

# 2018 AOCS Annual Meeting & Expo

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



## Lipid Oxidation and Quality (LOQ) Interest Area Tentative Technical Program

As of January 3, 2018

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

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

### Monday Afternoon

#### **LOQ 1a: Lipid Oxidation Fundamentals**

*Chairs: Fereidoon Shahidi, Memorial University of Newfoundland, Canada; and Weerasinghe Indrasena, DSM Nutritional Products, Canada*

**Role of Antioxidants and Stability of Frying Oils.** S.P.J. Namal Senanayake, *CFS North America, USA*

**Impact of Oxidized Proteins and Lipids and Suppression of Atherosclerosis Development by Functional Food Bioactives and Their Metabolites.** Jack N. Losso, *Louisiana State University, USA*

**Antioxidant Evaluation: Why *in vitro* and *in vivo* Results do not Always Correspond?** Fereidoon Shahidi, *Memorial University of Newfoundland, Canada*

#### **LOQ 1b: Optimal Application of Antioxidants in Food with Respect to their Protection Mechanism**

*Chairs: Xin Tian, Kalsec, Inc., USA; and Thanh Vu, University of Massachusetts Amherst, USA*

**The Oxidative Stability of Fish Oil Enriched Cow and Soy Milk and the Effect of Adding Rosemary Extract.** Xujian Qiu, Charlotte Jacobsen, and Ann-Dorit Moltke Sørensen\*, *Technical University of Denmark, Denmark*

**Enzymatic Functionalization of Vinyl Phenols and Evaluation of their Resulting Antioxidant Properties in Cell Model Systems.** Jéropome Lecomte, Erwann Durand, and Pierre Villeneuve, *CIRAD, France*

**Impact of Modified Lecithin on the Antioxidant Activity of alpha-Tocopherol in Bulk Oils.** Eric A. Decker and Anuj G. Shanbhag\*, *<sup>1</sup>University of Massachusetts Amherst, USA*

**Controlling Oxidation in Skin Care Products with Novel Seaweed Antioxidants.** Ditte B. Hermund<sup>1</sup>, Birgitte R. Thomsen<sup>1</sup>, Niruja Sivasubramaniam<sup>2</sup>, Shuk Y. Heung<sup>3</sup>, Randi Neerup<sup>4</sup>, Louise M. Klinder<sup>5</sup>, Susan Holdt<sup>2</sup>, and Charlotte Jacobsen\*<sup>1</sup>, *<sup>1</sup>Technical University of Denmark, Denmark; <sup>2</sup>National Food Institute, Technical University of Denmark, Denmark; <sup>3</sup>DTU Food, Denmark; <sup>4</sup>Danish Technological Institute, Denmark; <sup>5</sup>Mellisa Aps, Denmark*

## Tuesday Morning

### **ANA 2c / LOQ 2a: Evaluation and Prediction of Oxidative Stability and Shelf-life**

*Chairs: Min Hu, DuPont Nutrition & Health, USA; and Rick Della Porta, Pepsico / Frito-Lay, USA*

**The Combination of High Oleic Oils and Natural Antioxidants as a Powerful Tool for Shelf Life Extension.** Susan Knowlton, *DuPont Company, Pioneer, USA*

**The Antioxidative Activity of Soluble Bound Phenolic Compounds Fractions Extracted from Germinated Chickpea in Oil-in-Water Emulsions.** Minwei Xu and Bingcan Chen, *North Dakota State University, USA*

**Antioxidant Activities of Sugars and Protein in Low Moisture Cracker System.** Thanh P. Vu, Lili He, D. Julian McClements, and Eric A. Decker, *University of Massachusetts Amherst, USA*

**Oxidative Stability of Margarines, Shortenings and Spreads.** Min Hu, *DuPont Nutrition & Health, USA*

**Shelf-life Extension of Meat and Meat Products by Using Natural Antioxidants.** Henna F.S. Lu, *Kalsec Europe Ltd, UK*

### **ANA 2d / LOQ 2b: Sensory Analytics and Analytical Methods for Assessing Lipid Oxidation and Shelf-life**

*Chairs: Jian Kong, Abbott Nutrition, USA; and Rick Della Porta, Pepsico / Frito-Lay, USA*

