<sup>3</sup>, <sup>1</sup>Griffith Foods, United States; <sup>2</sup>Meat Science, Iowa State University, United States; <sup>3</sup>Food Science and Human Nutrition, Iowa State University, United States

**Study of microstructure entropy to optimize wax-based oleogel production technology.** Varuzhan Sarkisyan\*, Roman Sobolev, Yuliya Frolova, Alla Kochetkova, Federal Research Center of Nutrition, Biotechnology and Food Safety, Russia

## Bioactive Lipid Mediators

### HEALTH AND NUTRITION

Sponsored by K.D. Pharma Bexbach GmbH

Chairs: Philip C. Calder, University of Southampton, UK; and Gerard Bannenberg, GOED Omega-3, USA

Tuesday, May 3, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Bioactive Lipid Mediators session includes talks on a nutraceutical approach for preventing and treating Alzheimer's disease; effects of EPA; enzymatically-oxidized lipids; milk fat globules; ALA and T cells; and plasma lipoproteins.*

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**The biosynthesis and action of enzymatically-oxidized lipids during innate immunity and inflammation.** Valerie O'Donnell\*, Cardiff University, United Kingdom

**Eicosapentaenoic acid ethyl esters prevent obesity-driven impairments to glucose homeostasis through the biosynthesis of downstream hydroxylated metabolites.** Saame (Raz) Shaikh\*, Abrar Al-Shaer, Anandita Pal, Ian Carroll, Nutrition, UNC Chapel Hill, United States

**Enrichment of brain DHA through dietary LPC EPA/ DHA-Potential application for the Alzheimer disease.** Sugasini Dhavamani\* (**Health and Nutrition Division New Investigator Research Award Winner**), Poorna CR Yalagala, Papasani V. Subbaiah, Medicine, University of Illinois at Chicago, United States

**$\alpha$ -Linolenic acid metabolism in human CD3<sup>+</sup> T cells favours oxylipin production over polyunsaturated fatty acid synthesis.** Johanna Von Gerichten\*<sup>1</sup>, Annette Holland<sup>2</sup>, Nicola Irvine<sup>2</sup>, Elizabeth Miles<sup>2</sup>, Philip

Calder<sup>2</sup>, Karen Lillycrop<sup>3</sup>, Graham Burdge<sup>3</sup>, Barbara Fielding<sup>4</sup>, <sup>1</sup>*Nutritional Sciences, University of Surrey, United Kingdom*; <sup>2</sup>*School of Human Development and Health, University of Southampton, United Kingdom*; <sup>3</sup>*University of Southampton, United Kingdom*, <sup>4</sup>*University of Surrey, United Kingdom*

**Intact milk fat globules as a dynamic encapsulation matrix for DHA, which *in situ* produces DHA-derived anti-inflammatory lipids.** Tana Hernandez Barrueta\*<sup>1</sup>, Nitin Nitin<sup>2</sup>, Ameer Y. Taha<sup>1</sup>, <sup>1</sup>*Food Science and Technology, University of California at Davis, United States*, <sup>2</sup>*Food Science and Technology/Biological and Agricultural Engineering, University of California at Davis, United States*

**Hydrolysis of hydroxy PUFA GPC of plasma lipoproteins by group IIA, V and X sPLA<sub>2</sub>s.** Arnis Kuksis\*, *University of Toronto, Canada*

## Panel discussion

## Biorenewable Polymers

### INDUSTRIAL OIL PRODUCTS

*Chairs: Eric Cochran, Iowa State University, USA; and Richard Ashby, USDA ARS ERRC, USA*  
Tuesday, May 3, 2022 | 7:05–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Biotechnology Division. See page 20 for details.

## Evaluating Antioxidant Efficacy via Accelerated Storage for Shelf-life Determination

### LIPID OXIDATION AND QUALITY

*Sponsored by BTSA*

*Chairs: Min Hu, Corbion, USA; Leqi Cui, Florida State University, USA; and Carolin Edinger, Anton Paar, Germany*

Tuesday, May 3, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*This session includes: rapid tests for identification of cannabis extract compositions; predictive model for adlehyde in mayonnaise; new, faster method for screening effect of antioxidants; and optimizing supercritical fluid technology.*

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**Supercritical extracts from olive leaves as natural antioxidants: Extraction optimization, characterization and evaluation.** Ignacio Vieitez Osorio\*<sup>1</sup>, Cecilia Dauber<sup>2</sup>, Tatiana Carreras<sup>2</sup>, Laura González<sup>2</sup>, Alberto Valdés<sup>3</sup>, Adriana Gámbaro<sup>2</sup>, Elena Ibañez<sup>3</sup>, <sup>1</sup>*PEDECIBA Quimica-UdelaR, Uruguay*, <sup>2</sup>*Universidad de la República, Uruguay*; <sup>3</sup>*Institute of Food Science Research (CIAL-CSIC), Spain*

**Determination of oxidation stability and shelf life of cannabis formulations.** Stuart Castillo, Drew Marquardt\*, *Chemistry and Biochemistry, University of Windsor, Canada*

**Quantitative and predictive modelling of lipid oxidation in mayonnaise.** John Van Duynhoven\*<sup>1</sup>, Donny Merckx<sup>2</sup>, Andries Swager<sup>3</sup>, Ewoud van Velzen<sup>2</sup>, Marie Hennebelle<sup>3</sup>, <sup>1</sup>*Unilever R&D Vlaardingen, Netherlands*; <sup>2</sup>*Unilever, Netherlands*; <sup>3</sup>*Wageningen University, Netherlands*

**Rapid small scale oxidation test: Screening the influence of antioxidants on food products.** Carolin Edinger\*, *Anton Paar Provetec GMBH, Germany*

**Modeling the kinetics of tocopherol degradation during the lag phase to predict shelf-life.** Jiakai Lu\*,  
*Food Science, University of Massachusetts Amherst, United States*

## General Processing (Energy, Sustainability, Future)

PROCESSING

*Sponsored by Clariant*

*Chairs: Darren Litle, Arisdyne Systems Inc, USA; and Ruchira Nandasiri, University of Manitoba, Canada*

Tuesday, May 3, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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**A world first funded by the European Union: Adaptation and startup of an U.K. hexane extraction plant to run on a 100% biobased solvent.** Laurence Jacques, Mickael Bartier\*; *EcoXtract, Pennakem Europe, France*

**Improving the efficiency and capacity of edible oil refineries.** Alan Paine\*, *ARP Lipids Consulting, United Kingdom*

**Process management**

Brent German\*, *Blind Corner Solutions LLC, United States*

**Utilization of controlled flow cavitation to minimize process inputs, energy, and waste while maximizing process yield, quality, and sustainability.** Darren Litle\*, *Arisdyne Systems, Inc., United States*

**Energy treasure hunts.** John Barry\*, *Barry Consulting Services LLC, United States*

**Organic solvent nanofiltration membrane for vegetable oil refining.** Mohammad Hossein Davood Abadi Farahani\*, *Seppure Ptd Ltd, Singapore*

## Standard/Novel Analytical Methods for Protein Analysis in Food

PROTEIN AND CO-PRODUCTS

*Chairs: Sneha Bhandari, Independent Consultant, USA; Janitha Wanasundara, Agriculture and Agri-Food Canada, Canada; and Frederic Baudouin, Improve SAS, France*

Tuesday, May 3, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Analytical Division. See page 19 for details.

## Interactions of Surfactants at Solid Surfaces

SURFACTANTS AND DETERGENTS

*Chairs: Brian Grady, University of Oklahoma, USA; and Geoffrey Pasciak, Promega Corp, USA*

Tuesday, May 3, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Interactions of Surfactants at Solid Surfaces session includes aqueous lubrication with an amphiphilic block copolymer; adsorption of switchable diamine surfactants; industrial cleaners containing hydroxyproline rich, natural proteins (HRPs); interaction of gastrointestinal lipases with plant lipid membranes; and the role of the solid surface chemistry (wettability and others) on the properties of microemulsion polymer thin films.*

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**Adsorption of switchable diamine surfactants on heterogeneous mineral surfaces.** Sibani Biswal\*,  
*Chemical & Biomolecular Engineering, Rice University, United States*

**Interfacial adsorption of gastrointestinal lipases onto heterogeneous biomimetic vegetal membranes.** Jeanne Duplessis-Kergomard\*<sup>1</sup>, Frédéric Carrière<sup>2</sup>, Gérard Lambeau<sup>3</sup>, Gilles Paboeuf<sup>1</sup>, Nathalie Barouh<sup>4</sup>, Pierre Villeneuve<sup>4</sup>, Claire Bourliou-Lacanal<sup>5</sup>, Véronique Vié<sup>1</sup>, <sup>1</sup>*Soft Matter, Institut de Physique de Rennes, Université De Rennes 1, France*; <sup>2</sup>*Enzymology of Supramolecular Systems, UMR7281 Bioenergetics and Protein Engineering laboratory, France*; <sup>3</sup>*Institut de Pharmacologie Moléculaire et Cellulaire (IPMC) UMR 7275, France*; <sup>4</sup>*CIRAD, France*; <sup>5</sup>*UMR IATE, INRAE/Univ Montpellier/Institut Agro, France*

**Microemulsion bicontinuous polymers thin films and their use as membranes.** Brandon Cordeiro\*,  
Edgar Acosta, *Chemical Engineering and Applied Chemistry, University of Toronto, Canada*

**Evaluation of alcohol ethoxylates for industrial & institutional hard surface cleaning.** Nelson E. Prieto\*<sup>1</sup>, David Benitez<sup>1</sup>, Christoph Groß-Heitfeld<sup>2</sup>, <sup>1</sup>*R&D, Applications, Sasol, United States*; <sup>2</sup>*R&D, Sasol, Germany*

**Hard surface cleaning formulations containing hydroxyproline rich, natural proteins (HRPs) can allow for easier sequential cleanings that reduce the need for harsh cleaning chemistries.** Eric Yezdimer\*<sup>1</sup>, Nina Ritterer<sup>2</sup>, Matthias Reihmann<sup>2</sup>, <sup>1</sup>*Gelita, United States*; <sup>2</sup>*Gelita AG, Germany*

**Aqueous lubrication with an amphiphilic block copolymer and its application.** Shinji Yamada\*, *R&D—Analytical Science Research, Kao Corporation, Japan*

## Tuesday | Late Morning

### Implications of Lipids Structuring in Food Applications II

#### EDIBLE APPLICATIONS TECHNOLOGY

*Chairs: Nuria Acevedo, Iowa State University, USA; and Sabine Danthine, University of Liege, Belgium*  
Tuesday, May 3, 2022 | 9:55–Noon EDT (Atlanta, USA; UTC-4)

*The Implications of Lipids Structuring in Food Applications sessions highlight fat structuring; replacing semi-solid fats; developing gels from algal oils; candelilla wax, carnauba wax and beeswax emulsions; and wax-based oleogels.*

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**Characterization and comparison of oleogels and emulgels prepared from *Schizochytrium* algal oil using monolaurin and MAG/DAG as gelators.** Joseph Hyatt\*, Siyu Zhang, Casimir Akoh, *Food Science and Technology, University of Georgia, United States*

**Crystallization of wax esters—a prerequisite to understand wax-based oleogels.** Henriette Brykczynski\*<sup>1</sup>, Eckhard Flöter<sup>2</sup>, <sup>1</sup>*Technical University Berlin, Germany*; <sup>2</sup>*Food Process Engineering, Technical University of Berlin, Germany*

**Structured water-in-oil emulsions developed with candelilla wax.** Jorge F. Toro-Vazquez\*<sup>1</sup>, Anaid De la Peña-Gil<sup>1</sup>, Miriam A. Charó-Alonso<sup>1</sup>, David Pérez-Martinez<sup>2</sup>, <sup>1</sup>*Food Physicochemistry, UASLP-FCQ, Mexico*; <sup>2</sup>*UASLP-FCQ, United States*

**Carnauba wax and beeswax as structuring agents for surfactant-free water-in-oleogels emulsions.** Ivana A. Penagos\*<sup>1</sup>, Juan S. Murillo Moreno<sup>2</sup>, Koen Dewettinck<sup>2</sup>, Filip Van Bockstaele<sup>2</sup>, <sup>1</sup>*Food Structure &*



## Lipids and the Microbiome

### HEALTH AND NUTRITION

Chairs: Jeanette Andrade, University of Florida, USA; and Melissa Pérez Santana, Impossible Foods, USA  
Tuesday, May 3, 2022 | 9:55–Noon EDT (Atlanta, USA; UTC-4)

*The Lipids and Microbiome session features talks on the relationship of gut organisms with branched chain fatty acids; metabolomics pipeline to accelerate the identification of microbiota-dependent metabolites; milk polar lipids and bile acid metabolism; phytosterols and obesity; cholesterol esterase and bioaccessibility; and a high-fat diet and placental function.*

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**The gut microbiome and dietary fatty acids.** J. Thomas Brenna\*, Pediatrics, Chemistry, Nutrition, University of Texas, United States

**Creating a metabolomics pipeline for investigating microbiome-host interactions.** Shuo Han\*, Microbiology and Immunology, Stanford University School of Medicine, United States

**Addition of cholesterol esterase substantially enhances phytosterol ester bioaccessibility in emulsions with different droplet sizes using a standardized *in vitro* digestion model.** Abigail Boyd\*<sup>1</sup>, Joey Talbert<sup>1</sup>, Nuria Acevedo<sup>2</sup>, <sup>1</sup>Food Science and Human Nutrition, Iowa State University, United States; <sup>2</sup>Griffith Foods, United States

**Lipidomic analysis of TRPC1 Ca<sup>2+</sup>-permeable channel-knock out mouse demonstrates a vital role in placental tissue sphingolipid and triacylglycerol homeostasis under high-fat diet.** Michael Bukowski\*<sup>1</sup>, Brij Singh<sup>2</sup>, James Roemmich<sup>3</sup>, Kate Larson<sup>3</sup>, <sup>1</sup>USDA-ARS Beltsville Human Nutrition Research Center, United States; <sup>2</sup>Department of Periodontics, UT Health San Antonio, United States; <sup>3</sup>USDA-ARS Grand Forks Human Nutrition Research Center, United States

**Impact of milk polar lipid supplementation on postprandial bile acid composition.** Mélanie Le Barz<sup>1</sup>, Cécile Vors<sup>2</sup>, Lydie Humbert<sup>3</sup>, Emilie Gaudiard<sup>3</sup>, Patrice Gaborit<sup>4</sup>, Stéphanie Lambert-Porcheron<sup>5</sup>, Lemlih Ouchchane<sup>6</sup>, Hubert Vidal<sup>7</sup>, Corinne Malpuech-Brugère<sup>8</sup>, Dominique Rainteau<sup>9</sup>, Marie-Caroline Michalski\*<sup>2</sup>, <sup>1</sup>CarMeN laboratory, UCBL1, France; <sup>2</sup>INRAE, Carmen Laboratory, UMR1397, France; <sup>3</sup>Biochemistry, Laboratory of Biomolecules, Sorbonne University, France; <sup>4</sup>Dairy Technology, Actalia, France; <sup>5</sup>Hospices Civils de Lyon, France; <sup>6</sup>Unité de Biostatistique-Informatique Médicale, Université Clermont Auvergne, CHU de Clermont-Ferrand, France; <sup>7</sup>CarMeN laboratory, INSERM, France; <sup>8</sup>UMR 1019 UNH, UFR de Médecine & Des Professions Paramédicales, University of Clermont Auvergne, France; <sup>9</sup>Biochemistry, Sorbonne University, France

**Anti-obesity potential of 4,4-dimethylsterols by inhibiting pancreatic lipase.** Tao Zhang\*<sup>1</sup>, Xingguo Wang<sup>2</sup>, <sup>1</sup>Jiangnan University, Netherlands; <sup>2</sup>Jiangnan University, China (People's Republic)

### Panel discussion

## Green Chemistry and Oleochemicals II

### INDUSTRIAL OIL PRODUCTS

Chairs: Helen Ngo, USDA ARS ERRC, USA; and Majher Sarker, USDA, USA  
Tuesday, May 3, 2022 | 9:55–Noon EDT (Atlanta, USA; UTC-4)

*The Green Chemistry and Oleochemicals sessions cover topics such as chemically modified animal fats; biosurfactants and ecolabels; soluble soybean polysaccharide film; green engineering in process assessment; bio-derived epoxy-amine formulations; potential of birch bark extracts; p-cymene applications; estolides; corrosivity of biofeedstocks; utilization of soapstock; and environmentally acceptable lubricants.*

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**Heat sealable soluble soybean polysaccharide based composite films containing gelatin and curcumin for oil packaging.** Jie Liu\*<sup>1</sup>, Yitong Dong<sup>2</sup>, Xuejing Zheng<sup>2</sup>, Keyong Tang<sup>2</sup>, <sup>1</sup>*School of Materials Science and Engineering, Zhengzhou University, China (People's Republic);* <sup>2</sup>*Zhengzhou University, China (People's Republic)*

**Evaluation of hybridized bio-based building blocks as coating materials.** Emre Kinaci\*, Sarah Salazar, Giuseppe Palmese, Joseph Stanzione, *Rowan University, United States*

**Converting birch bark extracts into bio-based thermosets.** Joseph Stanzione\*, John Chea, Kylie Howard, Kirti Yenkie, *Rowan University, United States*

**Correlating viscosity of 2-ethylhexyl oleic estolide esters to their molecular weight.** Grigor Bantchev\*<sup>1</sup>, Steven Cermak<sup>2</sup>; <sup>1</sup>*NCAUR, USDA/ARS, United States;* <sup>2</sup>*USDA, United States*

**Proposal of complete utilization system of soapstock by electrolysis.** Kousuke Hiromori\*, Keisuke Katagami, Atsushi Takahashi, Naomi Shibasaki-Kitakawa, *Tohoku University, Japan*

**Enzyme developments in oleochemicals and surfactants.** Martin Rushworth\*, Hon Seng Yee, *Novozymes Malaysia, Malaysia*

## General Industrial Oil Products

### INDUSTRIAL OIL PRODUCTS

*Chairs: Darrell Sparks, Mississippi State University, USA; and B.K. Sharma, USDA ARS ERRC, USA*  
Tuesday, May 3, 2022 | 9:55–Noon EDT (Atlanta, USA; UTC-4)

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**Advancing PCMO (passenger car motor oil) with sustainable high oleic soybean base oil.** Mark Miller\*<sup>1</sup>, Matthew Kriech<sup>2</sup>, <sup>1</sup>*Biosynthetic Technologies, United States;* <sup>2</sup>*Innoleo LLC, United States*

**Oil produced from Ghana cocoa bean for potential industrial applications.** Samuel K. Tulashie<sup>1</sup>, Daniel Doodoo\*<sup>2</sup> (**Industrial Oil Products Division Junior Researcher Travel Grant Winner**), Godfred Appiah<sup>3</sup>, Francis Kotoka<sup>4</sup>, Kingsley Enoch Adukpoh<sup>5</sup>, <sup>1</sup>*Industrial Chemistry Section, Department of Chemistry; University of Cape Coast, Ghana;* <sup>2</sup>*Department of Chemistry, Aix-Marseille University, Ghana;* <sup>3</sup>*Department of Water Supply, Sanitation and Environmental Engineering, IHE Delft Institute of Water Education, Czech Republic;* <sup>4</sup>*Department of Green Chemistry and Technology, Ghent University, Belgium;* <sup>5</sup>*Chemistry, Kwame Nkrumah University of Science and Technology, Ghana*

**Innovations in high performance, environmentally acceptable lubricants (EALs) in lubricant applications.** Mark Miller\*, *Biosynthetic Technologies, United States*

**Eutectic solvent as co-solvent for oil extraction from plant seeds.** Adeeb Hayyan\* (**Industrial Oil Products Division Junior Researcher Travel Grant Winner**), *Department of Chemical Engineering, University of Malaya, Malaysia*

**Membrane-based oil and biodiesel washing.** N. Kocherginsky\*, *UIUC, United States*

**Energy conservation in solvent extraction plants of oilseeds.** Sadru H. Dada\*, *Consultancy, Self Employed, United Arab Emirates*

## Food Preservation Strategies: Combination of Antioxidants with Other Actives in Food Systems

LIPID OXIDATION AND QUALITY

*Sponsored by BTSa*

*Chairs: Marie Hennebelle, Wageningen University, Netherlands; and Liyun Ye, Finless Foods, Inc., USA*  
Tuesday, May 3, 2022 | 9:55–Noon EDT (Atlanta, USA; UTC-4)

*This session includes topics covering rosemary abstract combos; sunflower oleogels in active packaging; production of hydrolysates from cod side-streams; fractionation of potato protein hydrolysates; and plant protein-stabilized emulsions.*

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**Role of natural antioxidants for favoring dual functionality in meat and poultry products.** Divek Nair\*, Alessandra Pham-Mondala, Lorna Polovina, Andrew Lee, *Food Protection, Kalsec® Inc., United States*

**Enzymatic production of antioxidative and antimicrobial hydrolysates from cod solid side-streams.** Ann-Dorit Moltke Sørensen\*<sup>1</sup>, Dimitra Marinou<sup>2</sup>, Charlotte Jacobsen<sup>1</sup>, <sup>1</sup>*National Food Institute, Technical University of Denmark, Denmark*; <sup>2</sup>*Chr. Hansen, Denmark*

**Physical and oxidative stability of emulsions stabilized with fractionated potato protein hydrolysates obtained from starch production byproduct: Use of bioinformatics and proteomics.** Betül Yesiltas\*<sup>1</sup>, Rasmus K. Mikkelsen<sup>2</sup>, Pedro J. Garcia-Moreno<sup>3</sup>, Simon Gregersen<sup>4</sup>, Tobias H. Olsen<sup>5</sup>, Paolo Marcatili<sup>2</sup>, Michael T. Overgaard<sup>4</sup>, Egon B. Hansen<sup>2</sup>, Charlotte Jacobsen<sup>1</sup>, <sup>1</sup>*National Food Institute, Technical University of Denmark, Denmark*; <sup>2</sup>*Technical University of Denmark, Denmark*; <sup>3</sup>*Department of Chemical Engineering, University of Granada, Spain*; <sup>4</sup>*Aalborg University, Denmark*; <sup>5</sup>*University of Oxford, United Kingdom*

**Antioxidant and antimicrobial active packaging systems.** Zhe Cheng\*, Matthijs Dekker, Jenneke Heising *Wageningen University & Research, Netherlands*

**Plant protein-stabilized emulsions: Implications of protein and non-protein components for lipid oxidation.** Katharina Münch\*<sup>1</sup>, Karin Schroën<sup>2</sup>, Simeon Stoyanov<sup>1</sup>, Claire Berton-Carabin<sup>3</sup>, <sup>1</sup>*Wageningen University, Netherlands*; <sup>2</sup>*Food Process Engineering, Wageningen University, Netherland*; <sup>3</sup>*INRAE Nantes, France*

## Novel Technologies—Plant-based Foods

PROCESSING

*Sponsored by Clariant*

*Chairs: Pulari Krishnankutty Nair, Danone North America, USA; and Anil Kommineni, Danone, USA*  
Tuesday, May 3, 2022 | 9:55–Noon EDT (Atlanta, USA; UTC-4)

*The Novel Technologies—Plant-based Foods session covers using soluble soybean polysaccharides to improve lactose recovery; processing dynamics at the molecular and supramolecular level; adding fat crystals to oleogels; sustainable protein microgels for low-calorie food; and factors that influence plant-based milk quality and stability.*

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**Processing plant proteins colloidal structures.** Milena Corredig\*, *Department of Food Science, Aarhus University, Denmark*

**Modifying plant proteins as microgels for fat replacement applications.** Ben J. Kew\* (**European Section Student Travel Grant Winner**), Melvin Holmes, Anwesha Sarkar, Evan Lamas, *School of Food Science and Nutrition, University of Leeds, United Kingdom*

**Fat crystal network reinforced plant-derived polysaccharide-based oleogels.** Zong Meng\*, Qinbo Jiang *School of Food Science and Technology, Jiangnan University, China (People's Republic)*

**Evaluation of plant-based milk quality and stability: A commercial analysis.** Andrew Elder\*<sup>1</sup>, Steve McColley<sup>1</sup>, James G. Redwine<sup>2</sup>, Ashley Apil<sup>1</sup>, <sup>1</sup>*Kalsec Inc., United States*; <sup>2</sup>*Analytical, Kalsec, Inc., United States*

## Protein Biofunctions

### PROTEIN AND CO-PRODUCTS

*Chairs: Kaustav Majumder, University of Nebraska-Lincoln, USA; Hitomi Kumagai, Nihon University, Japan; and Hongbing Fan, University of Alberta, Canada*

Tuesday, May 3, 2022 | 9:55–Noon EDT (Atlanta, USA; UTC-4)

*The Protein Biofunctions session includes enhancing resistance of food proteins to proteolysis; plant and gut microbiota-derived protein metabolites; and the potential of miso in suppressing high fat diet-induced obesity.*

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**Protein gelation enhances resistance to proteolysis and *in vivo* cholesterol-lowering ability of the indigestible proteins.** Rotimi Aluko\* (**Protein and Co-Products Division Lifetime Achievement Award Winner**), *Food and Human Nutritional Sciences, University of Manitoba, Canada*

**Plant and gut microbiota-derived protein metabolites and potential health functions.** Thanutchaporn Kumrungsee\*<sup>1</sup>, Toshiro Matsui<sup>2</sup>, Yongshou Yang<sup>3</sup>, Norihisa Kato<sup>1</sup>, <sup>1</sup>*Graduate School of Integrated Sciences for Life, Hiroshima University, Japan*; <sup>2</sup>*Faculty of Agriculture, Kyushu University, Japan*; <sup>3</sup>*School of Life Sciences, Anhui University, China (People's Republic)*

**Amelioration of high fat diet-induced obesity in rat by short chain pyroglutamyl peptides in Japanese salted fermented soy paste (miso).** Kenji Sato\*, *Graduate School of Agriculture, Kyoto University, Japan*

**From the bench to the bedside: The history of lupin bioactive peptides as useful ingredient for the prevention of metabolic syndrome.** Carmen Lammi\*, *University of Milan, Italy*

## Performance Additives Featuring Formulating Waterless Products

### SURFACTANTS AND DETERGENTS

*Chairs: Robert Nolles, Cosun Biobased Experts, USA; and David Stott, Mary Kay, Inc., USA*

Tuesday, May 3, 2022 | 9:55–Noon EDT (Atlanta, USA; UTC-4)

*The Performance Additives session includes talks covering a detergents using phosphodiesterase to break down body grime; high-active alcohol ethoxysulfate/alcohol ethoxylate (AES/AE) surfactant blends in detergents; non-aqueous foams; enzymes in automatic dishwashing; and formulating waterless cleaners in solid or powder form.*

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**Innovation, sustainability and cost trends in detergent formulations.** Roel M. Hermant\*, Jean-Paul Janssens, *FRAMES Formulation Intelligence, Netherlands*

**Enter a new world of clean: Phosphodiesterase breaks down and removes body grime in clothing and home textiles resulting in true malodor removal.** Donna Nguyen\*, Renata Hyczy, *Household Care, Novozymes, United States*

**The power of enzymes in automatic dishwashing.** Grace Lau\*, Arjen Hoekstra, *IFF, United States*

**Non-aqueous foams based on high alcohol content stabilized by fatty acid crystalline particles** Anne-Laure Fameau\*<sup>1</sup>, Yingzhen Ma<sup>2</sup>, Bhuvnesh Bharti<sup>2</sup>, <sup>1</sup>*INRAE, France*; <sup>2</sup>*Cain Department of Chemical Engineering, Louisiana State University, United States*

**Formulating waterless cleaners in solid or powder form: Considerations for stability and performance.** Ron Masters\*<sup>1</sup>, Vanessa DeMarco<sup>1</sup>, Sarah Kovach<sup>2</sup>, <sup>1</sup>*Consumer Products R&D, Stepan Company, United State*; <sup>2</sup>*Marketing, Stepan Company, United States*

**High-active alcohol ethoxysulfate/alcohol ethoxylate blends: Cost-effective alternatives for formulation of concentrated liquid and pod detergents.** Kirk Raney\*, *A&I Ventures, LLC, United States*

## Tuesday | Early Afternoon

### Analysis of Less-Abundant Lipids

ANALYTICAL

*Chairs: Kim Ekroos, Lipidomics Consulting Ltd, Finland; and Federico Torta, National University of Singapore, Singapore*

Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*This Analysis of Less Abundant Lipids session discusses chemoinformatics toolbox for visualization of lipidomic data; the role of essential fatty-acid derived mediators in inflammation resolution; the role of isoprostanooids; analytical challenges of LC-MS/MS methods; and oxidation of lipids in aged emulsified foods.*

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**Quantification of minor lipid species in mammalian samples—strategies and pitfalls.** Gerhard Liebisch\*, Sabrina Krautbauer, Marcus Höring, *University Hospital Regensburg, Germany*

**The wonders of isoprostanooids in biological systems.** Jetty Chung-Yung Lee\*<sup>1</sup>, Jean-Marie Glanao<sup>2</sup>, Thierry Durand<sup>2</sup>, <sup>1</sup>*The University of Hong Kong, Hong Kong*; <sup>2</sup>*Institut des Biomolécules Max Mousseron, (IBMM), UMR 5247, CNRS, Université de Montpellier, ENSCM, France*

**Structure elucidation and biological evaluations of sulfido-conjugated specialized pro-resolving mediators.** Jesmond Dalli\*<sup>1</sup>, Kimberly Pistorius<sup>1</sup>, Ana Rodriguez<sup>2</sup>, Bernd Spur<sup>2</sup>, Charles Serhan<sup>3</sup>, <sup>1</sup>*Queen Mary University of London, United Kingdom*; <sup>2</sup>*Rowan University, United States*; <sup>3</sup>*Brigham and Women's Hospital, United States*

**An online structural-based connectivity and omic phenotype evaluations (SCOPE) cheminformatics toolbox for lipidomic data visualization.** Melanie Odenkirk\*<sup>1</sup>, Erin Baker<sup>1</sup>, David Reif<sup>2</sup>, <sup>1</sup>*Department of Chemistry, North Carolina State University, United States*; <sup>2</sup>*Department of Biological Sciences, North Carolina State University, United States*

**Selective ionization of oxidized versus non-oxidized lipid species using different solvent additives in direct infusion MS.** Eleni Lazaridi\*<sup>1</sup>, Marie Hennebelle<sup>1</sup>, Boudewijn Hollebrands<sup>2</sup>, Jean-Paul Vincken<sup>1</sup>, Hans-Gerd Janssen<sup>3</sup>, <sup>1</sup>Wageningen University and Research, Netherlands; <sup>2</sup>Unilever, Netherlands; <sup>4</sup>Unilever, United States

## Surface Methods and Analysis

ANALYTICAL

Joint session with the Surfactants and Detergents Division

Chair: Rick Theiner, Evonik Industries, USA and Jeff Botts, Corbion, USA

Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Surface Methods and Analysis session includes research on methods to quantify surfactant performance in laundry detergents; a technique to study interfaces at low interfacial tensions; contact angle measurements; a 1H NMR method to distinguish between emulsifier and surfactant classes; rheological-based approach to gel curve analysis; and properties and applications of docosanol and higher alcohol ethoxylates.*

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**Use of 1H NMR as a rapid analytical technique to distinguish between emulsifier and surfactant classes coupled with cosine similarity computations as part of a raw material surveillance program.**

Margaret Walsh\*<sup>1</sup>, Jeff Botts<sup>2</sup>, <sup>1</sup>Emulsifiers, Corbion, United States; <sup>2</sup>Sustainable Food Solutions, Corbion, United States

**Understanding interfaces: Using contact angle measurements to determine surface tension, interfacial tension, and kinetic properties from contact angle hysteresis.** Daniel Scholz\*<sup>1</sup>, Paul Simutis<sup>2</sup>,

<sup>1</sup>DataPhysics Instruments GmbH, Germany; <sup>2</sup>DataPhysics Instruments USA Corp., United States

**The spinning drop method: An accurate technique to study interfaces at low interfacial tensions.**

Ronald Marquez\*<sup>1</sup>, Jose Maria Zamora<sup>2</sup>, <sup>1</sup>Laboratoire Physico-Chimie des Interfaces Complexes, TotalEnergies, Lille Univ., ESPCI, France; <sup>2</sup>CITEC ULA, Venezuela

**Fundamental interfacial properties and industrial applications of a new class of surface active**

**docosanol and higher alcohol ethoxylates.** Ramesh Varadaraj\*, Ollie Normand, Dustin Landry, R&D, Sasol North America, United States

**Rheological-based approach to gel curve analysis of alcohol ethoxylates.** Timothy King\*<sup>1</sup>, Franklin

Caputo<sup>1</sup>, Auriana Hughes<sup>1</sup>, Julian Barnes<sup>2</sup>, <sup>1</sup>Shell Global Solutions US Inc., United States, <sup>2</sup>Shell Global Solutions International B.V., United States

**Good, better, best: 3 Methods to quantify surfactant performance in laundry detergent tests.** Caspar

van Leeuwen, Remco Langedijk\*, Patrick Zwamborn, Center for Testmaterials BV, Netherlands

## Edible Oil Contaminants—Analysis and Industrial Perspective

### ANALYTICAL

Joint session with the Processing Division

*Sponsored by Clariant*

*Chairs: Jan Kuhlmann, SGS Germany GmbH, Germany; and Wim de Greyt, Desmet Ballestra Group, Belgium*

Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Edible Oil Contaminants session includes: the regulatory status of MOSH/MOAH; recent methods for determining MOSH/MOAH; method for detecting MCPD and GE applied to fats and oils; the introduction of an AOCS Official method adaptation for food emulsifiers; reducing GE using silica-based materials; and mitigation of MCPD.*

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**Mitigation of MCPD in physically refined palm oil.** Kornél Nagy\*, Marine Nicolas, Karine Redeuil, Xanthippe Theurillat, Nestlé Research—Société Des Produits Nestlé SA, Switzerland

**MCPD and glycidyl esters—presentation of a modular analysis method for oils and fats as well as compound foods.** Martin Kaminski\*, Department 5, BVL, Germany

**Determination of 3-MCPD and glycidol in food emulsifiers: Analytical solution and multi-laboratory validation.** Jan Kuhlmann\*, SGS Germany GmbH, Germany

**Recent analytical methodologies for the determination of MOSH/MOAH in edible oils & fats.** Susanne Kühn\*, Michael Koch, Institut Kirchoff Berlin GmbH part of Mérieux NutriSciences, Germany

**MOSH/MOAH in edible oils and fats: Current status and mitigation solutions.** Antonios Papastergiadis\*, Wim De Greyt, R&D Centre, Desmet Ballestra Group, Belgium

## New Crops for Oils/Feedstock Engineering

### BIOTECHNOLOGY

Joint session with the Industrial Oil Products Division

*Chairs: Roque Evangelista, USDA ARS NCAUR, USA; and Mahesh Balwant Khot, Farmsow Pvt. Ltd., India*

Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*New Crops for Oils/Feedstock Engineering topics includes metabolic engineering of oilseeds; potential of Chrysophyllum albidium seed; pennycress as cover crop and source of food and oil; and the applications and potential of Camelina sativa and Carinata.*

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**Carinata: An emerging biofuel feedstock platform.** Rick Bennett\*, Nuseed, Canada

**Camelina breeding and development—A Canadian perspective.** Christina Eynck\*, Specialty Crop Breeding, AAFC, Canada

**CoverCress—A novel oilseed winter crop with canola-like composition that helps sequester carbon and prevent soil erosion.** Tim Ulmasov\*, CoverCress Inc., United States

**Targeted genome editing of industrial oilseed crops to enhance synthesis of functional lipids.** Linah Alkotami\*<sup>1</sup>, Maliheh Esfahanian<sup>2</sup>, Brice Jarvis<sup>3</sup>, Kathleen M. Schuler<sup>4</sup>, Jianhui Zhang<sup>5</sup>, Somnath Koley<sup>6</sup>, Doug K. Allen<sup>7</sup>, Chaofu Lu<sup>8</sup>, John Sedbrook<sup>9</sup>, Timothy Durrett<sup>1</sup>, <sup>1</sup>Biochemistry and Molecular Biophysics,

*Kansas State University, United States; <sup>2</sup>Plant Biology, Carnegie Institution for Science, United States; <sup>3</sup>Illinois State University, United States; <sup>4</sup>Biochemistry, Kansas State University, United States; <sup>5</sup>Plant Sciences & Plant Pathology Department, Montana State University, United States; <sup>6</sup>Donald Danforth Plant Science Center, United States; <sup>7</sup>Agricultural Research Service, U.S. Department of Agriculture/Donald Danforth Plant Science Center, United State; <sup>8</sup>Montana State University, United States; <sup>9</sup>Biological Sciences, Illinois State University, United States*

**Development of dedicated non-food oil crops for industrial oil production through metabolic engineering.** Xueyuan Li, Emelie Ivarson, Li-Hua Zhu\*, *Swedish University of Agricultural Sciences, Lomma, Sweden*

**Viability of utilization of *Chrysophyllum albidum* seed oil as bio-industrial fluid.** Chinedu M. Agu\*<sup>1</sup>, Goziya W. Dzarma<sup>1</sup>, Albert C. Agulanna<sup>2</sup>, Emeka L. Udokporo<sup>2</sup>, <sup>1</sup>*Chemical Engineering, Michael Okpara University of Agriculture, Nigeria; <sup>2</sup>Centre for Environmental Management and Control, University of Nigeria, Enugu Campus, Nigeria*

## Gene Editing Technologies

### BIOTECHNOLOGY

*Chairs: Tim Ulmasov, CoverCress, Inc., USA; and Timothy P. Durrett, Kansas State University, USA*  
Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Gene Editing Technologies session features talks examining issues around genome edited plants in grain and food.*

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**Unlocking the next generation of row crop quality traits through genome editing.** Julia Stevens\*, *Plant Biotechnology, Bayer Crop Science, United States*

**Utility of CRISPR/Cas in accelerating gene discovery in soybean.** Minviluz Stacey\*, *Division of Plant Science and Technology, University of Missouri, United States*

**CRISPR/Cas9-based editing of OsNF-YC4/GmNF-YC4 promoter yields high-protein crops.** Ling Li\*, *Biological Sciences, Mississippi State University, United States*

**Update on the revised USDA biotech regulation.** Neil Hoffman\*, *Animal Plant Health Inspection Service/Biotechnology Regulatory Services, United States*

**Detection of genome edited products—is it CRISPR?** Raymond D Shillito\*, *Regulatory Science, BASF (United States), United States*

## Phase Transitions and Interfacial Phenomena in Complex Food Systems

### EDIBLE APPLICATIONS TECHNOLOGY

*Chairs: Andrew Gravelle, University of California, Davis, USA; and Reed Nicholson, Motif FoodWorks, Inc., USA*  
Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Phase Transitions and Interfacial Phenomena in Complex Food Systems session includes the design of bigels; oleofoams for food; diacylglycerol-based SLNs and Pickering W/O emulsions; and oil-in-water bilayer nanoemulsions.*

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**From molecular assemblies to nutritious food products.** Maya Davidovich-Pinhas\*, *Technion—Israel Institute of Technology, Israel*

**Role of interfacial compositions in achieving dispersed phase-induced gelation and controlled digestion of oil-in-water bilayer nanoemulsions.** Kunal Kadiya\*<sup>1</sup>, Supratim Ghosh<sup>2</sup>, <sup>1</sup>*Department of Food and Bioproduct Sciences, University of Saskatchewan, Canada*

**Tailored rigidity of W/O Pickering emulsions using diacylglycerol-based surface-active solid lipid nanoparticles.** Yong Wang\*, Chaoying Qiu<sup>1</sup>, Guoyan Li, *Jinan University, China (People's Republic)*

**Edible oleofoams stabilized by fatty acid and fatty alcohol crystalline particles.** Anne-Laure Fameau\*, *INRAE, France*

**Fabrication and characterization of oleofoams composed of the edible oils and tribehenoil-glycerol: Towards stable and higher air content colloidal system.** Kazuki Matsuo\*<sup>1</sup>, Satoru Ueno<sup>2</sup>, <sup>1</sup>*POLA Chemical Industries, Inc., Japan; <sup>2</sup>Hiroshima University, Japan*

## New Crops for Oils/Feedstock Engineering

### INDUSTRIAL OIL PRODUCTS

*Chairs: Roque Evangelista, USDA ARS NCAUR, USA; and Mahesh Balwant Khot, Farmsow Pvt. Ltd., India*  
Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Biotechnology Division. See page 31 for details.