**Assessing Virgin Olive Oil Stability and Shelf Life at Moderate Conditions by FTIR Spectroscopy Endowed with a Mesh Cell Accessory.** Noelia Tena<sup>1</sup>, Ramón Aparicio-Ruiz<sup>1</sup>, Ana Lobo<sup>1</sup>, María Teresa Morales<sup>2</sup>, Aparicio Ramón<sup>1</sup>, and Diego L. García González\*<sup>1</sup>, <sup>1</sup>*Instituto de la Grasa (CSIC), Spain;* <sup>2</sup>*University of Seville, Spain*

**Antioxidant Efficacy and Impact of Storage Conditions.** Marie Shen<sup>1</sup>, Lan Ban<sup>1</sup>, and Chandra Ankolekar\*<sup>2</sup>, <sup>1</sup>*Kemin Food Technologies, USA;* <sup>2</sup>*Kemin Industries Inc., USA*

**Sensory Directed Chemical Analysis of Oxidized Marine Oils.** Roy D. Desrochers, *Tufts University Sensory and Science Center, USA*

**A Rapid Non-destructive Method for Determining Quality Parameters of Edible Oils.** Kathryn J. Lawson-Wood\*<sup>1</sup>, Ariel Bohman<sup>2</sup>, and Robert Packer<sup>2</sup>, <sup>1</sup>*PerkinElmer, United Kingdom;* <sup>2</sup>*PerkinElmer, USA*

**Developing a Sensory Oxidation Quality Scale.** Monica L. Godbout, *Abbott Nutrition, USA*

## Tuesday Afternoon

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

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

**Antioxidant and Antibacterial Activity of Different Extracts from Herbs Obtained by Maceration or Supercritical Technology.** Ignacio Vieitez, Lucía Maceiras, Iván Jachmanián, and Silvana Alborés, *UdelaR, Uruguay*

**Oxidation and Hydrolysis of Lipids in Marine Edible Shellfishes During Hot Drying Process.** Dayong Zhou<sup>1</sup>, Zhongyuan Liu<sup>2</sup>, Kaiqi Gang<sup>3</sup>, Fereidoon Shahidi<sup>4</sup>, and Tong Wang<sup>5</sup>, <sup>1</sup>*Dalian Polytechnic University, China;* <sup>2</sup>*College of Food Science & Technology, Dalian Polytechnic University, China;* <sup>3</sup>*School of Food Science and Technology, Dalian Polytechnic University, China;* <sup>4</sup>*Memorial University of Newfoundland, Canada;* <sup>5</sup>*Iowa State University, USA*

**Effect of Spray-Dried Flavonoid Microparticles on Oxidative Stability of Methyl Linoleate as Lipid Model System.** Manuel J. Palma<sup>1</sup>, Gloria Márquez-Ruiz<sup>2</sup>, Paula García<sup>3</sup>, Francisca Holgado<sup>4</sup>, Cristina Vergara<sup>3</sup>, Begoña Giménez<sup>5</sup>, and Paz S. Robert<sup>1</sup>, <sup>1</sup>Universidad de Chile, Chile; <sup>2</sup>Instituto de Ciencia y Tecnología de Alimentos y Nutrición (ICTAN-CSIC), Spain; <sup>3</sup>Departamento de Ciencia de los Alimentos y Tecnología Química, Facultad de Ciencias Químicas y Farmacéuticas, Universidad de Chile, Chile; <sup>4</sup>Instituto de Ciencia y Tecnología de Alimentos y Nutrición (ICTAN-CSIC); <sup>5</sup>Departamento de Ciencia y Tecnología de los Alimentos, Facultad Tecnológica, Universidad de Santiago de Chile, Chile

**EAT 3.1a / LOQ 3b: Manufacture and Stabilization of W/O and O/W Emulsions for Optimal Shelf-life**

*Chairs: Tanu Tokle, Qualitech, USA; Ann-Dorit Moltke Sørensen, Technical University of Denmark, Denmark; and Chandra Ankolekar, Kemin Industries Inc., USA*