## Antioxidant Applications: Emulsions, Biofuels, Proteins and More

### LIPID OXIDATION AND QUALITY

*Sponsored by BTSA*

*Chairs: Claire Berton-Carabin, INRAE, France; and Andrew Elder, Kalsec, Inc., USA*  
Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Antioxidant Applications session includes topics such as soluble tempo-mediated oxidized cellulose; antioxidants in snacks; role of micelles; and protein-polyphenol conjugate, gentisic acid.*

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**Lipid oxidation in emulsions and bulk oils: A review of the importance of micelles.** Pierre Villeneuve\*<sup>1</sup>, Eric A. Decker<sup>2</sup>, Erwann Durand<sup>3</sup>, Julian McClements<sup>4</sup>, Claire Bourlieu-Lacanal<sup>5</sup>, <sup>1</sup>*CIRAD, France; <sup>2</sup>Food Science, University of Massachusetts Amherst, United States; <sup>3</sup>CIRAD/UMR QUALISUD, France; <sup>4</sup>U Mass, United States; <sup>5</sup>UMR IATE, INRAE/Univ Montpellier/Institut Agro, France*

**Succinylated cellulose-based ampholytic amphiphiles as a novel dual-function emulsifier for the emulsions.** Li Ziqian\*<sup>1</sup>, Zheng Guo<sup>2</sup>, <sup>1</sup>*Aarhus University, Denmark; <sup>2</sup>Department of Biological and Chemical Engineering, Aarhus University, Denmark*

**Enhancing antioxidant capacity at the interfaces of oil-in-water emulsions stabilized by phenolic conjugated protein: protein structure and surface activity effect.** Hui Li\*, Bingcan Chen, *Plant Sciences, North Dakota State University, United States*

**Lipid oxidation in pickering emulsions.** Claire Berton-Carabin\*, *INRAE Nantes, France*

## **Mindful snacking: Formulating antioxidant solutions to increase extruded puffed snack stability.**

Jennifer Young\*, *Food Protection, Kalsec, United States*

## Edible Oil Contaminants—Analysis and Industrial Perspective

PROCESSING

*Sponsored by Clariant*

*Chairs: Jan Kuhlmann, SGS Germany GmbH, Germany; and Wim de Greyt, Desmet Ballestra Group, Belgium*

Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Analytical Division. See page 31 for details.

## Protein Based Hydrocolloids for Food and Health Applications

PROTEIN AND CO-PRODUCTS

*Chairs: Lingyun Chen, University of Alberta, Canada; and Navam Hettiarachchy, University of Arkansas-Fayetteville, USA*

Tuesday, May 3, 2022 | 1:25–3:30 p.m. EDT (Atlanta, USA; UTC-4)

*The Protein Based Hydrocolloids for Food and Health Applications session features Pickering emulsions stabilized by soybean protein isolate; pulse starch as gelling agent and starch source; protein gel networks; comparison of structure and functionality of amyloid fibrils from different sources; and egg white-derived peptides with hydrogelation properties.*

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**Gluten as a unique protein building cereal product structure, is there an alternatives? Presenter to be announced.**

**Pulse starch as a promising gelling agent and resistant starch source for industrial applications.**

Yongfeng Ai\*, *Food and Bioproduct Sciences, University of Saskatchewan, Canada*

**Pickering emulsions stabilized by soybean protein isolate/cellulose nanofibrils: Influence of pH.**

Xingzhong Zhang<sup>1</sup>, Xiaogang Luo<sup>2</sup>, Yixiang Wang<sup>\*3</sup>, Yan Li<sup>1</sup>, Bin Li<sup>1</sup>, Shilin Liu<sup>1</sup>, <sup>1</sup>*Huazhong Agricultural University, China (People's Republic);* <sup>2</sup>*Wuhan Institute of Technology, China (People's Republic);* <sup>3</sup>*McGill University, Canada*

**Comparing the structure and functionality of amyloid fibrils assembled from peanut, pea, lentil, and mung bean proteins.** Sara Zamani<sup>1</sup>, Fan Bu<sup>1</sup>, Lanfang Shi<sup>1</sup>, Derek Dee<sup>\*2</sup>, <sup>1</sup>*The University of British Columbia, Canada;* <sup>2</sup>*Faculty of Land and Food Systems, The University of British Columbia, Canada*

**Self-assembly and hydrogelation properties of egg white-derived peptides.** Raliat Abioye<sup>\*1</sup>, Xiaohong Sun<sup>2</sup>, Pei Chun Queenie Hsu<sup>3</sup>, Caleb Acquah<sup>2</sup>, Nico Huttmann<sup>3</sup>, Chibuike Udenigwe<sup>3</sup>, <sup>1</sup>*Chemistry and Biomolecular Sciences, University of Ottawa, Canada;* <sup>2</sup>*School of Nutrition Sciences, University of Ottawa, Canada;* <sup>3</sup>*University of Ottawa, Canada*

**Structural design of plant protein gel networks for food applications.** Lingyun Chen\*, *Department of Agricultural, Food and Nutritional Science, University of Alberta, Canada*

## Surface Methods and Analysis

SURFACTANTS AND DETERGENTS

Joint session with the Analytical Division. See page 30 for details.

## Tuesday | Late Afternoon

### Advanced Methods of Analysis, Including Lipidomics

ANALYTICAL

Chairs: William C. Byrdwell, USDA ARS BHNRC MAFCL, USA; and Hari Kiran Kotapati, USDA ARS MAFCL, USA

Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*This session includes talks on the Lipidomics Standards Initiative; fast method for analyzing pulse oils; methodology for the characterization and quantification of lipid mediators; de novo identification and quantification of fatty acids in lipid extracts; and travelling wave cyclic ion mobility.*

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**Combining near-complete characterization with quantitation for lipid analysis in matrix using electron activated dissociation.** Mackenzie J. Pearson\*, Paul Norris, Ryan Anderson, *SCIEX, United States*

**Lipid separation and structural characterization using travelling wave cyclic ion mobility.** Giorgis Isaac\*, Hernando Olivos, Robert Plumb, *Biomedical Research, Waters Corporation, United States*

**Unknown unknowns in lipidomics: A *de novo* method for fatty acid discovery.** Stephen Blanksby\*, Philipp Menzel, Reuben Young, David Marshall, Berwyck Poad, *Queensland University of Technology, Australia*

**Potential of lipid class separation—mass spectrometry approaches for high-throughput lipidomic quantitation.** Michal Holčapek\*, *Department of Analytical Chemistry, University of Pardubice, Czech Republic*

**Fast chromatography with dual parallel mass spectrometry for lipidomic analysis and regioisomer quantification of pulse lipids.** William C. Byrdwell\*<sup>1</sup>, Hari Karin Kotapati<sup>2</sup>, <sup>1</sup>*Methods and Application of Food Composition Lab, USDA ARS BHNRC MAFCL, United States*; <sup>2</sup>*Nutrition and Food Science, University of Maryland, United States*

**Update on guidelines for lipidomics analysis and reporting.** Kim Ekroos\*<sup>1</sup>, Robert Ahrends<sup>2</sup>, Christer Ejsing<sup>3</sup>, Nils Hoffmann<sup>4</sup>, Michal Holčapek<sup>5</sup>, Harald Köfeler<sup>6</sup>, Jeffrey McDonald<sup>7</sup>, Gerhard Liebisch<sup>8</sup>, <sup>1</sup>*Lipidomics Consulting Ltd, Finland*; <sup>2</sup>*University of Vienna, Austria*; <sup>3</sup>*European Molecular Biology Laboratory, Germany*; <sup>4</sup>*Universität Bielefeld, Germany*; <sup>5</sup>*Department of Analytical Chemistry, University of Pardubice, Czech Republic*; <sup>6</sup>*Lipidomics Research Center Graz, Austria*; <sup>7</sup>*UT Southwestern, United States*; <sup>8</sup>*University of Regensburg, Germany*

### Biocatalysis—Enzyme Processing

BIOTECHNOLOGY

Chairs: Jun Ogawa, Kyoto University, Japan; and Lu-Kwang Ju, The University of Akron, USA

Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Biocatalysis—Enzyme Processing session features talks on using phospholipases for enzymatic degumming; synthesizing oleochemicals with Eversa immobilized lipase-catalyzed esterification; chickpea proteins, lipids, and potential prebiotic oligosaccharides for industrial applications.*

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**Production of value-added oleochemicals via Eversa immobilized lipase-catalyzed esterification.** In-Hwan Kim\*, Dongchan Oh, Suhyeon Choi, *Korea University, Republic of Korea*

**Immobilized lipase in the synthesis of high purity medium chain diacylglycerols using a bubble column reactor: Characterization and application.** Jiazi Chen\* (*Biotechnology Division Student Award Winner*), Jinan University, China (People's Republic)

**Applications and benefits of phospholipase a enzymes in seed oil processing.** Ying Zha<sup>1</sup>, Nikita Iltchenko\*<sup>1</sup>, Jesse Beam<sup>2</sup>, <sup>1</sup>DSM Food & Beverage, Netherlands; <sup>2</sup>DSM Food & Beverage, United States

**Temperature effects on enzyme stability for carbohydrate hydrolysis of soy materials.** Md Fauzul Kabir\*, Lu-Kwang Ju, *Chemical, Biomolecular, and Corrosion Engineering, The University of Akron, United States*

**Bioprocessing strategies to improve the extractability and functional properties of lipids, proteins, and carbohydrates from full-fat chickpea flour.** Fernanda Furlan Goncalves Dias\*, Kazunori Machida, Juliana Leite Nobrega De Moura Bell, *University of California, Davis, United States*

## Surfactants in Food

### EDIBLE APPLICATIONS TECHNOLOGY

Joint session with the Surfactants and Detergents Division

*Chairs: Pulari Krishnankutty Nair, Danone North America, USA; and Kaustuv Bhattacharya, IFF, Denmark*  
Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Surfactants in Food session includes research on the transport of lipid oxidation intermediates; food-grade lecithin microemulsions for oil extraction; local distribution of limonene in phospholipid vesicles; and understanding the reactivity of sucralose versus sucrose using lipase catalyzed trans-esterification.*

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**Local distribution of limonene in phospholipid vesicles.** Ann-Dorie Webley\*<sup>1</sup>, Stephanie Dungan<sup>1</sup>, Susan Ebeler<sup>3</sup>, <sup>1</sup>Food Science and Technology, University of California Davis, United States; <sup>3</sup>Viticulture and Enology, University of California Davis, United States

**Transport of lipid oxidation intermediates and its impact on the lipid oxidation rate in a model food emulsion.** Sten ten Klooster\*<sup>1</sup> (*Edible Applications Technology Division Student Award*), Karin Schroën<sup>1</sup>, Claire Berton-Carabin<sup>2</sup>, <sup>1</sup>Food Process Engineering, Wageningen University, Netherlands, <sup>2</sup>INRAE Nantes, France

**Extraction of clove oil via solvent-enhanced capillary displacement.** Carol Tan\*, Edgar Acosta  
*Chemical Engineering and Applied Chemistry, University of Toronto, Canada*

**Sucralose hydrogels: Peering into the reactivity of sucralose versus sucrose using lipase catalyzed trans-esterification.** George John\*<sup>1</sup>, Malick Samateh<sup>1</sup>, Siddharth Marwaha<sup>2</sup>, Jose James<sup>2</sup>, Vikas Nanda<sup>2</sup>, <sup>1</sup>Chemistry and Biochemistry, City College of New York (CUNY), United States; <sup>2</sup>Biochemistry, Rutgers University, United States

**Methods of improving the lactose recovery from the permeate and the drying ability of Greek yogurt whey.** Venkateswarlu Sunkesula\*, *Idaho Milk Products, United States*

## Panel discussion

### The Role of Lipids and Related Nutrients in Companion Animal Health

#### HEALTH AND NUTRITION

Chairs: Elaine Krul, EKSci, LLC, USA; and Christine Rogers-Kelly, Mississippi State Chemical Lab, USA  
Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*This session covers topics such as nutrition and inflammation; choline and obesity prevention; benefits of MCT oil; pancreatitis in dogs; and the demand for nutritional pet food.*

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#### **Nutritional opportunities to advance companion animal health—focus on lipids and related nutrients.**

Elaine S. Krul\*, EKSci, LLC, United States

**An investigation into the effect of high fat and carbohydrate diets on a range of biomarkers associated with pancreatitis in dogs.** David G. Thomas\*<sup>1</sup>, Mark Roberts<sup>2</sup>, Wayne Young<sup>3</sup>, David Thomas<sup>4</sup>, Emma Bermingham<sup>3</sup>, <sup>1</sup>School of Agriculture & Environment, Massey University, New Zealand; <sup>2</sup>Nutritional Instinct Consultancy Services LLC, United States; <sup>3</sup>AgResearch Ltd, New Zealand; <sup>4</sup>School of Veterinary Science, Massey University, New Zealand

**Technologies utilizing MCT oil for canine health.** Christina Germain\*, Yuanlong Pan, Hui Xu, Sandeep Bhatnagar, Brian Zanghi, Brian Larson, Asa Gore, Nestle Purina Petcare, United States

**Bioactive lipids and related nutrients in companion animal and poultry diets for reducing inflammation and improving immunity.** Elizabeth Bobeck\*, Animal Science, Iowa State University, United States

**Dietary choline in feline nutrition and its role in obesity prevention and liver health.** Adronie Verbrugghe\*, Alexandra Rankovic, Ontario Veterinary College, University of Guelph, Canada

### Lipid Oxidation in Omega-3 Products and Stabilization Strategies

#### LIPID OXIDATION AND QUALITY

Sponsored by BTSA

Chairs: Janaka Senanayake, CFS North America, LLC, USA; and Haizhou Wu, Chalmers University of Technology, Sweden

Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Lipid Oxidation in Omega-3 Products and Stabilization Strategies session includes talks on flavor deterioration; effect of lipid type on oxidation; co-encapsulation of fish oil with essential oils; application of extracts/solutions to surface of fish tissue; nanoemulsions encapsulated with tocopherol; and food fortification delivery systems.*

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**Delivery systems for omega-3 oils.** Charlotte Jacobsen\*<sup>1</sup>, Ann-Dorit Moltke Sørensen<sup>1</sup>, Betül Yesiltas<sup>1</sup>, Pedro J. Garcia-Moreno<sup>2</sup>, <sup>1</sup>National Food Institute, Technical University of Denmark, Denmark; <sup>2</sup>Department of Chemical Engineering, University of Granada, Spain

**Strategies to prevent hemoglobin-mediated lipid oxidation in fish.** Ingrid Undeland\*, Department of Biology and Biological Engineering-Food and Nutrition Science, Chalmers University of Technology, Sweden

**Co-encapsulation of fish oil with essential oils, lutein, and curcumin to produce stable fish oil powders with multiple functionalities using ovalbumin-polysaccharide coacervation.** Shulan Xiao\*, Dong Ahn, *Animal Science, Iowa State University, United States*

**Developing pickering and nanoemulsions for inhibiting lipid oxidation of aquatic food products.** Hongshun Yang\*<sup>1</sup>, Zhongyang Ren<sup>2</sup>, Xiao Feng<sup>3</sup>, <sup>1</sup>*Food Science and Technology, National University of Singapore, Singapore*; <sup>2</sup>*Ocean Food and Biological Engineering, Jimei University, China (People's Republic)*; <sup>3</sup>*Food Science and Engineering, Nanjing University of Finance & Economics, China (People's Republic)*

**Inhibitory effect of sphingoid bases on the oxidative flavor deterioration of fish oil.** Kazuo Miyashita\*<sup>1</sup>, Masashi Hosokawa<sup>2</sup>, <sup>1</sup>*Obihiro University of Agric and Vet Med, Japan*; <sup>2</sup>*Faculty of Fisheries Sciences, Hokkaido University, Japan*

**Stability of omega-3 fatty acids in different lipid forms analyzed by SPME-GC-MS, NMR and loss of antioxidants.** Kaisa Linderborg\*, Annelie Damerou, Eija Ahonen, Maaria Kortensniemi, *Department of Life Technologies, University of Turku, Finland*

## Food Safety, Process Safety & Energy

### PROCESSING

*Chairs: Matthew Williamson, ADF Engineering, USA; and Richard Clough, Texas A&M University, USA*  
Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

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**Cost effective hygienic design strategies for your protein plant.** Dennis M. McCullough\*, Scott Korte, *Process Plus LLC, United States*

**Maintaining compliance with combustible dust regulations.** Matthew Williamson\*, *ADF Engineering, United States*

**Energy management systems.** John Barry\*, *Barry Consulting Services LLC, United States*

**Controlling outcomes succeeding in safety.** Brent German\*, *Blind Corner Solutions LLC, United States*

**Recent advances in enzymatic fat splitting— has the time come for wide industrial plant implementation?** Hans Christian Holm\*, *Novozymes AS, Denmark*

## Functionality of Proteins in Foods and Interactions with Other Food Components

### PROTEIN AND CO-PRODUCTS

*Chairs: Jiajia Rao, North Dakota State University, USA; Chibuikwe Udenigwe, University of Ottawa, Canada; and Yifu Chu, University of Alberta, Canada*  
Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*This session includes green modifications for enhancing pea protein; lentil protein-tannic acid complexes; emulsifying properties of pea proteins; eco-friendly protein isolation method; rapeseed meal proteins; and effects of extraction methods on pea proteins.*

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**Enhancing pea protein functionalities through “green” modifications for food applications.** Yonghui Li\*<sup>1</sup>, Yanting Shen<sup>2</sup>, Shan Hong<sup>2</sup>, <sup>1</sup>*Grain Science and Industry, Kansas State University, United States;* <sup>2</sup>*Kansas State University, United States*

**Improved emulsification behaviour of pea protein-polysaccharide complexes for beverage application.** Burcu Guldiken<sup>1</sup>, Maxime Saffon<sup>2</sup>, Supratim Ghosh\*<sup>1</sup>, Michael Nickeson<sup>1</sup>, <sup>1</sup>*University of Saskatchewan, Canada;* <sup>2</sup>*Nestle Product Development Center, United States*

**The role of conformational state of pea protein fractions on the oil/water dynamic adsorption, rheological interfacial properties and emulsifying properties.** Liuyi Chang\*<sup>1</sup>, Jiajia Rao, *Plant Science, North Dakota State University, United States*

**Effects of extraction methods on the composition, structure, and gelling mechanism of pea proteins.** Jingqi Yang\*, Lingyun Chen, <sup>2</sup>*Department of Agricultural, Food and Nutritional Science, University of Alberta, Canada*

**Functional, nutritional properties and aroma profile of hemp protein isolate by reverse micelles extraction technique: Impact of defatting processing.** Baochen Fang\*, Jiajia Rao, *North Dakota State University, United States*

## Surfactants in Food

### SURFACTANTS AND DETERGENTS

*Chairs: Pulari Krishnankutty Nair, Danone North America, USA; and Kaustuv Bhattacharya, IFF, Denmark*  
Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Edible Applications Technology Division. See page 36 for details.

## Surfactant Mixtures and Trace Components

### SURFACTANTS AND DETERGENTS

*Chairs: Sukhwan Soontravanich, Ecolab, USA; and Ronald Marquez, TotalEnergies, France*  
Tuesday, May 3, 2022 | 3:55–6 p.m. EDT (Atlanta, USA; UTC-4)

*The Surfactants Mixtures and Trace Components session includes anionic and cationic surfactant synergism; surfactants adsorbed at the water/oil interface; the role of natural surfactants in gas hydrate anti-agglomeration; the coalescence and rheology of densely packed emulsions; breaking water-in-diluted bitumen emulsions; and detecting and quantifying aldehydes.*

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**Surfactants adsorbed at the water/oil interface.** Reinhard Miller\*, *Soft Matter Physics, TU Darmstadt, Germany*

**Anionic and cationic surfactant synergism: Minimizing precipitation, microemulsion formation, and enhanced solubilization and surface modification.** Parichat Phaodee\*<sup>1</sup>, David Sabatini<sup>2</sup>, <sup>1</sup>*Ecolab Inc., United States;* <sup>2</sup>*University of Oklahoma, United States*

**Effect of surfactant mixtures on the coalescence and rheology of densely packed emulsions – theory and experiments.** Enric Santanach-Carreras\*<sup>1</sup>, Huy-Hong-Quan Dinh<sup>1</sup>, Marie Lalanne-Aulet<sup>1</sup>, Pascal Panizza<sup>2</sup>, Veronique Schmitt<sup>3</sup>, François Lequeux<sup>4</sup>, <sup>1</sup>*TotalEnergies SE, France;* <sup>2</sup>*Université de Rennes 1/ESPCI/Laboratoire PIC, France;* <sup>3</sup>*CRPP Bordeaux/CNRS, France;* <sup>4</sup>*CNRS SIMM ESPCI/Laboratoire PIC CNRS/TotalEnergies/ESPCI, France*

**Exploration of surfactant additives for improvement of bitumen froth.** Daniel S. Miller\*<sup>1</sup>, Heather Wiles<sup>2</sup>, David Brennan<sup>2</sup>, Adam Schmitt<sup>2</sup>, Kathryn Grzesiak<sup>2</sup>, Rohini Gupta<sup>2</sup>, Tom Kalantar<sup>2</sup>, Harpreet Singh<sup>2</sup>, Tzu-Chi Kuo<sup>3</sup>, <sup>1</sup>Core R&D, Formulation, Automation & Material Science, Dow Inc., United States; <sup>2</sup>Dow Inc., United States; <sup>3</sup>The Dow Chemical Company, United States

**Aldehydes in poloxamer and PEGs-detection and quantification.** Sharda Prasad\*, BASF Corporation, United States

**The role of natural surfactants in gas hydrate anti-agglomeration in crude oil systems.** Jose Delgado-Linares\*, Hannah Stoner, Nur Ismail, Ahmad Majid, Carolyn Koh, Colorado School of Mines, United States  
Wednesday | Early Morning

## Wednesday | Early Morning

### Trace Contaminants

ANALYTICAL

*Chairs: Jessica Beekman, US Food & Drug Admin, USA; and Jan Kuhlmann, SGS Germany GmbH, Germany*  
Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Trace Contaminants session features talks on measuring and identifying the major trace contaminants in fats and oils methods for quantifying mineral oil hydrocarbons, mycotoxins, chlorinated paraffins and MCPD and glycidyl; and recent developments in EU policy on contaminants in vegetable oils.*

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**Analysis of MCPD and glycidyl esters: Recent occurrence data in U.S. infant formulas and effects of cooking on contaminant concentrations in frozen fried foods.** Jessica Beekman\*, Samanta Popol, Steven Peyton, Shaun MacMahon, Center for Food Safety and Applied Nutrition, U.S. FDA, United States

**LC-GC×GC-TOFMS/FID: Extra dimensionality to untangle mineral oil contamination: A particular look into the MOAH fraction.** Gregory Bauwens, Giorgia Purcaro\*, Gembloux Agro-Bio Tech, University of Liege, Belgium

**Determination of MOSH and MOAH—German standard method with improved precision data.** Ludger Ruehl\*, Institut für Sicherheit und Qualität bei Getreide, Max Rubner-Institut, Germany

**Solutions for modern routine analysis of mycotoxins in edible oils.** Jan Kuhlmann, Nicolaus von Mouillard\*, SGS Germany GmbH, Germany

**Gas chromatography-mass spectrometry (GC-MS) and liquid chromatography-high resolution mass spectrometry (LC-HRMS) approaches for analysis of chlorinated paraffins in edible fats and oils.** Thomas J McGrath\*<sup>1</sup>, Franck Limonier<sup>2</sup>, Giulia Poma<sup>1</sup>, Jasper Bombeke<sup>1</sup>, Raf Winand<sup>3</sup>, Kevin Vanneste<sup>3</sup>, Mirjana Andjelkovic<sup>2</sup>, Els Van Hoeck<sup>2</sup>, Laure Joly<sup>2</sup>, Adrian Covaci<sup>1</sup>, <sup>1</sup>Toxicological Centre, University of Antwerp, Belgium; <sup>2</sup>Chemical and Physical Health Risks Department, Sciensano, Belgium; <sup>3</sup>Transversal activities in Applied Genomics, Sciensano, Belgium

**EU policy on certain processing contaminants in vegetable oils and foods containing vegetable oils: recent developments and outlook.** Frans Verstraete\*, Directorate General for Health and Food Safety, European Commission, Belgium



## Phospholipid Analysis in Food and Nutrition Research

### ANALYTICAL

Joint session with the Phospholipid Division

*Chairs: Michael Bukowski, USDA ARS, USA; and Francesca Giuffrida, Nestle Research Center, Switzerland*

Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Phospholipid Analysis session includes an open-source application to facilitate high-throughput lipidomics; using supercritical fluid chromatography and high resolution mass spectrometry to identify minor lipid classes; challenges in phospholipid analysis in bovine milk; and differentiating animal sources of milk.*

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**Current challenges in phospholipid analysis in bovine milk.** Zhiqian Liu\*, Simone Rochfort, *Agriculture Victoria Research, Australia*

**Differentiation of the animal source of milk and milk products by means of <sup>1</sup>H NMR and <sup>31</sup>P NMR spectroscopy.** Bernd Diehl\*, *Spectre Service AG, Germany*

**Identification of glycerophospholipid species in food and biological matrices by supercritical fluid chromatography coupled with high resolution mass spectrometry.** Francesca Giuffrida\*, *Societe des produits Nestlé, Switzerland*

**Shotgun lipidomics assistant: An open-source application to facilitate high-throughput, comprehensive lipidomics.** Baolong Su<sup>1</sup>, Mackenzie J. Pearson<sup>2</sup>, Steven J. Bensinger<sup>3</sup>, Kevin J. Williams\*<sup>1</sup>, <sup>1</sup>*Biological Chemistry, UCLA, United States; <sup>2</sup>SCIEX, United States; <sup>3</sup>Microbiology, Immunology, & Molecular Genetics, UCLA, United States*

### Panel discussion

## Breeding and Biotechnology for Improved Quality of Food Proteins

### BIOTECHNOLOGY

Joint session with the Protein and Co-Products Division

*Chairs: Phil S. Kerr, Prairie AquaTech, LLC, USA; and Long Zou, Bunge Creative Solutions Center, USA*

Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Breeding and Biotechnology for Improved Quality of Food Proteins session includes soybean varieties with desirable carbohydrate fraction; ultra-high protein soybeans; modifying oil and protein quality in hemp; methionine content in soybean; and hydrolysates from sunflower proteins.*

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**High-yield soybean lines with improved seed protein and oil balance.** George Graef\*, *Dept. of Agronomy & Horticulture, University of Nebraska-Lincoln, United States*

**Ultra-high protein soybeans for food and aquaculture.** Michael Lassner\*, *Amfora, Inc., United States*

**Developing high yielding soybean varieties with desirable carbohydrate fraction for enhancing nutrition.** Henry T. Nguyen\*, Pengyin Chen, Tri D. Vuong, Haiying Shi, Dongho Lee, Ali Md Alikat, *Plant Science & Technology, University of Missouri, United States*

**Evaluating breeding and management solutions for methionine content in soybean.** William M. Singer\*<sup>1</sup>, Zachary Shea<sup>2</sup>, Dajun Yu<sup>2</sup>, Keren Brooks<sup>1</sup>, Mark Reiter<sup>1</sup>, David L. Holshouser<sup>1</sup>, Haibo Huang<sup>3</sup>, Rouf Mian<sup>4</sup>, Maria L. Rosso<sup>1</sup>, Bo Zhang<sup>1</sup>, <sup>1</sup>*School of Plant and Environmental Sciences, Virginia Tech,*

United States; <sup>2</sup>Virginia Tech University, United States; <sup>3</sup>Food Science and Technology, Virginia Tech, United States; <sup>4</sup>Soybean & Nitrogen Fixation Unit, USDA-ARS, United States

**Modifying oil and protein quality in hemp using modern conventional breeding approaches.** Rich Fletcher\*, *New West Genetics, United States*

**Production of highly soluble and functional hydrolysates from sunflower proteins.** Sophie Beaubier\*<sup>1</sup>, Sara Albe Slabi<sup>2</sup>, Odile Mesieres<sup>3</sup>, Marine Bianeis<sup>2</sup>, Olivier Galet<sup>2</sup>, Romain Kapel<sup>3</sup>, <sup>1</sup>University of Lorraine, LRGP CNRS, France; <sup>2</sup>Groupe AVRIL, France; <sup>3</sup>LRGP CNRS UMR7274, France

## Interactions Between Lipids and Other Ingredients in Plant-based Products

EDIBLE APPLICATIONS TECHNOLOGY

*Chairs: Karel Hrnčirik, Upfield, Netherlands; and Zong Meng, Jiangnan University, China*

Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*This session covers oil structuring to replace trans and saturated fats; detecting thiol moieties; healthy alternatives to solid fats; and crosslinking gelatin with tannic acid.*

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**Polysaccharide microgel particles-dominated Pickering emulsion gels for oil structuring: Formation, interfacial layer construction, and physical properties.** Zong Meng\*, Qinbo Jiang, *School of Food Science and Technology, Jiangnan University, China (People's Republic)*

**Development and characterization of a novel, edible oleocolloid made of rice bran wax oleogel and sodium alginate-kappa-carrageenan hydrogel.** Julia Nutter\*<sup>1</sup>, Xiaolei Shi<sup>1</sup>, Nuria Acevedo<sup>2</sup>, <sup>1</sup>Food Science and Human Nutrition, Iowa State University, United States; <sup>2</sup>Griffith Foods, United States

**Spontaneous aggregation of glutathione in aqueous solutions and the use of Ellman's procedure to detect thiol moieties.** David A. Pink\*<sup>5</sup>, Shajahan G. Razul<sup>1</sup>, Gurpreet Matharoo<sup>2</sup>, Iris Joye<sup>3</sup>, Wei Cao<sup>3</sup>, Erzsebet Szabo<sup>4</sup>, David A. Pink<sup>5</sup>, <sup>1</sup>Chemistry, St. Francis Xavier University, Canada; <sup>2</sup>ACENET/Physics Dept., Compute Canada/ACENET, Canada; <sup>3</sup>Food Science, University of Guelph, Canada; <sup>4</sup>Physics, St. Francis Xavier University, Canada; <sup>5</sup>Physics/Food Science, St. Francis Xavier University/University of Guelph, Canada

**Effect of crosslinking gelatin with tannic acid on the mechanical and thermal properties of gelatin—beeswax biphasic gel.** Ariana Saffold\*<sup>1</sup>, Nuria Acevedo<sup>2</sup>, <sup>1</sup>Food Science and Human Nutrition, Iowa State University, United States; <sup>2</sup>Griffith Foods, United States

**Panel discussion**

## Lipid Oxidation and Quality General Session

LIPID OXIDATION AND QUALITY

*Sponsored by Kalsec*

*Chairs: Hong-Sik Hwang, USDA ARS NCAUR, USA; and Sumudu Warnakulasuriya, University of Saskatchewan, Canada*

Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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**Formation of reactive aldehydes (MDA, HHE, HNE) during *in vitro* digestion of cod muscle: role of hemoglobin from trout and bovine sources.** Haizhou Wu\*<sup>1</sup>, Cecilia Tullberg<sup>2</sup>, Ingrid Undeland<sup>3</sup>, <sup>1</sup>Dept of [annualmeeting.aocs.org](http://annualmeeting.aocs.org) | [meetings@aocs.org](mailto:meetings@aocs.org) | May 1–4, 2022 | 42

*Biology and Biological Engineering-Food and Nutrition Science, Chalmers University of Technology, Sweden;* <sup>2</sup>*Biotechnology, Lund University, Sweden;* <sup>3</sup>*Department of Biology and Biological Engineering-Food and Nutrition Science, Chalmers University of Technology, Sweden*

**Lipid oxidation in sorted herring (*Clupea harengus*) filleting co-products and its relationship to composition.** Haizhou Wu\*<sup>1</sup>, Bitu Forghani<sup>2</sup>, Mehdi Abdollahi<sup>1</sup>, Ingrid Undeland<sup>1</sup>, <sup>1</sup>*Department of Biology and Biological Engineering-Food and Nutrition Science, Chalmers University of Technology, Sweden;* <sup>2</sup>*Chalmers University of Technology, Sweden*

**Influence of monosodium glutamate on the oxidative stability of meat lipids.** Jon Alberdi-Cedeno\*, Kübra Demir, Marc Pignitter, *Department of Physiological Chemistry, University of Vienna, Austria*

**Savoury snacks: How to improve their quality and shelf life by using naturally derived food additives?** Henna Lu\*, *R&D, Kalsec Europe Ltd, United Kingdom*

**Epoxides are major products in oxidation of methyl oleate and linoleate and their triacylglycerols.** Morgan Kandrac\* (**Hans Kaunitz Award Winner**), Karen M. Schaich, *Food Science, Rutgers University, United States*

**Quantitative evaluation of oxidative stability of biomembrane lipids in the presence of vitamin E.** Atsushi Takahashi\* (**Edwin N. Frankel Award for Best Paper in Lipid Oxidation and Quality Winner**), Ryota Takahashi, Kousuke Hiromori, Naomi Shibasaki-Kitakawa, *Tohoku University, Japan*

## Phospholipid Analysis in Food and Nutrition Research

### PHOSPHOLIPID

*Chairs: Michael Bukowski, USDA ARS, USA; and Francesca Giuffrida, Nestle Research Center, Switzerland*  
Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Analytical Division. See page 41 for details.

## New and Emerging Technology

### PROCESSING

*Sponsored by Desmet Ballestra North America, Inc.*

*Chairs: Fernanda Furlan Goncalves Dias, University of California, Davis, USA; and Orayne Mullings, Desmet Ballestra North America Inc., USA*

Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The New and Emerging Technology session features talks on a method to increase the purity of fumarated rosin; using proteolysis to extract proteins and lipids; developments in ice condensing in oil refining; an alternative bio-based solvent; the effect of ultrasound disruption on lipid extraction; and pre-processing sunflower meal to enhance protein separation.*

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**Purification of fumarated rosin.** Bing Wang\*<sup>1</sup>, Mitra Ganewatta<sup>2</sup>, <sup>1</sup>*Ingevity, United States;* <sup>2</sup>*Innovation, Ingevity, United States*

**Latest developments in ice condensing in oil refining: The SAFE solution.** Marc Kellens, Bart Schols\*, *Desmet Ballestra OFO, Belgium*

**Understanding the impact of proteolysis on extractability, physicochemical, and functional properties of proteins and lipids from almond flour.** Juliana Leite Nobrega De Moura Bell\*, Fernanda Furlan Goncalves Dias, *Food Science and Technology, University of California, Davis, United State*

**Oilseeds extraction using 2-methyloxolane as an alternative bio-based solvent to hexane.** Ombeline Claux\*, *GREEN Laboratory, Avignon University, France*

**Effect of ultrasound disruption on lipid extraction from *Nannochloropsis* sp.** Esther Mienis\*<sup>1</sup>, Dries Vandamme<sup>2</sup>, Imogen Foubert<sup>3</sup>, <sup>1</sup>*Microbial and Molecular Systems, KU Leuven, Belgium*; <sup>2</sup>*Analytical and circular chemistry, UHasselt, Belgium*; <sup>3</sup>*KU Leuven, Belgium*

**Optimization of feed preparation for sunflower meal prior to protein separation using triboelectric belt separation.** Natsuki Barber\*, Abhishek Gupta, *ST Equipment & Technology, United States*

## Breeding and Biotechnology for Improved Quality of Food Proteins.

### PROTEIN AND CO-PRODUCTS

*Chairs: Phil S. Kerr, Prairie AquaTech, LLC, USA; and Long Zou, Bunge Creative Solutions Center, USA*  
Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

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Joint session with the Biotechnology Division. See page 41 for details.

## Regulatory Issues

### SURFACTANTS AND DETERGENTS

*Chairs: Yvon Durant, Itaconix Corporation, USA; and Jennifer Foreman, ExxonMobil Chemical Company, USA*  
Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Regulatory Issues session includes Safer Choice standards for branched alcohol ethoxylates; Integrated Approach to testing and assessment (IATA) including New Approach Methods (NAMs) for assessing inhalation risks under the Toxic Substances Control Act (TSCA); animal-free alternative to fish in environmental risk assessment; and green surfactants as chemical herders for maritime oil spill remediation.*

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**Category development of safer choice qualified branched alcohol ethoxylates.** Jennifer Foreman\*, *ExxonMobil, United States*

***In silico* tools for study endpoint predictions, their use and abuse in regulatory toxicology and ecotoxicology.** Paul Thomas\*, *KREATIS, France*

**Fish cell lines as animal-free and resource-efficient alternatives to fish in environmental risk assessment.** Stephan Fischer\*<sup>1</sup>, Melanie Fischer<sup>2</sup>, Kristin Schirmer<sup>2</sup>, <sup>1</sup>*aQuaTox-Solutions Ltd., Switzerland*; <sup>2</sup>*Department Environmental Toxicology, Eawag, Swiss Federal Institute of Aquatic Science and Technology, Switzerland*

**Surfactants category: An Integrated Approach to Testing and Assessment (IATA) including new approach methods (NAMs) for assessing inhalation risks under the Toxic Substances Control Act (TSCA).** Annie Jarabek\*<sup>1</sup>, Tala R. Henry<sup>2</sup>, <sup>1</sup>*U.S. Environmental Protection Agency, United States*; <sup>2</sup>*Office of Pollution Prevention & Toxics, U.S. Environmental Protection Agency, United States*

## Panel discussion

### Household and I&I Cleaning

#### SURFACTANTS AND DETERGENTS

Chair: Julian Barnes, Shell Global Solutions International B.V., Netherlands

Wednesday, May 4, 2022 | 7:25–9:30 a.m. EDT (Atlanta, USA; UTC-4)

*The Household and I&I Cleaning session includes interfacial and transport phenomena in consumer and industrial applications; removing stubborn stains with Methyl Ester Ethoxylate; a remove stubborn stains using Methyl Ester Ethoxylate; alcohol ethoxylates for industrial & institutional laundry; performance-testing results comparing bio-based and conventional (synthetic) products; and nonionic surfactant structure on cleaning performance.*

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**The role of interfacial and transport phenomena in consumer and industrial applications.** Padma P. Varanasi\* (*Samuel Rosen Memorial Award Winner*), Care Chemicals, BASF, United States

**Approaches and cleaning mechanisms to remove stubborn stains using methyl ester ethoxylate surfactant.** Junya Sato\*, Shiho Kuroda, Hideaki Watanabe, Hiroyuki Masui, Lion Corporation, Japan

**Laundry sustainable goals need a paradigm change in cleanliness testing.** Rodrigo Olmedo\*, CONSUMERTEC, Ecuador

**Effect of alkyl chain length, branching and oligomer distribution of alcohol ethoxylates on performance in textile cleaning applications.** George A. Smith\*, Gabriel Ortego, Research & Development, Sasol, United States

**From concept to practice: Development of fully ‘biological’ cleaning products.** Thomas Burns\*<sup>1</sup>, Renata Hyczy<sup>2</sup>, Jatin Sharma<sup>1</sup>, <sup>1</sup>Consumer Biosolutions, Novozymes North America, Inc., United States, <sup>2</sup>Household Care, Novozymes, United States

**Evaluation of alcohol ethoxylates for industrial & institutional laundry.** Nelson E. Prieto\*, David Benitez, Christian Jones, R&D, Applications, Sasol, United States

## Wednesday | Late Morning

### Rapid and High-throughput Screening Methods

#### ANALYTICAL

Chairs: David Barr, Bruker BioSpin Corp., USA; and Torben Kuechler, Eurofins Analytik GmbH, Germany

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The Rapid and High-throughput Screening Methods session features a low-cost, portable system to determine solid fat content; using 1H-NMR spectroscopy to analyze deviations from the origin lot in olive oil; and calibrating NMR for fat analysis in chocolate.*

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**1H-NMR spectral fingerprints of extra virgin olive oils: Confirmation of the identity and homogeneity within commercial lots.** Torben Kuechler\*, Ole Winkelmann, Eurofins Analytik GmbH, Germany

**Single-wavelength near-infrared analysis as a rapid and field-deployable tool to determine the solid fat content in fats and oils.** Marco Grossi<sup>1</sup>, Enrico Valli\*<sup>2</sup>, Virginia Teresa Glicerina<sup>2</sup>, Pietro Rocculi<sup>2</sup>, Tullia Gallina Toschi<sup>3</sup>, Bruno Riccò<sup>1</sup>, <sup>1</sup>*Department of Electrical Energy and Information Engineering Guglielmo Marconi, Alma Mater Studiorum—Università di Bologna, Italy;* <sup>2</sup>*Department of Agricultural and Food Sciences and Interdepartmental Centre of Agri-Food Industrial Research, Alma Mater Studiorum—Università di Bologna, Italy;* <sup>3</sup>*Department of Food and Agriculture Sciences, University of Bologna, Italy*

**Demystifying chemometrics: How multivariate analysis allows spectroscopy to be used to solve most analytical problems.** Jonathon Speed\*, *Keit Spectrometers, United Kingdom*

**Calibration of NMR for total fat analysis in chocolate manufacturing.** Dika Lau\*<sup>1</sup>, Rebecca Kuehn<sup>1</sup>, Linsen Liu<sup>2</sup>, <sup>1</sup>*R&D, Guittard Chocolates Company, United States,* <sup>2</sup>*Sciences, Guittard Chocolates Company, United States*

**Palm oil extraction process control using TD-NMR—study of losses reduction case.** Daniel M. Consalter\*<sup>1</sup>, Silvia P. De Azevedo, Lucas Topp, Cristina Consalter, Bruno Caravieri, Gabriel Torresam *Fine Instrument Technology, Brazil*

**A nondestructive method for oil distribution evaluation in healthy fried food developing by Raman imaging.** Peijin Tong\*<sup>1</sup>, Lingling Wei<sup>2</sup>, Junmei Liang<sup>2</sup>, Wenming Cao<sup>1</sup>, <sup>1</sup>*Wilmar (Shanghai) Biotechnology Research & Development Center Co., Ltd, China (People's Republic);* <sup>2</sup>*Wilmar Global R&D Center, China (People's Republic)*

## Novel Analytical Tools to Assess Oil Quality and Oxidation

ANALYTICAL

Joint session with the Lipid Oxidation and Quality Division

*Sponsored by Kalsec*

*Chairs: Matthew Phaner, University of Michigan-Flint, USA; Richard Della Porta, Pepsico/Frito-Lay, USA; and Fernanda Furlan Goncalves Dias, University of California, Davis, USA*

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*This session includes a novel method for quantitative assessment of epoxides; new tool for evaluating oxidation stability of specialty oils; green solvents for antioxidant analysis in frying oils; a rapid and efficient analytical method of oil oxidation steps; and irradiation-specific changes in irradiated meat matrices.*

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**Novel and Versatile Tool for Investigating the Oxidation Stability of Specialty Oils.** Carolin Edinger\* *Anton Paar PROVETEC GMBH, Germany*

**Time Domain (TD) NMR Proton (<sup>1</sup>H) Mobility Sensor to Assess Oil Quality and Oxidation.** Zeev Wiesman\*, Tatiana Osheter, Charles Linder, *Biotechnology Engineering, Ben Gurion University of the Negev, Israel*

**Analysis of lipid radiolysis in irradiated dried meat products.** Umut Yucel\*, *Food Science Institute, Animal Sciences and Industry Department, Kansas State University, United States*

**Implementation of Green Solvents to Monitor Thermal Oxidation of Common Frying Oils.** Matthew Phaner\*, *Department of Natural Sciences, University of Michigan–Flint, United States*

**Quantitative assessment of epoxide formation in bulk oil and mayonnaise by <sup>1</sup>H-<sup>13</sup>C HSQC NMR spectroscopy.** Vincent Boerkamp<sup>1</sup>, Donny Merckx<sup>2</sup>, Jianli Wang<sup>1</sup>, Jean-Paul Vincken<sup>1</sup>, John Van

Duynhoven<sup>3</sup>, Marie Hennebelle\*<sup>1</sup>, <sup>1</sup>Wageningen University, Netherlands; <sup>2</sup>Unilever, Netherlands;  
<sup>3</sup>Unilever R&D Vlaardingen, Netherlands

## Fermentation

### BIOTECHNOLOGY

Joint session with the Processing Division

Sponsored by Desmet Ballestra North America, Inc.