**Tocopherol Regeneration by Phospholipids in Soybean Oil-in-Water Emulsion: Effect of Tocopherol Homologue and Emulsifier Type.** Gautam Samdani, D. Julian McClements, and Eric A. Decker, *University of Massachusetts, Amherst, USA*

**Effect of Droplet Aize and Interfacial Crystallization on the Rheology of Fat Crystal-stabilized Water-in-Oil Emulsions.** Dérick Rousseau and Ruby R. Rafanan, *Ryerson University, Canada*

**Label Friendly EDTA Alternative for Oxidative Stability Improvement in Food Emulsions.** Lan Ban, Yvonne Gildemaster, and Joan Randall, *Kemin Food Technologies, USA*

Wednesday Morning

**LOQ 4a: Lipid Oxidation in Complex Food Products and Interactions with Ingredients**

*Chairs: Lynn Yao, Mondelēz International Inc., USA, USA; Lan Ban, Kemin Food Technologies, USA; and Will Schroeder, Kemin Food Technologies, USA*

**Lipid Oxidation in Fish Feed.** Ann-Dorit Moltke Sørensen, Anita Ljubic, and Charlotte Jacobsen\*, *Technical University of Denmark, Denmark*

**The Combination of Green Tea and Rosemary – Impact of System, Concentration and Ratio on Antioxidant Performance.** Xin Tian, Nora Yang, and Poulson Joseph, *Kalsec, Inc., USA*

**Evaluation of Antioxidants and Antimicrobials from Plant Extracts in Pet Food.** Charlotte Deyrieux<sup>1</sup>, Erwann Durand<sup>1</sup>, Nathalie Barouh<sup>1</sup>, Jérôme Lecomte<sup>2</sup>, Françoise Michel-Salaun<sup>3</sup>, Bruno Baréa<sup>1</sup>, Gilles Kergourlay<sup>3</sup>, and Pierre Villeneuve<sup>1</sup>, <sup>1</sup>CIRAD, France; <sup>2</sup>CIRAD, Greece; <sup>3</sup>Videka Diana Pet Food, France

**Non-targeted Screening for Oxidized Lipids in Foods.** Verena Grüneis<sup>1</sup>, Natasa Popovic<sup>2</sup>, Martin Zehl<sup>3</sup>, Jürgen König<sup>4</sup>, and Marc Pignitter\*<sup>1</sup>, <sup>1</sup>Department of Physiological Chemistry, Faculty of Chemistry, University of Vienna, Austria; <sup>2</sup>Department of Physiological Chemistry, Faculty of Chemistry, University of Vienna, Austria; <sup>3</sup>Department of Analytical Chemistry, Faculty of Chemistry, University of Vienna, Austria; <sup>4</sup>Department of Nutritional Sciences, Faculty of Life Sciences, University of Vienna, Austria

**Polyphenol Shifts in Lipid Oxidation Pathways and Interactions with Proteins Alter Apparent Antioxidant Effectiveness.** Karen M. Schaich, and Xiaosong Chen<sup>2</sup>, <sup>1</sup>Dept. of Food Science, Rutgers University, USA; <sup>2</sup>China Agricultural University, China

## **EAT 4.1 / LOQ 4b: Food Structuring to Reduce Lipid Oxidation**

*Chairs: Hong-Sik Hwang, USDA, ARS, NCAUR, USA; and Alex Kripps, Caldic USA, USA; and Yaqi Lan, South China Agriculture University, China*

### **Formation of Free-flowing Fish Oil-loaded Hollow Solid Lipid Micro- and Nanospheres Using Carbon Dioxide.**

Junsi Yang and Ozan N. Ciftci, *University of Nebraska-Lincoln, USA*

### **Natural Wax Oleogels-A Method to Prevent Oxidation of Fish Oil.**

Hong-Sik Hwang<sup>1</sup>, Matthew Phaner<sup>2</sup>, Jill Moser<sup>1</sup>, and Sean Liu<sup>3</sup>, <sup>1</sup>USDA, ARS, NCAUR, USA; <sup>2</sup>University of Michigan-Flint, USA; <sup>3</sup>USDA, ARS, USA

### **Self-assembled Colloidal Complexes of Polyphenol–gelatin and their Stabilizing Effects on Emulsions.**

Chaoying Qiu, Yu Huang<sup>1</sup>, Zhen Zhang<sup>2</sup>, Ying Li<sup>3</sup>, and Yong Wang<sup>1</sup>, <sup>1</sup>Jinan University, China; <sup>2</sup>South China University of Technology, China; <sup>3</sup>Guangdong Saskatchewan Oilseed Joint Laboratory, Dept. of Food Science and Engineering, Jinan University, China

### **Ability of SDS Micelles to Increase the Antioxidant Activity of $\alpha$ -tocopherol.**

Raffaella Inchingolo<sup>1</sup>, Sezer S. Kiralan<sup>1</sup>, Sibel Uluata<sup>1</sup>, MariaTeresa Rodriguez Estrada<sup>2</sup>, D. Julian McClements<sup>1</sup>, and Eric A. Decker<sup>1</sup>, <sup>1</sup>University of Massachusetts, USA; <sup>2</sup>University of Bologna, Italy

### **Impact of Reduced Oxygen Environment and Natural Antioxidants on the Oxidative Stability of Oil-in-Water Emulsions.**

Eric A. Decker<sup>1</sup>, and David R. Johnson<sup>\*2</sup>, <sup>1</sup>University of Massachusetts Amherst, USA; <sup>2</sup>Kalsec Inc., USA

## Wednesday Afternoon

### **LOQ 5a: Nutritional Impacts of Oxidation Byproducts in Food**

*Chairs: S.P.J. Namal Senanayake, CFS North America, USA; and Constantin Bertoli, Nestle, Switzerland*

### **Nutritional Impacts of Oxidation Byproducts in Food: The Pet Food Dilemma.**

Megan E. Morts and Greg Aldrich, *Kansas State University, USA*

### **Dietary Intake of Mildly Oxidized Fat Increases Colitis and Colitis-associated Colon Tumorigenesis through Activation of Toll-like Receptor 4 (TLR4) Signaling.**

Weicang Wang, Yuxin Wang, Eric A. Decker, and Guodong Zhang<sup>\*</sup>, *University of Massachusetts Amherst, USA*

### **Food-induced Formation of Health-damaging Compounds during Repeated Deep-fat Frying Cycles.**

Ru Shen, William G. Helferich, and Nicki J. Engeseth, *University of Illinois at Urbana-Champaign, USA*

### **Implications of Feeding Peroxidized Lipids in Swine.**

Brian Kerr, *USDA-ARS, USA*

### **LOQ 5b: Lipid Oxidation and Quality General Session**

*Chair: Jill Moser, USDA, ARS, NCAUR, USA*

### **Synergism and Antagonism of Phenolic, Amine and Sulfur-containing Antioxidants in Lipid Oxidation.**

Olga T. Kasaikina and Karina M. Zinatullina<sup>2</sup> Semenov N.N. *Institute of Chemical Physics, Russia*

### **Oxidative Stability of Flaxseed Oil: Effect of Polar, non-Polar and Surface-active Antioxidants.**

Athira Mohanan, Michael Nickerson, and Supratim Ghosh, *University of Saskatchewan, Canada*

**Oxidative Stability of Tomato-based Matrices Enriched with n-3-LC-PUFA Derived from Microalgae.** Lore Gheysen, Nele Lagae, Jolien Devaere, Koen Goiris, Luc De Cooman, and Imogen Foubert, *Katholieke Universiteit Leuven Kulak, Belgium*