Chairs: Tsunehiro Aki, Hiroshima University, Japan; and Mahesh Balwant Khot, Farmsow Pvt. Ltd., India

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The Fermentation session includes talks on isolating microorganisms in crude glycerol to measure fatty acid composition; using yeasts to produce biodiesel and healthier metabolites; enhancing oil production from yeast; biodiesel production using agro-waste; and improving the quality of pennycress meal.*

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**Fungal bioprocessing to improve quality of pennycress meal as potential feeding ingredient for monogastric animal.** Bo Hu\*<sup>1</sup>, Xiao Sun<sup>1</sup>, David Marks<sup>2</sup>, Bo Hu<sup>1</sup>, <sup>1</sup>Bioproducts and Biosystems Engineering, University of Minnesota, United States; <sup>2</sup>Plant and Microbial Biology, University of Minnesota, United States

***Rhodotorula mucilaginosa* R2: A potent oleaginous yeast isolated from traditional fermented food as a promising platform for the production of lipid-based biofuels, bioactive compounds and other value-added products.** Pritam Bardhan\*, Manabendra Mandal, Department of Molecular Biology & Biotechnology, Tezpur University, India

**Genetic modification to enhance single cell oil production in the oleaginous yeast *Rhodotorula mucilaginosa*.** Sheetal Bandhu\*<sup>1</sup>, Debashish Ghosh<sup>2</sup>, <sup>1</sup>Kusuma School of Biological Sciences, Indian Institute of Technology, Delhi, India; <sup>2</sup>Biochemistry and Biotechnology, CSIR-Indian Institute of Petroleum, India

**Studies on filamentous fungus *Fusarium* sp. accumulating hydroxy fatty acids.** Eiji Sakuradani\*, Kai Yoshida, Naomi Murakawa, Takaiku Sakamoto, Tokushima University, Japan

**Process optimization for biodiesel production using agro-waste substrate.** Ameeta Ravikumar\*<sup>1</sup>, V. Ravi Kumar<sup>2</sup>, Rashmi Bed<sup>1</sup>, <sup>1</sup>Institute of Bioinformatics and Biotechnology, Savitribai Phule Pune University, India; <sup>2</sup>Chemical Engineering and Process Development Division, CSIR-National Chemical Laboratory (CSIR-NCL), India

**Utilization of sugar cane bagasse as a substrate for fatty acid production by *Aurantiochytrium* sp.** Kenshi Watanabe\*, Hiroshima University, Japan

## General Health and Nutrition II

### HEALTH AND NUTRITION

Chairs: Douglas Bibus, Lipid Technologies, LLC, USA; and Rotimi Aluko, University of Manitoba, Canada

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

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**Novel antihypertensive and anticholesterolemic peptides from peptic hydrolysates of camel whey proteins.** Waqas Baba\* (**Health and Nutrition Division Student Award Winner**), Sajid Maqsood, UAE University, United Arab Emirates

**Development of a method for separation of geometric isomers of alpha-linolenic acid in human plasma by silver Ion HPLC and GC-NCI-MS.** Na Wei\*, Heather C. Kuiper, Enada Archibold, Grace Jairo, Hubert W. Vesper, *NCEH, DLS, Center for Disease Control, United States*

**Associations between n-3 fatty acid status and depressive symptoms in Swiss adolescents with and without diagnosed paediatric major depressive disorder: A case-control study.** Ester Osuna\*<sup>1</sup>, Isabelle Herter-Aeberli<sup>1</sup>, Sophie Emery<sup>2</sup>, Mona Albermann<sup>2</sup>, Noemi Baumgartner<sup>2</sup>, Michael B. Zimmermann<sup>1</sup>, Isabelle Häberling<sup>2</sup>, Gregor Berger<sup>2</sup>, Jeannine Baumgartner<sup>1</sup>, <sup>1</sup>*ETH Zurich, Laboratory of Human Nutrition, Switzerland*; <sup>2</sup>*University Hospital Zurich, Clinics for Child and Adolescent Psychiatry, Switzerland*

**The essentiality of a healthy dietary pattern across the lifespan for reducing the global burden of cardiovascular disease.** Penny Kris-Etherton\*, *Department of Nutritional Sciences, The Pennsylvania State University, United States (Supelco AOCS Research Award Winner)*

## Biofuels II

### INDUSTRIAL OIL PRODUCTS

Joint session with the Processing Division

*Sponsored by Desmet Ballestra North America, Inc.*

*Chairs: Bruce Patsey, Oil-Dri Corp of America, USA; and Robert O. Dunn, Jr., USDA ARS NCAUR, USA*

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The second Biofuels session includes fractionation by urea inclusion; a solution for measuring oil content; and silica adsorbents.*

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**Fractionation of biodiesel by urea inclusion to improve its cold flow properties and provide feedstocks for chemicals/polymers production.** Junli Liu\*, Bernie Tao, *Agricultural and Biological Engineering, Purdue University, United States*

**Filter media options in renewable fuels and edible oils.** Zachary Galberd\*, Eric Appelbaum, *Dicalite Management Group, Inc., United States*

**Adsorptive reduction of metals and phospholipids from biofuel feedstocks.** Neal Williams\*<sup>1</sup>, David Gittins<sup>2</sup>, Tony Smith<sup>2</sup>, <sup>1</sup>*Science and Technology, Imerys, United States*; <sup>2</sup>*Imerys, United States*

**Silica adsorbents for biofuel feedstock pretreatment.** Chelsea Grimes\*, *Biofuels and Edible Oils, W. R. Grace & Co., United States*

## Novel Analytical Tools to Assess Oil Quality and Oxidation

### LIPID OXIDATION AND QUALITY

*Sponsored by Kalsec*

*Chairs: Matthew Phaner, University of Michigan–Flint, USA; Richard Della Porta, PepsiCo/Frito-Lay, USA; and Fernanda Furlan Goncalves Dias, University of California, Davis, USA*

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

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Joint session with the Analytical Division. See page 46 for details.



## Biofuels II

### PROCESSING

*Sponsored by Desmet Ballestra North America, Inc.*

*Chairs: Bruce Patsey, Oil-Dri Corp of America, USA; and Robert O. Dunn, Jr., USDA ARS NCAUR, USA*

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

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Joint session with the Industrial Oil Products Division. See page 48 for details.

## Control, Instrumentation and Machine Learning

### PROCESSING

*Sponsored by Desmet Ballestra North America, Inc.*

*Chairs: Jonathon Speed, Keit Spectrometers, UK; and William Younggreen, Alfa Laval Inc., USA*

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The Control, Instrumentation and Machine Learning session features Raman spectroscopy for measuring fats; a discussion of analytical approaches to the characterization of oil samples; and FTIR spectroscopy for measuring fermentation.*

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**Static optics FTIR spectroscopy for the measuring and control of fermentation.** Jonathon Speed\*, Keit Spectrometers, United Kingdom,

**Raman spectroscopy as a tool for understanding oil or fat quality in food products.** Karen Esmonde-White\*, Tory Woolf, Mary Lewis, Ian Lewis, Endress+Hauser, United States

**Interpretability as a quality parameter for validation of sensor analytics approaches.** Geir Rune Flaaten\*, Aspentech, Norway

**Advanced Process Control in Edible Oils Refining.** Richard Sallis\*, Keit Spectrometers, United States

## Fermentation

### PROCESSING

*Sponsored by Desmet Ballestra North America, Inc.*

*Chairs: Tsunehiro Aki, Hiroshima University, Japan; and Mahesh Balwant Khot, Farmsow Pvt. Ltd., India*

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

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Joint session with the Biotechnology Division. See page 47 for details.

## Non-food Applications of Proteins

### PROTEIN AND CO-PRODUCTS

*Chairs: Nandika Bandara, University of Manitoba, Canada; Yixiang Wang, McGill University, Canada; and Bishnu Karki, South Dakota State University, USA*

Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The Non-food Applications of Proteins session features plant polymer-based solid foams applications; protein-based biopolymers as sorbents for industrial wastewater; improving canola protein-based packaging films; 3D printing of gelatin/alginate based hydrocolloids; and wet strength of wood adhesives made with soy protein.*

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**Developments of plant polymer-based solid foams applications in the Food Industry.** Marcela A, Jarpa-Parra\*, *Research Direction, Universidad Adventista De Chile, Chile*

**3D Printing of gelatin/alginate based hydrocolloids as delivery systems for food and pharmaceutical applications.** Xiaolei Shi\*, *Iowa State University, United States*

**Protein based biopolymers as sorbents for treatment of industrial wastewater.** Aman Ullah\*<sup>1</sup>, Irum Zahara<sup>2</sup>, Tariq Siddique<sup>2</sup>, <sup>1</sup>AFNS, *University of Alberta, Canada*; <sup>2</sup>ReNR, *University of Alberta, Canada*

**Relationships between wet strength of wood adhesives made with soy protein, and the protein aggregation state/physical chemistry.** Christopher G. Hunt\*<sup>1</sup>, Nayomi Plaza<sup>2</sup>, Charles Frihart<sup>3</sup>, Casey Crooks<sup>2</sup>, Matthew Gargulak<sup>4</sup>, <sup>1</sup>Forest Biopolymer Science and Engineering, *USDA, Forest Service, Forest Products Laboratory, United States*; <sup>2</sup>USDA Forest Service, *Forest Products Laboratory, United States*; <sup>3</sup>Retired, *United States*; <sup>4</sup>Agrichemical Technologies, *United States*

**Food protein self-assembly towards high-performance functional materials.** Yiping Cao\*, *Department of Chemical Engineering, MIT, United States*

**Improving mechanical, barrier, and thermal properties of canola protein-based packaging films using hydrophobically modified nanocrystalline cellulose.** Thilini Dissanayake\*<sup>1</sup> (*Canadian Section Student Support Grant Winner; Protein and Co-Products Division Student Travel Grant Winner*), Binh Minh Trinh<sup>2</sup>, Tizazu Mekonnen<sup>2</sup> Nandika Bandara<sup>1</sup>, <sup>1</sup>Food and Human Nutritional Sciences, *University of Manitoba, Canada*; <sup>2</sup>Chemical Engineering, *University of Waterloo, Canada*

## Surfactants for Petroleum Applications

### SURFACTANTS AND DETERGENTS

*Chairs: Daniel Miller, The Dow Chemical Company, USA; and Dorianne Castillo, Baker Hughes, USA*  
Wednesday, May 4, 2022 | 9:55 a.m.–Noon EDT (Atlanta, USA; UTC-4)

*The Surfactants for Petroleum Applications session includes the challenges of using bio-oil as marine fuel; a porous media microfluidic flooding experiment; Gemini surfactant use in the oil-wet carbonate reservoirs; naphthenic acids; tri-methyl-propane and glycerin-based surface-active co-solvents (SAS); and the effect of selected additives on the interfacial behaviors.*

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**Innovative biofuels derived from wood pyrolysis bio-oil. Compatibility with petroleum cuts for applications in marine transportation.** Ronald Marquez\*<sup>1</sup>, Sophie Gelade<sup>2</sup>, François Lequeux<sup>3</sup>, Nicolas Sanson<sup>3</sup>, Jesus F. Ontiveros<sup>4</sup>, Veronique Rataj<sup>4</sup>, Jean-Marie Aubry<sup>4</sup>, Valerie Molinier<sup>2</sup>, <sup>1</sup>Laboratoire Physico-Chimie des Interfaces Complexes, *TotalEnergies, France*; <sup>2</sup>TotalEnergies, *France*; <sup>3</sup>ESPCI, *France*; <sup>4</sup>ENSCL, *France*

**Alkaline-surfactant-foam design for improving heavy oil mobility.** Sibani Biswal\*, *Chemical & Biomolecular Engineering, Rice University, United States*

**Mechanistic approaches to break water-in-crude oil emulsions.** Tzu-Chi Kuo\*, Arash Nowbahar, Decai Yu<sup>1</sup> Roxanne Jenkins, Michael Tulchinsky, Kathryn Grzesiak, Heather Wiles, Sara Ouellette, Adam Schmitt, Daniel S. Miller, Tom Kalantar, *The Dow Chemical Company, United States*

**The zipper self-assembly effect applied to naphthenic acid systems.** Rafael Perez, Edgar Acosta\*, *Chemical Engineering and Applied Chemistry, University of Toronto, Canada*

**Tri-methyl-propane and glycerin-based surface-active co-solvents (SAS) as an effective, low-cost, and environmentally friendly source of nonionic/anionic amphiphiles for chemical EOR applications.**

Karasinghe A. Upamali\*, Upali Weerasooriya, Chris Britton, Matt Dean, Jith Liyanage, Winoto Winoto, *Ultimate EOR services LLC, United States*

**Novel Gemini surfactants as a cost-effective material for oil-wet carbonate reservoirs: Wettability Alteration at HTHP conditions.** Muhammad Shahzad Kamal\*, Xiao Deng, Shirish Patil, Syed Muhammad Hussain, Xianmin Zhou, Mohamed Mahmoud, *KFUPM, Saudi Arabia*

# Poster Presentations

## Analytical

*Chairs: Lisa Clement, Cargill Inc., USA; and Ali Reza Fardin Kia, U.S. Food and Drug Administration, USA*

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**ANA-01 Development of a near-infrared spectroscopy calibration model to predict methionine content in whole soybeans.** Maria Erazo\*, William M. Singer, Nick Lord, Maria L. Rosso, Bo Zhang  
*School of Plant and Environmental Sciences, Virginia Tech, United States*

**ANA-02 Identification of soybean germplasm with higher concentrations of long chain fatty acids**  
Patrick Bewick\*<sup>1</sup>, Eva Collakova<sup>1</sup>, Bo Zhang<sup>2</sup>, <sup>1</sup>*Virginia Tech, United States*; <sup>2</sup>*School of Plant and Environmental Sciences, Virginia Tech, United States*

**ANA-03 Simultaneous determination of free and esterified fatty acids of food fats using a rapid gas chromatographic method.** Aubreyona Migliori\*<sup>1</sup>, Robert E. Ward<sup>2</sup>, Silvana Martini<sup>1</sup>, Melissa Marsh<sup>3</sup>  
<sup>1</sup>*Utah State University, United States*; <sup>2</sup>*Nutrition, Dietetics and Food Sciences, Utah State University, United States*; <sup>3</sup>*Food Science, Utah State University, United States*

**ANA-04 Consistent units are required when using the activated complex theory in oil evaluation process.** Liyou Zheng\*<sup>1</sup>, Hongyan Guo<sup>1</sup>, Jun Jin<sup>2</sup>, Qingzhe Jin<sup>2</sup>, <sup>1</sup>*Anhui Polytechnic University, China (People's Republic)*; <sup>2</sup>*Jiangnan University, China (People's Republic)*

**ANA-05 Enhance HS-SPME extraction kinetics by vacuum-assisted headspace and multi-cumulative trapping SPME and the combination of them for olive oil volatile profiling.** Steven Mascrez\*, Giorgia Purcaro, *Gembloux Agro-Bio Tech, University of Liege, Belgium*

**ANA-06 Increase the throughput and reliability of fatty acid characterization in food by using a rapid single step microwave-assisted extraction and derivatization method followed by GCxGC-FID.** Steven Mascrez\*, Angelica Fina, Giorgia Purcaro, *Gembloux Agro-Bio Tech, University of Liege, Belgium*

**ANA-07 Nutrient content and carotenoid bioaccessibility of underutilized taro varieties from Hawaii.** Kento Senga\*<sup>1</sup>, Kacie Ho<sup>1</sup>, Jon-Paul Bingham<sup>1</sup>, Marisa Wall<sup>2</sup>, <sup>1</sup>*University of Hawaii at Manoa, United States*; <sup>2</sup>*United States Department of Agriculture, United States*

**ANA-08 Thoughtful optimization of microwave-assisted saponification and extraction of MOSH&MOAH in edible oil.** Grégory Bauwens\*<sup>1</sup>, Giorgia Purcaro<sup>2</sup>, <sup>1</sup>*Analytical Chemistry, University of Liege, Belgium*; <sup>2</sup>*Gembloux Agro-Bio Tech, University of Liege, Belgium*

## Biotechnology

*Chair: Sarah Willett, Kerry Group, USA*

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**BIO-01 An efficient and environment friendly bio-based polyols through liquefaction: Liquefaction temperature and catalyst concentration optimization and utilized for rigid polyurethane foams.**  
Chiragkumar Patel\*<sup>1</sup>, Nikhil Dhore<sup>2</sup>, <sup>1</sup>*SICART, India*; <sup>2</sup>*IICT Hyderabad, India*

**BIO-02 Effect of oil carbon chain length on the physical stability and bioactivity of nanoemulsion delivery systems incorporating lipophilic ingredients.** Xin Guo\*<sup>1</sup> (**Biotechnology Division Student Award**)

**Winner**, Ming Chang<sup>2</sup>, <sup>1</sup>University of Massachusetts, Amherst, United States; <sup>2</sup>Jiangna University, China (People's Republic)

**BIO-03 Encapsulation of melittin in bicontinuous microemulsions for topical delivery.** Madison Oehler\*<sup>1</sup>, Douglas Hayes<sup>1</sup>, Doris D'Souza<sup>2</sup>, <sup>1</sup>Biosystems Engineering and Soil Science, University of Tennessee, Knoxville, United States; <sup>2</sup>Food Science and Technology, The University of Tennessee Knoxville, United States

**BIO-04 International standards for food authenticity and allergen detection from ISO TC 34/SC 16 horizontal methods for molecular biomarker analysis.** Michael Sussman\*, ISO/USDA, AMS, L&P, Agricultural Analytics Division, United States

**BIO-05 Measurement of volumetric mass transfer coefficient in lab-scale stirred tank reactors: Is there a point of diminishing returns for impeller speed and gas flowrate?** Robert Bertrand\*<sup>1</sup>, Emmanuel Revellame<sup>2</sup>, Lisa Stephanie Dizon<sup>1</sup>, Kristel Gatdula<sup>2</sup>, Remil Aguda<sup>2</sup>, <sup>1</sup>Chemical Engineering, University of Louisiana at Lafayette, United States; <sup>2</sup>University of Louisiana at Lafayette, United States

**BIO-06 Variation in cellulase production during solid and submerged state fermentation of raw and processed canola meal by *Aureobasidium pullulans*, *Neurospora crassa*, and *Trichoderma reesei*.** Ahmad F. Alhomodi\*<sup>1</sup>, William Gibbons<sup>2</sup>, Bishnu Karki<sup>2</sup>, <sup>1</sup>Dept. of Biology and Microbiology, South Dakota State University, United States; <sup>2</sup>South Dakota State University, United States

**BIO-07 A Comparative Analysis of NanoLuc Luciferase and Alkaline Phosphatase as Reporter Proteins for Phage-Based Pathogen Detection.** Joey Talbert \*, Shalini Wijeratne, Arubdan Bakshi, Department of Food Science and Human Nutrition, Iowa State University, United States

**BIO-08 Characterization of monoolein liquid crystals using oscillatory rheology and strain rate frequency superposition.** Shweta Mistry\*<sup>1</sup>, Philipp Fuhrmann<sup>1</sup>, Dérick Rousseau<sup>2</sup>, <sup>1</sup>Ryerson University, Canada; <sup>2</sup>Department of Chemistry and Biology, Ryerson University, Canada

**BIO-09 CRISPR/Cas9-targeted mutagenesis of KT11 and KT13 to reduce trypsin inhibitors in soybean seeds.** Zhibo Wang\*<sup>1</sup>, Zachary Shea<sup>1</sup>, Maria L. Rosso<sup>2</sup>, Chao Shang<sup>1</sup>, Jianyong Li<sup>1</sup>, Patrick Bewick<sup>1</sup>, Bingyu Zhao<sup>1</sup>, Bo Zhang<sup>2</sup>, <sup>1</sup>Virginia Tech, United States; <sup>2</sup>School of Plant and Environmental Sciences, Virginia Tech, United States

**BIO-10 Effects of fungal fermentation on cellulase activity along with the solubility and protein yield on different economically important substrates.** Mohammad Raihan\*<sup>1</sup>, Ahmad F. Alhomodi<sup>2</sup>, Mark Berhow<sup>3</sup>, William Gibbons<sup>1</sup>, Bishnu Karki<sup>1</sup>, <sup>1</sup>South Dakota State University, United States; <sup>2</sup>Dept. of Biology and Microbiology, South Dakota State University, United States; <sup>3</sup>USDA, United States

**BIO-11 Effects of growth conditions on the bacterial conversion of methane to lipids.** Lisa Stephanie Dizon\*<sup>1</sup>, Robert Bertrand<sup>1</sup>, Mark Zappi<sup>1</sup>, Rafael Hernandez<sup>1</sup>, William Holmes<sup>2</sup>, Dhan Lord Fortela<sup>1</sup>, Emmanuel Revellame<sup>3</sup>, <sup>1</sup>Chemical Engineering, University of Louisiana at Lafayette, United States; <sup>2</sup>Energy Institute of Louisiana, University of Louisiana at Lafayette, United States; <sup>3</sup>Industrial Technology, University of Louisiana at Lafayette, United States

**BIO-12 In-situ direct transesterification process optimization for biodiesel production from *Aspergillus terreus* wet biomass.** Rashmi Bed\*<sup>1</sup>, Ameeta Ravikumar<sup>1</sup>, V. Ravi Kumar<sup>2</sup>, <sup>1</sup>Institute of Bioinformatics and Biotechnology, Savitribai Phule Pune University, India; <sup>2</sup>Chemical Engineering and Process Development Division, National Chemical Laboratory, Pune, India

**BIO-13 Lignin-alginate-based biopolymers for the bioencapsulation of Rhizobium.** Toby A. Adjuik\*, Sue E. Nokes, Michael D. Montross, *Biosystems and Agricultural Engineering, University of Kentucky, United States*

**BIO-14 Novel strategy for synthesis of stearidonic acid enriched triacylglycerol from ahiflower seed oil via a two-step enzyme reaction.** Yu Jin Lee\*<sup>1</sup>, Changhwan Ju<sup>2</sup>, In-Hwan Kim<sup>2</sup>, <sup>1</sup>*Department of Integrated Biomedical and Life Sciences, Graduate School, Korea University/BK21FOUR R&E Center for Learning Health Systems, Korea University, Korea University, Republic of Korea;* <sup>2</sup>*Korea University, Republic of Korea*

**BIO-15 Optimizing corn steep liquor as fermentation media for the production of recombinant antifreeze proteins.** Bibek Byanju\*<sup>1</sup>, Buddhi Lamsal<sup>2</sup>, Swastik Sen<sup>3</sup>, Thomas Mansell<sup>3</sup>, <sup>1</sup>*Food Science and Human Nutrition, Iowa State University, United States;* <sup>2</sup>*Iowa State University (ISU), United States;* <sup>3</sup>*Department of Chemical and Biological Engineering, Iowa State University, United States*

**BIO-16 Phosphatidylglycerol-specific phospholipase C from *Amycolatopsis* sp. NT115: Biochemical characterization and heterologous expression.** Daisuke Sugimori\*, Kiyoto Kajiyama, Shunsuke Kawashima, Yuho Matsumoto, *Fukushima University, Japan*

**BIO-17 Probiotic fermentation to improve nutritional profile in extruded or ground corn and wheat brans.** Bibek Byanju\*<sup>1</sup>, Buddhi Lamsal<sup>2</sup>, <sup>1</sup>*Food Science and Human Nutrition, Iowa State University, United States;* <sup>2</sup>*Iowa State University (ISU), United States*

**BIO-18 Statistical optimization of media for enhancing intracellular lipid content in *Yarrowia lipolytica* NCIM 3589 grown on waste cooking oil for biodiesel production.** Shubhangi Jagtap\*<sup>1</sup>, Ameeta Ravikumar<sup>1</sup>, Gouri Raut<sup>2</sup>, V. Ravi Kumar<sup>3</sup>, <sup>1</sup>*Institute of Bioinformatics and Biotechnology, Savitribai Phule Pune University, Pune, India;* <sup>2</sup>*Bioenergy, Agharkar Research Institute, India;* <sup>3</sup>*Chemical Engineering and Process Development Division, CSIR-National Chemical Laboratory (CSIR-NCL), India*

**BIO-19 Synthesis of pinolenic acid enriched triacylglycerol from pine nut oil via a two-step consecutive enzyme reaction.** Mi Soon Park\*<sup>1</sup>, Yu Jin Lee<sup>1</sup>, In-Hwan Kim<sup>2</sup>, <sup>1</sup>*Department of Integrated Biomedical and Life Sciences, Graduate School, Korea University/BK21FOUR R&E Center for Learning Health Systems, Korea University, Republic of Korea;* <sup>2</sup>*Korea University, Republic of Korea*

## Edible Applications Technology

*Chair: Supratim Ghosh, University of Saskatchewan, Canada*

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**EAT-01 Chemical and physical stability of EPA and DHA fortified plant milk analogs.** Abigail A. Sommer\*, Yael Vodovotz, *Department of Food Science and Technology, The Ohio State University, United States*

**EAT-02 Comparison of high oleic palm oils and shortenings in a baking application.** Melissa Perez-Santana, Gloria Cagampang, Christopher Nieves, Victor Cedeño-Sánchez, Andrew MacIntosh\*, *University of Florida, United States*

**EAT-03 Does cannabidiol affect the physical properties of anhydrous milk fat and palm kernel oil?** Joseph Cooney\*<sup>1</sup>, Silvana Martini<sup>2</sup>, <sup>1</sup>*Department of Nutrition, Dietetics and Food Sciences, Utah State University, United States;* <sup>2</sup>*Utah State University, United States*

**EAT-04 Effect of cannabidiol on crystallization behavior and physical properties of cocoa butter and palm oil.** Isaac Hilton\*<sup>1</sup>, Joseph Cooney<sup>2</sup>, Silvana Martini<sup>1</sup>, <sup>1</sup>*Utah State University, United States*; <sup>2</sup>*Department of Nutrition, Dietetics and Food Sciences, Utah State University, United States*

**EAT-05 Effect of waxes on oil separation and texture properties of peanut butter.** Md. Jannatul Ferdous\*<sup>1</sup>, Rycal Blount<sup>2</sup>, Nathan Zauner<sup>1</sup>, Roberta Silva<sup>1</sup>, <sup>1</sup>*Family and Consumer Sciences, North Carolina A&T State University, United States*; <sup>2</sup>*North Carolina A&T State University, United States*

**EAT-06 Effect of the Fat Content of Cream on the Physical Properties of Butter.** Annalisa Jones\*, Silvana Martini, *Utah State University, United States*

**EAT-07 Effects on the physical properties of corn oil oleogels structured with different ratios of rice bran or carnauba waxes.** Jabarius Jones\*<sup>1</sup>, Jaden Payne<sup>1</sup>, Rycal Blount<sup>2</sup>, Roberta Silva<sup>1</sup>, <sup>1</sup>*Family and Consumer Sciences, North Carolina A&T State University, United States*; <sup>2</sup>*North Carolina A&T State University, United States*

**EAT-08 Exploring plant biodiversity to extract oil bodies for sustainable food applications.** Nathalie Barouh\*<sup>1</sup>, Claire Berton-Carabin<sup>2</sup>, Thierry Chardot<sup>3</sup>, Sabine D'andrea<sup>3</sup>, Jean-François Fabre<sup>4</sup>, Yann Gohon<sup>3</sup>, Eric Lacroux<sup>7</sup>, Valérie Lullien-Pellerin<sup>5</sup>, Valérie Micard<sup>5</sup>, Othmane Merah<sup>4</sup>, Anne Meynier<sup>2</sup>, Romain Valentin<sup>4</sup>, Véronique Vié<sup>6</sup>, Pierre Villeneuve<sup>7</sup>, Claire Bourlieu-Lacanal<sup>5</sup>, <sup>1</sup>*CIRAD, France*; <sup>2</sup>*UR BIA, INRAE, France*; <sup>3</sup>*UMR 1318 Institut Jean-Pierre Bourgin (IJBP), INRAE/ AgroParisTech/ Université Paris-Saclay, INRAE, France*; <sup>4</sup>*UMR 1010 LCA, INRAE/ Université de Toulouse/INPT/ENSIACET, United States*, <sup>5</sup>*UMR IATE, INRAE/Univ Montpellier/Institut Agro, France*; <sup>6</sup>*Soft Matter, Institut de Physique de Rennes, Université de Rennes 1, France*; <sup>7</sup>*UMR QUALISUD, CIRAD/Univ Montpellier/Institut Agro/IRD/Univ Réunion, France*

**EAT-09 Impact of almond roasting and particle size on the simultaneous extraction of lipids and proteins for almond milk production.** Jessica Hallstrom\*, Fernanda Furlan Goncalves Dias<sup>1</sup>, Juliana Leite Nobrega De Moura Bell, *Food Science & Technology, University of California, Davis, United States*

**EAT-10 Monoglyceride type and concentration affect the rheological and structural properties of Pickering stabilized oleofoams.** Matteo Grossi\*, Bingcan Chen, *Plant Science, North Dakota State University, United States*

**EAT-11 Physical properties of beeswax-based oleogel-emulsion as a delivery system of probiotics.** Rycal Blount\*, *North Carolina A&T State University, United States*

**EAT-12 Plant-based adipose tissue developed using advanced emulsion technology: Comparison of soy-based high internal phase emulsions with beef adipose tissue.** Xiaoyan Hu\*, David J. McClements, *Food Science, University of Massachusetts Amherst, United States*

**EAT-13 Solubilized proteins as a fat block in production.** Stephen Kelleher\*, Wayne Saunders, William Fielding, *Kemin Industries, United States*

**EAT-14 Static in vitro digestibility impacted by emulsion crystallinity under different experimental conditions.** Ye Ling Li\*, Amanda J. Wright, *Human Health & Nutritional Sciences, University of Guelph, Canada*

**EAT-15 African butter seed fat: A potential substitute for cocoa butter.** Sandaru Jayathissa\*<sup>1</sup>, Buddhika Silva<sup>2</sup>, Shiromi De Silva<sup>3</sup>, Renuka Jayatissa<sup>2</sup>, Terrence Madhujith<sup>1</sup>, <sup>1</sup>*Food Science and Technology*,

University of Peradeniya, Sri Lanka; <sup>2</sup>Department of Nutrition, Medical Research Institution, Sri Lanka;  
<sup>3</sup>Department of Electron microscopy, Medical Research Institute, Sri Lanka

**EAT-16 Candelilla and rice bran wax as oleogelators in soybean oil for deep frying application.** Maslia Manja Badrul Zaman\*<sup>1</sup>, Amelia Najwa Ahmad Hairi<sup>1</sup>, Norliza Saparin<sup>2</sup>, Ahmadilfitri Md Noor<sup>2</sup>, <sup>1</sup>Oils and Fats, Sime Darby Plantation Research Sdn Bhd, Malaysia; <sup>2</sup>Sime Darby Plantation Research Sdn Bhd, Malaysia

**EAT-17 Cocoa butter crystallization and fat bloom formation in the presence of rice bran wax.** Pawitchaya Podchong\*<sup>1</sup>, Sopark Sonwai<sup>2</sup>, D errick Rousseau<sup>3</sup>, <sup>1</sup>Department of Food Science and Technology, Faculty of Agricultural Technology and Agro-Industry, Rajamangala University of Technology Suvarnabhumi, Thailand; <sup>2</sup>Department of Food Technology, Faculty of Engineering and Industrial Technology, Silpakorn University, Thailand; <sup>3</sup>Department of Chemistry and Biology, Ryerson University, Canada

**EAT-18 Comparative analysis of cocoa beans from different climatic regions in Togo.** Daniel Kalnin\*, ISTOM, France

**EAT-19 Consumers' perceptions and associations on plant-based cheese analogue in Malaysia.** Amelia Najwa Ahmad Hairi\*<sup>1</sup>, Ungku Fatimah Ungku Zainal Abidin<sup>2</sup>, Maimunah Sanny<sup>2</sup>, Nur Qistina Aznor Shahril<sup>2</sup>, <sup>1</sup>Oils and Fats, Sime Darby Plantation Research Sdn Bhd, Malaysia; <sup>2</sup>Universiti Putra Malaysia, Malaysia

**EAT-20 Destabilization of particle-stabilized emulsions with non-ionic surfactants.** Malek El-Aooiti\*<sup>1</sup>, Auke de Vries<sup>2</sup>, D errick Rousseau<sup>1</sup>, <sup>1</sup>Chemistry and Biology, Ryerson University, Canada; <sup>2</sup>Ryerson University, Canada

**EAT-21 Determination of solid fat content in plain fats and suspensions with lab-scale SAXS device.** Fien De Witte \*, Koen Dewettinck, Department of Food Technology, Safety and Health, Ghent University, Belgium

**EAT-22 Effect of dispersed aqueous droplet volume fraction on the rheology and structure of water-in-oil emulsions stabilized with fat crystals.** Veronica Hislop\*<sup>1</sup>, D errick Rousseau<sup>2</sup>, <sup>1</sup>Molecular Science, Ryerson University, Canada; <sup>2</sup>Department of Chemistry and Biology, Ryerson University, Canada

**EAT-23 Improving the consistency of high internal phase water-in-oil emulsions stabilized by fat crystals**  
Natalia Mello\*<sup>1</sup>, D errick Rousseau<sup>2</sup>, <sup>1</sup>Ryerson University, Canada; <sup>2</sup>Department of Chemistry and Biology, Ryerson University, Canada

**EAT-24 Inclusion complexes between amylose and long-chain dicarboxylic acids prepared by jet cooking: Characterization and thermal properties.** James Kenar\*<sup>1</sup>, David Compton<sup>2</sup>, Steve Peterson<sup>3</sup>, Frederick Felker<sup>1</sup>, <sup>1</sup>Functional Food Research, USDA ARS MWA NCAUR, United States; <sup>2</sup>Renewable Products Technology, USDA ARS MWA NCAUR, United States; <sup>3</sup>Plant Polymer Research, USDA ARS MWA NCAUR, United States

**EAT-25 Microstructure controlling on the printability of high oil paste formulated with nanoporous starch aerogels (NSAs).** Lingyi Liu\* (**Honored Student Award Winner; Manuchehr Eijadi Award Winner**), Ozan Ciftci, Food Science and Technology, University of Nebraska–Lincoln, United States



**EAT-26 Physicochemical properties of bambangan (*Mangifera pajang*) kernel fat and its stearin mixtures with cocoa butter.** Hasmadi B. Mamat\*<sup>1</sup>, Norazlina Ridhwan<sup>2</sup>, <sup>1</sup>*Faculty of Food Science and Nutrition, University Malaysia Sabah, Malaysia;* <sup>2</sup>*Universiti Malaysia Sabah, Malaysia*

**EAT-27 Sucrose esters potential as oleogelators to form oleogels using different structuration routes.** Thais da Silva\*<sup>1</sup>, Vicent Baeten<sup>2</sup>, Sabine Danthine<sup>1</sup>, <sup>1</sup>*Gembloux Agro-Bio Tech, University of Liege, Belgium;* <sup>2</sup>*Quality and Authentication of Products, Walloon Agricultural Research Centre, Belgium*

**EAT-28 Temperature-dependent microstructure and rheology of fat in adipose tissue in pork, beef and lamb.** Khakhanang Wijarnprecha\*<sup>1</sup>, Philipp Fuhrmann<sup>2</sup>, Christopher Gregson<sup>3</sup>, Matt Sillick<sup>3</sup>, Sopark Sonwai<sup>4</sup>, D eric Rousseau<sup>2</sup>, <sup>1</sup>*Ryerson University, Canada;* <sup>2</sup>*Department of Chemistry and Biology, Ryerson University, Canada;* <sup>3</sup>*Paragon Pure Inc, United States;* <sup>4</sup>*Silpakorn University, Thailand*

**EAT-29 Temperature-dependent phase behaviour of blends of SSS (tristearin) and SSO (1,2-distearoyl-3-oleoyl-rac-glycerol).** Khakhanang Wijarnprecha\*<sup>1</sup>, Ryan West<sup>2</sup>, D eric Rousseau<sup>3</sup>, <sup>1</sup>*Ryerson University, Canada;* <sup>2</sup>*Mondelez International, United States;* <sup>3</sup>*Department of Chemistry and Biology, Ryerson University, Canada*

**EAT-30 Tuning suspension rheology in hybrid capillary suspension-oleogels for edible oil structuring.** Selvyn Simoes\*<sup>1</sup>, D eric Rousseau<sup>2</sup>, <sup>1</sup>*Ryerson University, Canada;* <sup>2</sup>*Department of Chemistry and Biology, Ryerson University, Canada*

~~**Animal fat replacement with faba bean protein-stabilized oil-in-water emulsion gels in hybrid bologna formulations.** Fatemeh Keivaninahr<sup>1</sup>, Oluwafemi J. Coker\*<sup>1</sup>, Phyllis J. Shand<sup>1</sup>, Supratim Ghosh<sup>2</sup>, <sup>1</sup>*Department of Food and Bioproduct Sciences, University of Saskatchewan, Canada;* <sup>2</sup>*University of Saskatchewan, Canada*~~

## Health and Nutrition

*Chairs: Hongbing Fan, University of Alberta, Canada; and Fang Xia, Pharmavite LLC, USA*

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**H&N-01 Biological Activities of Flaxseed Peptides (Linusorbs).** Youn Young Shim\*<sup>1</sup>, Timothy Tse<sup>2</sup>, Martin J. Reaney<sup>2</sup>, <sup>1</sup>*Department of Plant Sciences, University of Saskatchewan, Canada;* <sup>2</sup>*University of Saskatchewan, Canada*

**H&N-02 Changes in energy metabolism induced by PFOS and dietary oxylipins.** William A. Evans\*, Jazmine Eccles, William S. Baldwin, *Biological Sciences, Clemson University, United States*

**H&N-03 Dietary  $\gamma$ -glutamyl valine in reducing inflammation in endothelial cells and in a mouse model for Atherosclerosis.** Snigdha Guha\*, Kaustav Majumder, *Food Science and Technology, University of Nebraska, Lincoln, United States*

**H&N-04 Eco-designed virgin coriander seed oil: A food supplement solution to soothe sensitive skin.** Regis Marchand\*, Catherine Kern, Remi Laville, Alicia Roso, *Research and Innovation, Seppic, France*

**H&N-05 Enhancing soybean meal demand and market by developing soy meal based aquafeeds.** Zachary Shea\*<sup>1</sup>, Bo Zhang<sup>2</sup>, <sup>1</sup>*Virginia Tech University, United States;* <sup>2</sup>*School of Plant and Environmental Sciences, Virginia Tech, United States*