**LOQ-P: Lipid Oxidation and Quality Poster Session**

*Chair: Uwe Nienaber, DSM Nutritional Products, USA*

**Identification and Quantification of Phytoprostanes and Phytofurans in Coffee and Cocoa By- and Co-products.** Mariana Ruesgas Ramon<sup>1</sup>, Claire Vigor<sup>2</sup>, Amandine Rocher<sup>2</sup>, Guillaume Reversat<sup>3</sup>, Joseph Vercauteren<sup>3</sup>, Camille Oger<sup>3</sup>, Jean-Marie Galano<sup>3</sup>, Thierry Durand<sup>3</sup>, Erwann Durand<sup>4</sup>, and Maria Cruz Figueroa-Espinoza<sup>5</sup>, <sup>1</sup>*SupAgro Montpellier, France*; <sup>2</sup>*Institut des Biomolécules Max Mousseron, France*; <sup>3</sup>*Institut des Biomolécules Max Mousseron, UMR 5247 CNRS, University of Montpellier, ENSCM, Faculty of Pharmacy, France*; <sup>4</sup>*CIRAD, France*; <sup>5</sup>*Montpellier SupAgro, UMR IATE, France*

**An Investigation of the Antioxidant Activity of Alkyl Gallates in Model Membranes.** Yu Zhao<sup>1</sup>, Drew Marquardt<sup>2</sup>, Ryan J. Elias<sup>1</sup>, and John N. Coupland<sup>1</sup>, <sup>1</sup>*Penn State University, USA*; <sup>2</sup>*University of Windsor, Canada*

**Chemometric Profiling of Aldehyde Distribution in Frying Oil and French Fries.** Lei Wang, Yuyin Zhou\*, Yukari Yamashita, and Chi Chen, *University of Minnesota, USA*

**Predicting the Oxidative Stability in Bakery Products: Application of Accelerated Method Based on Oxygen Consumption.** Claudio Corradini<sup>1</sup>, Antonella Cavazza<sup>1</sup>, Emma Chiavaro<sup>2</sup>, Carmen Lagana<sup>3</sup>, Stefano Casiraghi\*<sup>4</sup>, Monia Scarsi<sup>4</sup>, Maria Paciulli<sup>5</sup>, Massimiliano Rinaldi<sup>5</sup>, and Maria Grimaldi<sup>6</sup>, <sup>1</sup>*Università degli Studi di Parma, Italy*; <sup>2</sup>*Dipartimento di Scienze degli Alimenti e del Farmaco, Università di Parma, Italy*; <sup>3</sup>*VELP Scientifica, Italy*; <sup>4</sup>*VELP Scientific, Inc., USA*; <sup>5</sup>*Dipartimento di Scienze degli Alimenti e del Farmaco, Università di Parma, Italy*; <sup>6</sup>*Dipartimento di Scienze Chimiche, della Vita e della Sostenibilità Ambientale, Università di Parma, Italy*

**A Study of Photooxidation in Edible Oils by FTIR Spectroscopy and Incubation at Moderate Light Intensity.** Noelia Tena<sup>1</sup>, Ramón Aparicio-Ruiz<sup>1</sup>, Ana Lobo<sup>2</sup>, María Teresa Morales<sup>3</sup>, Aparicio Ramón<sup>2</sup>, and Diego L. García González\*<sup>1</sup>, <sup>1</sup>*Instituto de la Grasa (CSIC), Spain*; <sup>2</sup>*Instituto de la Grasa (CSIC)*; <sup>3</sup>*University of Seville*

**Lecithin Near Critical Micelle Concentration had the Highest Oxidative Stability in Corn Oil.** JiSu Kim<sup>1</sup>, YunSik Woo<sup>1</sup>, Jiwon Ryu<sup>1</sup>, MiJa Kim<sup>2</sup>, and JaeHwan Lee\*<sup>3</sup>, <sup>1</sup>*Sungkyunkwan University, South Korea*; <sup>2</sup>*Kangwon National University, South Korea*; <sup>3</sup>*Department of Food Science and Biotechnology, Sungkyunkwan University, Republic of Korea*

**Optimization and Validation of Rancimat Operational Parameters to Determine Walnut-oil Oxidative Stability.** Lucia Felix and Irwin R. Donis-Gonzalez, *University of California Davis, USA*

**Food-induced Formation of Health-damaging Compounds During Repeated Deep-fat Frying Cycles.** Ru Shen, William G. Helferich, and Nicki J. Engeseth, *University of Illinois at Urbana-Champaign, USA*