**H&N-06 Fungal digestive enzymes promote macronutrient hydrolysis in the INFOGEST *in vitro* simulation of digestion.** Justin L. Guice\*<sup>1</sup>, Caroline H. Best<sup>1</sup>, Morgan D. Hollins<sup>1</sup>, Kelly M. Tinker<sup>1</sup>, Sean M. Garvey<sup>2</sup>, <sup>1</sup>*Research and Development, BIO-CAT, Inc., United States;* <sup>2</sup>*BIO-CAT, Inc., United States*

**H&N-07 Fungal multi-enzyme blend promotes improved macronutrient hydrolysis of mixed meal substrates in the INFOGEST *in vitro* simulation of digestion.** Justin L. Guice\*<sup>1</sup>, Morgan D. Hollins<sup>1</sup>, Caroline H. Best<sup>1</sup>, Kelly M. Tinker<sup>1</sup>, Sean M. Garvey<sup>2</sup>, <sup>1</sup>*Research and Development, BIO-CAT, Inc., United States*; <sup>2</sup>*BIO-CAT, Inc., United States*

**H&N-08 Lipid oxidation kinetics of model systems representative of follow-on formulas.** Mathilde Canelon\*<sup>1</sup> (**European Section Student Travel Grant Winner**), Nathalie Barouh<sup>1</sup>, Youna Hemery<sup>2</sup>, Erwann Durand<sup>3</sup>, Pierre Villeneuve<sup>1</sup>, Claire Bourlieu-Lacanal<sup>4</sup>, <sup>1</sup>*CIRAD, France*; <sup>2</sup>*IRD, France*; <sup>3</sup>*CIRAD/UMR QUALISUD, France*; <sup>4</sup>*UMR IATE, INRAE/Univ Montpellier/Institut Agro, France*

**H&N-09 In-vitro bioaccessibility and antioxidant activity of commercial standard and enriched whole egg compounds modulated by production and processing practices.** Emerson Nolasco\*<sup>1</sup>, Eugene Baraka<sup>2</sup>, Danh C. Vu<sup>2</sup>, Sophie Alvarez<sup>2</sup>, Kaustav Majumder<sup>1</sup>, <sup>1</sup>*Food Science and Technology, University of Nebraska-Lincoln, United States*; <sup>2</sup>*University of Nebraska-Lincoln, United States*

**H&N-10 Comparing physical stability of ultrasound and Pickering emulsion fortified with vitamin D.** Sibel Uluata\*<sup>1</sup>, Seymanur Avci<sup>2</sup>, Gokhan Durmaz<sup>2</sup>, <sup>1</sup>*Food Engineering, Inonu University, Turkey*, <sup>2</sup>*Inonu University, Turkey*

**H&N-11 Diet-induced gene expression changes of cachectic muscle, adipose, and liver.** Austin Angelotti\*<sup>1</sup>, Rachel Cole<sup>1</sup>, Amy Webb<sup>1</sup>, Maciej Pietrzak<sup>1</sup>, Martha A. Belury<sup>2</sup>, <sup>1</sup>*Ohio State University, United States*; <sup>2</sup>*Nutritional Sciences, Ohio State University, United States*

**H&N-12 Dietary intakes of trans fatty acids in the Canadian population before the prohibition of partially hydrogenated oils.** Isabelle Demonty\*<sup>1</sup>, Kuan Chiao Wang<sup>2</sup>, Isabelle Rondeau<sup>2</sup>, Chantal Martineau<sup>3</sup>, Lindsay Lukeman<sup>3</sup>, Dominique Ibanez<sup>2</sup>, <sup>1</sup>*Nutrition Research Division, Bureau of Nutritional Sciences, Health Products and Food Branch, Health Canada, Canada*; <sup>2</sup>*Bureau of Food Surveillance and Science Integration, Health Products and Food Branch, Health Canada, Canada*; <sup>3</sup>*Nutrition Regulations and Standards Division, Bureau of Nutritional Sciences, Health Products and Food Branch, Health Canada, Canada*

**H&N-13 Eco-friendly strategies to produce bioactive lipids from the omega-3 rich microalga *Nannochloropsis gaditana*.** Natalia Castejón\*, *Department of Food Chemistry and Toxicology, University of Vienna, Austria*

**H&N-14 Effect of food emulsions on the cytotoxicity of 3-chloropropane-1,2-diol esters.** Ayse Nur Akpinar\*<sup>1</sup>, Selvi Secil Sahin<sup>2</sup>, Büşra Moran Bozer<sup>3</sup>, Aziz Tekin<sup>1</sup>, Cansu Ekin Gumus-Bonacina<sup>1</sup>, <sup>1</sup>*Ankara University, Turkey*; <sup>2</sup>*University of Leeds, United Kingdom*; <sup>3</sup>*Hitit University, Turkey*

**H&N-15 Effects of palm stearin and palm olein emulsion crystallinity on beta-carotene degradation and *in vitro* bioaccessibility.** Jessica Ulbikas\*, Ye Ling Li, Amanda J. Wright, *Human Health & Nutritional Sciences, University of Guelph, Canada*

**H&N-16 Genotoxicity evaluation of prickly pear cactus seeds oil in cultured V79 cells.** Ghanya Al-Naqeb\*

**H&N-17 Medium-chain fatty acids for the prevention or treatment of Alzheimer's disease: A systematic review and meta-analysis.** Carolina Castro\*<sup>1</sup>, Cintia Dias<sup>2</sup>, Hamid Sohrabi<sup>1</sup>, Tejal Shah<sup>1</sup>, Pratihtha Chatterjee<sup>3</sup>, Heidi Hillebrandt<sup>3</sup>, Stephanie Fuller<sup>3</sup>, Manohar Garg<sup>2</sup>, Ralph Martins<sup>3</sup>, <sup>1</sup>*Murdoch University, Australia*; <sup>2</sup>*The University of Newcastle, Australia*; <sup>3</sup>*Macquarie University, Australia*

**H&N-18 Nutrition for longevity and healthy aging type.** Khalid Elsayed Elsorady\*, *Geriatrics and Gerontology, Faculty of Medicine, Ain Shams University, Egypt*

**H&N-19 The effects of dietary soybean oil on blood fatty acids and body weight in overweight and obese adults: Protocol for a crossover design pilot study.** Rachel Cole\*<sup>1</sup>, Eric Colombo<sup>1</sup>, Austin Angelotti<sup>1</sup>, Martha A. Belury<sup>2</sup>, <sup>1</sup>*Ohio State University, United States*; <sup>3</sup>*Nutritional Sciences, Ohio State University, United States*

## Industrial Oil Products

*Chair: Jerry King, R&D Consulting, USA*

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**IOP-01 The effect of structure regularity of natural oils on properties of oil-based epoxy resins.** Jian Hong\*, Dragana Radojic, Zoran S. Petrovic, *Kansas Polymer Research Center, Pittsburg State University, United States*

**IOP-02 Crystallography and functionality of natural waxes: Insights for the development of tailored lipid materials.** Francisco Leyva Gutierrez\*, Tong (Toni) Wang, *Department of Food Science, University of Tennessee Knoxville, United States*

**IOP-03 Flame retardant polyurethane foams using vegetable oil-based polyol.** Prashant Kote\*, Magdalen Asare, Sahilkumar Chaudhary, Tim Dawsey, Ram Gupta, *Pittsburg State University, United States*

**IOP-04 Production of branched esters via continuous alkylation of fatty acid methyl esters over montmorillonite and H-ZSM5 catalysts.** Evan Davison\*<sup>1</sup>, Jessica Otto<sup>1</sup>, Sandeep Kumar<sup>2</sup>, Randy Maglinao<sup>1</sup>, <sup>1</sup>*Montana State University-Northern, United States*; <sup>2</sup>*Department of Civil & Environmental Engineering, Old Dominion University, United States*

**IOP-05 Study of the phenolic fraction for the valorization of olive pomace as a functional ingredient.** Ilaria Grigoletto<sup>1</sup>, Patricia García Salas<sup>2</sup>, Enrico Valli\*<sup>3</sup>, Alessandra Bendini<sup>4</sup>, Federica Pasini<sup>1</sup>, Sebastián Sánchez Villasclaras<sup>5</sup>, Roberto García Ruiz<sup>6</sup>, Tullia Gallina Toschi<sup>1</sup>, <sup>1</sup>*Department of Agricultural and Food Sciences, Alma Mater Studiorum—University of Bologna, Italy*; <sup>2</sup>*University of Bologna, Italy*; <sup>3</sup>*Department of Agricultural and Food Sciences and Interdepartmental Centre of Agri-Food Industrial Research, Alma Mater Studiorum—Università di Bologna, Italy*; <sup>4</sup>*DISTAL, Alma Mater Studiorum Università di Bologna, Italy*, <sup>5</sup>*Chemical, Environmental and Materials Engineering, University of Jaen, Spain*; <sup>7</sup>*Plant and animal biology and ecology, University of Jaén, Spain*; <sup>8</sup>*Department of Food and Agriculture Sciences, University of Bologna, Italy*

**IOP-06 Synthesis of cycloalkanes from lignocellulosic platform.** Jessica Otto\*, Evan Davison, Randy Maglinao, *Montana State University-Northern, United States*

## Lipid Oxidation and Quality

*Sponsored by BTSA and Kalsec*

*Chairs: David Johnson, Kalsec, Inc., USA; and Marc Pignitter, University of Vienna, Physiological Chemistry, Austria*

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**LOQ-01 Antioxidative functionality of natural olive extract vs. synthetic tertiary butyl hydroquinone in sunflower oil during deep frying.** Mayamol Nichlavose\*<sup>1</sup>, Sergey Melnikov<sup>2</sup>, Rupesh Sarfare<sup>1</sup>, Chirag Jain<sup>1</sup>, <sup>1</sup>*Research & Development, International Foods Stuff Company (IFFCO), United Arab Emirates*;

<sup>2</sup>IFFCO, United Arab Emirates **LOQ-02 Determination of antioxidant synergism between tocopherols and myricetin in bulk oil.** Ipek Bayram\* (**Lipid Oxidation and Quality Division Student Travel Grant Winner**), Eric A. Decker, Food Science, University of Massachusetts Amherst, United States

**LOQ-03 Effect of processing and fat content on the oxidative stability and interfacial behavior of tree nut oil-bodies.** Jeanne Duplessis-Kergomard<sup>1</sup>, Mélina Robert<sup>2</sup>, Gilles Paboeuf<sup>1</sup>, Nathalie Barouh<sup>3</sup>, Pierre Villeneuve<sup>3</sup>, Olivier Schafer<sup>4</sup>, Tim Wooster<sup>4</sup>, Claire Bourlieu-Lacanal<sup>5</sup>, Véronique Vié<sup>1</sup>,  
<sup>1</sup>Soft Matter, Institut de Physique de Rennes, Université De Rennes 1, France; <sup>2</sup>LiFFhe, CIRAD/UMR QUALISUD, France; <sup>3</sup>CIRAD, France; <sup>4</sup>Institute of Material Sciences, Lipids, Nestlé, Switzerland; <sup>5</sup>UMR IATE, INRAE/Univ Montpellier/Institut Agro, France

**LOQ-04 Inhibitory mechanisms of quercetin against hemoglobin-mediated lipid oxidation in washed muscle model.** Haizhou Wu\*<sup>1</sup> (**Lipid Oxidation and Quality Division Junior Researcher Travel Grant Winner**), Jie Yin<sup>2</sup>, Mark P. Richards<sup>3</sup>, <sup>1</sup>Dept of Biology and Biological Engineering-Food and Nutrition Science, Chalmers University of Technology, Sweden; <sup>2</sup>University of Wisconsin-Madison, United States; <sup>3</sup>Department of Animal and Dairy Sciences, University of Wisconsin-Madison, United States

**LOQ-05 Optimization of oxidative stress indicator workflows for enhanced quality control of rendered meals and fats utilizing the CDR FoodLab Analyzer: Peroxide value and free fatty acids.** Jennifer Pelerin\*<sup>1</sup>, B.J. Bench<sup>2</sup>, Madison Schaugaard<sup>2</sup>, Jacob Swann<sup>2</sup>, Toniese Bailey<sup>2</sup>, <sup>1</sup>Quartz Analytics, United States; <sup>2</sup>Tyson Food Ingredient Solutions Group, United States

**LOQ-06 Review of oil quality of soybeans grown in different geographic areas.** Huazhen Liu\*<sup>1</sup>, Micah Pope<sup>2</sup>, Todd Doehring<sup>2</sup>, Pradeep Kachroo<sup>1</sup>, David Hildebrand<sup>1</sup>, <sup>1</sup>University of Kentucky, United States; <sup>2</sup>Centrec Consulting Group, United States

**LOQ-07 Screening of metal-chelating peptides and hydrolysates using Surface Plasmon Resonance and switchSENSE.** Mads Bjørllie\*<sup>1</sup>, Rachel Irankunda<sup>2</sup>, Jean-Michel Girardet<sup>3</sup>, Sandrine Boschi-Müller<sup>4</sup>, Betül Yesiltas<sup>1</sup>, Charlotte Jacobsen<sup>1</sup>, Laetitia Canabady-Rochelle<sup>2</sup>, <sup>1</sup>National Food Institute, Technical University of Denmark, Denmark; <sup>2</sup>CNRS, LRGP, University of Lorraine, France; <sup>3</sup>INRAE, IAM, University of Lorraine, France; <sup>4</sup>CNRS, IMoPA, University of Lorraine, France

**LOQ-08 Stability of novel peptides (linusorbs) in flaxseed meal fortified gluten-free bread.** Youn Young Shim\*<sup>1</sup>, Clara M. Olivia<sup>2</sup>, Xian-Guo Zou<sup>3</sup>, Young Jun Kim<sup>4</sup>, Martin J. Reaney<sup>2</sup>, <sup>1</sup>Department of Plant Sciences, University of Saskatchewan, Canada; <sup>2</sup>University of Saskatchewan, Canada; <sup>3</sup>Zhejiang University of Technology, China (People's Republic); <sup>4</sup>Korea University, Republic of Korea

**LOQ-09 Valorization of oilseeds: Impact of pH, hot air, and pressurized cooking on major phenolic derivatives**

Ruchira Nandasiri\* (**Lipid Chemistry and Nutrition Award Winner**), Olamide Fadairo, Thu Nguyen, N. A. Michael Eskin, Food and Human Nutritional Sciences, University of Manitoba, Canada

**LOQ-10 Assessing the effects of sunlight on the photooxidation of tropical oils with experimental and computational approaches.** Daniel Dodoo\*<sup>1</sup>, Samuel K. Tulashie<sup>2</sup>, Thomas Dodoo<sup>3</sup>, Francis Kwaw<sup>4</sup>,  
<sup>1</sup>Department of Chemistry, Aix-Marseille University, Ghana; <sup>2</sup>Industrial Chemistry Section, Department of Chemistry, University of Cape Coast, Ghana; <sup>3</sup>Department of Computer Science and Engineering, University of Mines and Technology, Ghana; <sup>4</sup>Quality Assurance Department, Ghana Nuts Company Limited, Ghana

**LOQ-11 Comparison of the fatty acid composition of different culinary oils with high saturated coconut oil towards the improvement of public health.** Ruchira Nandasiri\*<sup>1</sup>, Buddhika Silva<sup>2</sup>, Nethmi Senevirathene<sup>3</sup>, Helani Munasinghe<sup>4</sup>, Shiromi De Silva<sup>4</sup>, Renuka Jayatissa<sup>4</sup>, <sup>1</sup>Food and Human Nutritional

Sciences, University of Manitoba, Canada; <sup>2</sup>Department of Nutrition, Medical Research Institution, Sri Lanka; <sup>3</sup>Department of Botany, University of Sri Jayewardenepura, Sri Lanka; <sup>4</sup>Department of Electron Microscopy, Medical Research Institute, Sri Lanka

**LOQ-12 ESR photochemical method for evaluating oil oxidation by spin trapping method.** Hiromi Kameya\*, *The Institute of Food Research, NARO, Japan*

**LOQ-13 Extrusion 3D printing and oxidative stability of high-oil-content printing paste formulated with waxes-based oleogels.** Lingyi Liu\*, Ozan Ciftci, *Food Science and Technology, University of Nebraska-Lincoln, United States*

**LOQ-14 Free fatty acids in commercial krill oils: Concentrations, compositions, and implications for oxidative stability.** Ioan D. Fuller\*<sup>1</sup>, Adam H. Cumming<sup>2</sup>, Asli Card<sup>2</sup>, Elaine J. Burgess<sup>2</sup>, Colin J. Barrow<sup>3</sup>, Nigel B. Perry<sup>1</sup>, Daniel P. Killeen<sup>2</sup>, <sup>1</sup>Department of Chemistry, University of Otago, New Zealand; <sup>2</sup>Plant & Food Research, New Zealand; <sup>3</sup>School of Life & Env Sciences, Deakin University, Australia

**LOQ-15 Kinetic and thermodynamic studies of the thermal-degradation of tocopherols in lipid systems with different unsaturation degree.** Liyou Zheng\*<sup>1</sup>, Hongyan Guo<sup>1</sup>, Jun Jin<sup>2</sup>, Qingzhe Jin<sup>2</sup>, <sup>1</sup>Anhui Polytechnic University, China (People's Republic), <sup>2</sup>Jiangnan University, China (People's Republic)

**LOQ-16 Lingonberry press-cake inhibits lipid oxidation during pH-shift processing of herring co-products and subsequent ice storage of recovered protein isolates.** Bovie Hong, Jingnan Zhang\*, Mehdi Abdollahi, Marie Alminger, Ingrid Undeland, *Department of Biology and Biological Engineering-Food and Nutrition Science, Chalmers University of Technology, Sweden*

**LOQ-17 Pulsed electric field treatment enhances lipid bioaccessibility while preserving oxidative stability in *Chlorella vulgaris*.** Greta Canelli\*<sup>1</sup> (**Processing Division Student Award Winner**), Isabelle Kuster<sup>1</sup>, Luc Jaquenod<sup>1</sup>, Patricia Murciano Martínez<sup>2</sup>, Zhen Rohfritsch<sup>3</sup>, Fabiola Dionisi<sup>2</sup>, Paolo Nanni<sup>4</sup>, Christoph J. Bolten<sup>5</sup>, Alexander Mathys<sup>1</sup>, <sup>1</sup>ETH Zurich, Switzerland; <sup>2</sup>Nestlé Research, Switzerland; <sup>3</sup>Analytical science, Nestlé Research, Switzerland; <sup>4</sup>Functional Genomics Center Zurich, Switzerland; <sup>5</sup>NPTC Food Singen, Switzerland

**LOQ-18 Study of the oxidative stability of oleogels structured with beeswax fractions.** Roman Sobolev\*, Yuliya Frolova, Varuzhan Sarkisyan, Alla Kochetkova, *Federal Research Center of Nutrition, Biotechnology and Food Safety, Russia*

**LOQ-19 Wheat and rice bran as natural additives for the protection of fish oil from oxidation.** Zhen Rohfritsch\*<sup>1</sup>, Greta Canelli<sup>2</sup>, Philippe Pollien<sup>3</sup>, Rachid Bel-Rhli<sup>4</sup>, <sup>1</sup>Analytical science, Nestlé Research, Switzerland; <sup>2</sup>Laboratory of Sustainable Food Processing, ETH Zurich, Switzerland; <sup>3</sup>IMS, Nestlé Research, Switzerland; <sup>4</sup>Institute of Material Sciences, Nestlé Research, Switzerland

## Phospholipid

Chair: Xuebing Xu, Wilmar Global R&D Center, China

**PHOS-01 Rice bran lyso-gums: The unexplored source of potential industrial phospholipid.** Olivia Dhara\*, Pradosh P. Chakrabarti, *Centre for Lipid Science and Technology, CSIR-Indian Institute of Chemical Technology, India*

## Processing

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Chairs: Alan Paine, ARP Lipids Consulting, UK; and Orayne Mullings, Desmet Ballestra North America Inc, USA

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**PRO-01 Effect of emulsifier addition on the thermomechanical properties of a high oleic palm oil based oleogel.** Victor Cedeño-Sánchez, Devanshu Mehta\*, John Carriglio, Andrew MacIntosh, *University of Florida, United States*

**PRO-02 Effect of high oleic acetyl triacylglycerol (acetyl-TAG) on functional properties of biodegradable sorghum DDGS packaging film.** Eda C. Kaya\*<sup>1</sup>, Timothy Durrett<sup>2</sup>, Scott Bean<sup>3</sup>, Valentina Trinetta<sup>4</sup>, Umut Yucel<sup>1</sup>, <sup>1</sup>*Food Science Institute/Department of Animal Sciences and Industry, Kansas State University, United States*; <sup>2</sup>*Biochemistry and Molecular Biophysics, Kansas State University, United States*; <sup>3</sup>*USDA Center for Grain and Animal Health Research, Manhattan, Kansas., United States*; <sup>4</sup>*Kansas State University, United States*

**PRO-03 Efficacy of air frying as a hot air pre-treatment technique in enhancing the yield of the major oil-derived sinapic acid derivatives from canola oil.** Olamide S. Fadairo\*<sup>1</sup>, Ruchira Nandasiri<sup>2</sup>, N. A. Michael Eskin<sup>2</sup>, Martin G. Scanlon<sup>2</sup>, <sup>1</sup>*Food and Human Nutritional Sciences, Richardson Centre for Functional Food and Nutraceutical, University of Manitoba, Canada*; <sup>2</sup>*Food and Human Nutritional Sciences, University of Manitoba, Canada*

**PRO-04 Isothermal crystallization of palm olein with different seeding methods.** Veronique J. Gibon\*<sup>1</sup>, Bastien Jacquet<sup>1</sup>, Christophe Blecker<sup>2</sup>, Sabine Danthine<sup>2</sup>, <sup>1</sup>*R&D Department, Desmet Ballestra Group SA, Belgium*; <sup>2</sup>*University of Liège—Gembloux Agro-Bio Tech, Belgium*

**PRO-05 Adsorptive reduction of metals and phospholipids from biofuel feedstocks.** Neal Williams\*<sup>1</sup>, David Gittins<sup>2</sup>, Tony Smith<sup>2</sup>, Lazaebrean McDowell<sup>2</sup>, <sup>1</sup>*Science and Technology, Imerys, United States*; <sup>2</sup>*Imerys, United States*

**PRO-06 Application of choline chloride based deep eutectic solvent for the extraction of ferulic acid from oil palm pressed fibre.** Mei Han Ng\*, Nu'man Abdul Hadi, *Engineering and Processing, Malaysian Palm Oil Board, Malaysia*

**PRO-07 Effect of high-intensity ultrasound on canola oil bleaching (*Brassica napus* L.).** Alehi C. De Jesús-Hernández\*<sup>1</sup>, Genaro G. Amador-Espejo<sup>1</sup>, Raúl J. Delgado-Macuil<sup>1</sup>, Héctor Ruiz-Espinosa<sup>2</sup>, <sup>1</sup>*Centro de Investigación en Biotecnología Aplicada, Instituto Politécnico Nacional, Mexico*; <sup>2</sup>*Facultad de Ingeniería Química, Benemérita Universidad Autónoma de Puebla, Mexico*

**PRO-08 Effect of pretreatment conditions on mustard bioactive compounds.** Thu Nguyen\*, Ruchira Nandasiri, N. A. Michael Eskin, *Food and Human Nutritional Sciences, University of Manitoba, Canada*

**PRO-09 Formation of lentil protein-tannic acid complexes limits in vitro peptic hydrolysis and alters peptidomic profiles of the protein.** Ruth Boachie\*<sup>1</sup>, Ogadimma Okagu<sup>2</sup>, Raliat Abioye<sup>3</sup>, Nico Huttmann<sup>4</sup>, Teresa Oliviero<sup>5</sup>, Edoardo Capuano<sup>5</sup>, Vincenzo Fogliano<sup>5</sup>, Chibuikwe Udenigwe<sup>4</sup>, <sup>1</sup>*School of Nutrition Sciences/Agrotechnology and Food Sciences, University of Ottawa/Wageningen University & Research, Canada*; <sup>2</sup>*University of Ottawa, Canada*; <sup>3</sup>*Chemistry and Biomolecular Sciences, University of Ottawa, Canada*; <sup>4</sup>*University of Ottawa, Canada*; <sup>5</sup>*Wageningen University & Research, Netherlands*

**PRO-10 Novel encapsulated ionic liquid analogous for free fatty acid conversion to fatty acid methyl ester.** Adeb Hayyan<sup>1</sup>, Mohamed E. Mirghani\*<sup>2</sup>, Hanee F. Hizaddin<sup>1</sup>, Mahar Diana Hamid<sup>1</sup>, Jehad Saleh<sup>3</sup>, M.Y. Zulkifli<sup>4</sup>, Waleed Al Abdulmonem<sup>5</sup>, Fahad A. Alhumaydhi<sup>6</sup>, Abdullah S.M. Aljohani<sup>6</sup>, <sup>1</sup>*Department of*  
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*Chemical Engineering, University of Malaya, Malaysia;* <sup>2</sup>*International Institute for Halal research and Training (INHART), International Islamic University Malaysia (IIUM), Malaysia;* <sup>3</sup>*Department of Chemical Engineering, King Saud University, Saudi Arabia;* <sup>4</sup>*Academy of Islamic Studies, Universiti Malaya, Malaysia;* <sup>5</sup>*Department of Pathology, Qassim University, Saudi Arabia;* <sup>6</sup>*Department of Medical Laboratories, Qassim University, Saudi Arabia;* <sup>6</sup>*Department of Veterinary Medicine, Qassim University, Saudi Arabia*

**PRO-11 Process considerations for using alternative feedstock in the production of biodiesel.** Bryan Yeh\*

*American Biodiesel Db Community Fuels, United States*

**PRO-12 Utilizing tea industry by-products to improve instant tea aroma.** Umesh Rajapakse\*<sup>1</sup>, Chamila Jayasinghe<sup>1</sup>, Akila Dalpathadu<sup>2</sup>, Darshika Pathiraja<sup>1</sup>, Sarath P. Nissanka<sup>3</sup>, <sup>1</sup>*Department of Food Science and Technology, Wayamba University of Sri Lanka, Sri Lanka;* <sup>2</sup>*Postgraduate Institute of Agriculture, University of Peradeniya, Sri Lanka;* <sup>3</sup>*Department of Crop Science, University of Peradeniya, Sri Lanka*

## Protein and Co-Products

*Chairs: Keshun Liu, USDA ARS, USA; and Pankaj Bhowmik, National Research Council of Canada, Canada*

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**PCP-01 Comparing the structural and functional characteristics of novel proteins from Pennycress (*Thlaspi arvense*) and *Camelina sativa*.** Serap Vatansever\*<sup>1</sup>, Rachel Mitacek<sup>1</sup>, Vaidehi Narkar<sup>2</sup>, Pam Ismail<sup>3</sup>, <sup>1</sup>*Food Science and Nutrition, University of Minnesota, United States;* <sup>2</sup>*R&D, General Mills, United States;* <sup>3</sup>*Department of Food Science and Nutrition, University of Minnesota, United States*

**PCP-02 Comprehensive evaluation and comparison of machine learning methods in QSAR modeling of antioxidant tripeptides.** Zhenjiao Du\*<sup>1</sup>, Donghai Wang<sup>2</sup>, Yonghui Li<sup>1</sup>, <sup>1</sup>*Grain Science and Industry, Kansas State University, United States;* <sup>2</sup>*Biological and Agricultural Engineering, Kansas State University, United States*

**PCP-03 Development of a low-cost, nano-fibrillar xerogel network comprised of cyclic-di-amino acids.** Arianna Sultani\*, Michael Rogers, Pedram Nasr, *Food Science, University of Guelph, Canada*

**PCP-04 Does soil nutrient management with nitrogen fertilizer increase protein content in leguminous plants.** Emily Jundt\*<sup>1</sup>, Kaustav Majumder<sup>1</sup>, Bijesh Maharjan<sup>2</sup>, <sup>1</sup>*Food Science and Technology, University of Nebraska-Lincoln, United States;* <sup>2</sup>*Agronomy, University of Nebraska-Lincoln, United States*

**PCP-05 Efficacy of Great Northern beans-derived  $\gamma$ -glutamyl peptides in reducing vascular inflammation.** Snigdha Guha\* (**Honored Student Award Winner; Peter and Clare Kalustian Award Winner**), *Food Science and Technology, University of Nebraska, Lincoln, United States*

**PCP-06 Evaluating the efficacy of germination in producing biologically active peptides from garbanzo beans.** Kaustav Majumder, Ashley Newton\*, *Food Science and Technology, University of Nebraska, Lincoln, United States*

**PCP-07 Functional properties of enzymatic pea protein hydrolysates that inhibit in vitro activities of acetylcholinesterase and butyrylcholinesterase.** Nancy D. Asen\*<sup>1</sup>, Rotimi Aluko<sup>2</sup>, <sup>1</sup>*Food Science, University of Manitoba, Canada;* <sup>2</sup>*Food and Human Nutritional Sciences, University of Manitoba, Canada*

**PCP-08 Improving edamame seedling establishment by determining the optimal temperature.** Xiaoying Li\*<sup>1</sup>, Bo Zhang<sup>2</sup>, <sup>1</sup>*Virginia Tech, United States;* <sup>2</sup>*School of Plant and Environmental Sciences, Virginia Tech, United States*

**PCP-09 Increasing soybean meal protein level reduces GHG emissions and improves farm and food sector sustainability metrics.** John Osthus\*<sup>1</sup>, Bart Borg<sup>2</sup>, Shawn Conley<sup>3</sup>, Paul Mitchell<sup>3</sup>, R. Dean Boyd<sup>4</sup>, <sup>1</sup>Blue Spring Communications, United States; <sup>2</sup>Standard Nutrition Company, United States; <sup>3</sup>University of Wisconsin-Madison, United States; <sup>4</sup>Animal Nutrition Research, United States

**PCP-10 Introducing mung bean as an alternative or rotation crop to tobacco in Virginia.** Jessica Wilbur\*<sup>1</sup>, Ozzie Abaye<sup>1</sup>, Bo Zhang<sup>2</sup>, Carol Wilki<sup>3</sup>, <sup>1</sup>Virginia Tech, United States, <sup>2</sup>School of Plant and Environmental Sciences, Virginia Tech, United States, <sup>3</sup>Virginia Tech Southern Piedmont Agricultural Research & Extension Center, United States

**PCP-11 Quantitative structure-activity relationship study on antioxidant dipeptides.** Zhenjiao Du\*, Yonghui Li, *Grain Science and Industry, Kansas State University, United States*

**PCP-12 RuBisCO proteins as plant-based alternatives to egg white proteins: Characterization of thermal gelation properties.** Hualu Zhou\*<sup>1</sup>, Giang Vu<sup>1</sup>, David J. McClements<sup>2</sup>, <sup>1</sup>University of Massachusetts Amherst, United States; <sup>2</sup>Food Science, University of Massachusetts Amherst, United States

**PCP-13 Sequential fractionation as a tool for understanding the physicochemical and thermal properties of aqueous and enzyme-assisted aqueous extracted black bean proteins.** Jasmin S. Yang\*, Fernanda Furlan Goncalves Dias, Juliana Leite Nobrega De Moura Bell, *Food Science and Technology, University of California, Davis, United States*

**PCP-14 Tailoring the ultrafiltration of colostrum whey to produce a bioactive compound-rich permeate for subsequent isolation by nanofiltration.** Andrea J. Tam\*<sup>1</sup>, Sierra D. Durham<sup>1</sup>, Daniela Barile<sup>1</sup>, Juliana Leite Nobrega De Moura Bell<sup>2</sup>, <sup>1</sup>University of California, Davis, United States; <sup>2</sup>Food Science and Technology, University of California, Davis, United States

**PCP-15 Atmospheric cold plasma treatment enhanced the pea protein gelling properties and mechanisms study.** Sitian Zhang\*, Lingyun Chen, *University of Alberta, Canada*

**PCP-16 Bioactive peptide production from slaughterhouse blood proteins: Impact of pulsed electric fields and pH on enzyme inactivation, antimicrobial and antioxidant activities of peptic hydrolysates from bovine and porcine hemoglobins.** Zain Sanchez Reinoso\*, Jacinthe Thibodeau, Laila Ben Said, Ismail Fliss, Laurent Bazinet, Sergey Mikhaylin, *Food Science Department, Université Laval, Canada*

**PCP-17 Chicken feathers keratin/modified graphene oxide based biosorbent for water remediation** Muhammad Zubair\* (**Canadian Section Student Support Grant Winner; Protein and Co-Products Division Student Travel Grant Winner**), Aman Ullah, *Agricultural, Food and Nutritional Science, University of Alberta, Canada*

**PCP-18 Development of protein–polyphenol conjugates via free radical grafting method: Evaluation of physicochemical and functional properties.** Shahrzad Sharifimehr\*<sup>1</sup>, Supratim Ghosh<sup>2</sup>, Ramaswami Sammynaiken<sup>3</sup>, <sup>1</sup>Food and Bioproduct Sciences, University of Saskatchewan, Canada; <sup>2</sup>University of Saskatchewan, Canada; <sup>3</sup>Saskatchewan Structural Science Center, Canada

**PCP-19 Effects of particle size distribution and feed moisture content on the techno-functional properties of extruded soybean meal.** Ravinder Singh\*, Filiz Koxsel, *Department of Food and Human Nutritional Sciences, University of Manitoba, Canada*



**PCP-20 Effects of pH-shifting process on the improvement of gelling properties of pea protein and their potential application as binders in meat alternative products.** Peineng Zhu\*<sup>1</sup>, Lingyun Chen<sup>2</sup>, <sup>1</sup>University of Alberta, Canada; <sup>2</sup>Department of Agricultural, Food and Nutritional Science, University of Alberta, Canada

**PCP-21 Exploring Malaysian consumers' perception and purchase intention of meat analogues.** Maslia Manja Badrul Zaman\*<sup>1</sup>, Chun Wai Lai<sup>2</sup>, Ungku Fatimah Ungku Zainal Abidin<sup>2</sup>, Maimunah Sanny<sup>2</sup>, <sup>1</sup>Oils & Fats, Sime Darby Plantation Research Sdn Bhd, Malaysia; <sup>2</sup>Universiti Putra Malaysia, Malaysia

**PCP-22 Extraction and characterization of minimally processed native faba bean (*Vicia faba*) protein using mild fractionation.** Madhurima Bandyopadhyay\*<sup>1</sup>, Supratim Ghosh<sup>2</sup>, Michael Nickerson<sup>1</sup>, <sup>1</sup>Food and Bioproduct Sciences, University of Saskatchewan, Canada; <sup>2</sup>University of Saskatchewan, Canada

**PCP-23 Functionalization of rapeseed protein using membrane filtration.** Simone Bleibach Alpiger\*, Milena Corredig, Department of Food Science, Aarhus University, Denmark

**PCP-24 'Green' production of protein isolate from novel golden pennycress seeds.** Milagros P. Hojilla-Evangelista\*<sup>1</sup>, Roque L. Evangelista<sup>2</sup>, <sup>1</sup>USDA ARS NCAUR Plant Polymer Research, United States, <sup>2</sup>USDA ARS NCAUR Bio-Oils Research, United States

**PCP-25 Optimization of culture conditions for protein induced foam production by *Pseudomonas aeruginosa* for enhancing oil recovery.** Miu Ito\*<sup>1</sup>, Yuichi Sugai<sup>2</sup>, <sup>1</sup>Graduate School of Engineering, Kyushu University, Japan; <sup>2</sup>Faculty of Engineering, Kyushu University, Japan

**PCP-26 Optimization of potent mineral chelating peptides production from rapeseed meal proteins proteolysis and peptide characterizations.** Nastassia Kaugarenia\*<sup>1</sup>, Sophie Beaubier<sup>2</sup>, Erwann Durand<sup>3</sup>, François Lesage<sup>4</sup>, Xavier Framboisier<sup>5</sup>, Arnaud Aymes<sup>5</sup>, Pierre Villeneuve<sup>6</sup>, Romain Kapel<sup>4</sup>, <sup>1</sup>LRGP, France; <sup>2</sup>University of Lorraine, LRGP CNRS, France; <sup>3</sup>CIRAD/UMR QUALISUD, France; <sup>4</sup>LRGP CNRS UMR7274, France; <sup>5</sup>LRGP CNRS, France; <sup>6</sup>CIRAD, France

**PCP-27 Prediction of protein and amino acid contents in canola seeds and canola meal with near-infrared spectroscopy.** Junya Liu\*, University of Manitoba, Canada

**PCP-28 Processing of silflower (*Silphium integrifolium*) seeds to obtain oil and enriched protein meal.** Roque L. Evangelista\*<sup>1</sup>, Milagros P. Hojilla-Evangelista<sup>2</sup>, Steven Cermak<sup>3</sup>, David Van Tassel<sup>4</sup>, <sup>1</sup>USDA ARS NCAUR Bio-Oils Research, United States; <sup>2</sup>USDA ARS NCAUR Plant Polymer Research, United States; <sup>3</sup>USDA, United States; <sup>4</sup>Perennial Oilseeds, Land Institute, United States

**PCP-29 Variations in phytochemicals in DDGS oil from 30 ethanol plants.** Jill Winkler-Moser\*, USDA ARS NCAUR, United States

## Surfactants and Detergents

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Chair: Julian Barnes, Shell Global Solutions International B.V., Netherlands

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**S&D-01 New insight in the structure-properties relationship of hydroxypropyl cellulose.** Gilles Cremer\*<sup>1</sup>, Vera Van Hoed<sup>2</sup>, Sabine Danthine<sup>3</sup>, Anne Dombree<sup>2</sup>, Anne-Sophie Laveaux<sup>2</sup>, Christophe Blecker<sup>4</sup>, <sup>1</sup>Food Science, Uliege, Belgium; <sup>2</sup>Puratos Group, Belgium; <sup>3</sup>University of Liège Gembloux Agro-Bio Tech, Belgium; <sup>4</sup>University of Liège—Gembloux Agro-Bio Tech, Belgium

**S&D-02 Response surface methodology optimization of the use of acetyl-triacylglycerol for improving the structure of whey protein foams.** Eda C. Kaya\*<sup>1</sup>, Dallas Johnson<sup>2</sup>, Timothy Durrett<sup>3</sup>, Umut Yucel<sup>1</sup>, <sup>1</sup>*Food Science Institute/Department of Animal Sciences and Industry, Kansas State University, United States*; <sup>2</sup>*Department of Statistics, Kansas State University, United States*; <sup>3</sup>*Biochemistry and Molecular Biophysics, Kansas State University, United States*

**S&D-03 Characterization of organophilic clays for their application in cosmetic formulations (hectorite).** Johnbryner Garcia\*<sup>1</sup>, Angelica Maria Ortega<sup>1</sup>, Jesús Guillermo Perez<sup>1</sup>, Daniela Martínez<sup>2</sup>, Mairis Guevara<sup>2</sup>, Johnny Bullon<sup>2</sup>, Ana Forgiarini<sup>2</sup>, <sup>1</sup>*RD&I, Belcorp, Colombia*; <sup>2</sup>*FIRP Laboratory, Universidad de Los Andes, Venezuela, United States*

**S&D-04 Clear and transparent methyl ester sulphonate micellar systems for mild hair shampoo applications.** Emily Tan\*<sup>1</sup>, Krassimir D. Danov<sup>2</sup>, Romyana D. Stanimirova<sup>2</sup>, Peter A. Kralchevsky<sup>2</sup>, Tatiana G. Slavova<sup>2</sup>, Veronika I. Yavrukova<sup>2</sup>, Yee Wei Ung<sup>1</sup>, Hui Xu<sup>3</sup>, Jordan T. Petkov<sup>1</sup>, Ai Mun Cheong<sup>1</sup>, <sup>1</sup>*KLK OLEO, Malaysia*; <sup>2</sup>*Department of Chemical and Pharmaceutical Engineering, Sofia University, Bulgaria*; <sup>3</sup>*KLK OLEO, China (People's Republic)*

**S&D-05 Determination of the concentration of commercial cationic surfactants in aqueous solutions by the colloidal titration method.** José Alejandro Fernández\*<sup>1</sup>, Daniela Martínez<sup>2</sup>, Franklin Salazar-Rodríguez<sup>3</sup>, Johnny Bullon<sup>2</sup>, <sup>1</sup>*FIRP Laboratory/University of Los Andes, Venezuela*; <sup>2</sup>*FIRP Laboratory, Venezuela*; <sup>3</sup>*Unit Operations, FIRP Laboratory, Venezuela*

**S&D-06 Green surfactants as chemical herders for maritime oil spill remediation.** George John\*<sup>1</sup>, Charles Maldarelli<sup>2</sup>, <sup>1</sup>*Chemistry and Biochemistry, City College of New York (CUNY), United States*; <sup>2</sup>*Chemical Engineering/Levich Institute, The City College of New York, United States*

**S&D-07 Triborheological analysis of reconstituted gastrointestinal porcine mucus/polymeric nanoparticles system for studying mucoadhesion.** Gustavo Ruiz\*, Dora Medina, *School of Engineering and Sciences, Tecnológico De Monterrey, Mexico*