



2019 AOCS Annual Meeting & Expo

May 5–8

America's Center Convention Complex | St. Louis, Missouri, USA

Analytical (ANA) Interest Area Tentative Technical Program

As of February 12, 2019

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

ANA 1a: Proposed Updates to AOCS Official Methods, including Green Chemistry

Chairs: Susan Seegers, Bunge Oils, USA; and Cynthia Srigley, US Food and Drug Administration, USA

Update of AOCS Ce 6-86 Antioxidants Method and an Overview of the Need for Methods Updates.

Mark W. Collison*, *Archer Daniels Midland Co., USA*

Method Development for Rapid Analyses of Palm Minor Components. Mei Han Ng*, and Kushairi A, *Malaysian Palm Oil Board, Malaysia*

The Certo Fatty Acid Extraction Method. Adam H. Metherel*, *University of Toronto, Canada*

Oxidation and Its Challenges: Peroxide Value Determination in Solid Non-Oil Matrices. B.J. Bench*, *Tyson Foods, USA*

ANA 1b: Selected Analytical Presentations by the Dutton Award Winner

Chairs: Luigi Mondello, University of Messina, Italy; and Walter Vetter, University of Hohenheim, Germany

Fast GC and GC×GC Approaches to Detailed Fatty Acid Fingerprinting in Natural Fats and Oils. Luigi Mondello*, *University of Messina, Italy*

Unexpected Reduced Peak Widths of Partly Transferred Peaks after Heartcut Two-dimensional Countercurrent Chromatography. Walter Vetter*, Marco Müller, Medisa Muric, and Lisa Glanz, *University of Hohenheim, Germany*

Studies in Multidimensional Gas Chromatographic Separations for Triglyceride and Fatty Acid Analysis. Philip Marriott*, *Monash University, Australia*

NMR Analysis as a Tool to Ensure Authenticity of Lipids. Torben Küchler*, *Eurofins Analytik GmbH, Germany*

Critical Evaluation of Olive Oil Triglyceride Composition by Ultra High Performance Liquid Chromatography for the Detection of Added Seed Oils. Pierluigi Delmonte*, and Andrea Milani, *US Food and Drug Administration, USA*

Tuesday Morning

ANA 2a: Polar Lipids, including Phospholipids

Chairs: Francesca Giuffrida, Nestec SA, Switzerland; and Bernd Diehl, Spectral Service AG, Germany

Advances in Preparative Separation of Gangliosides from Porcine Samples via High-Speed Counter Current Chromatography (HSCCC). Nuanyi Liang*¹, Lucie Necasova², Yuanyuan Zhao², and Jonathan M. Curtis¹, ¹*Dept. of Agricultural, Food and Nutritional Science, University of Alberta, Canada;* ²*University of Alberta, Canada*

Polar Lipid Quantification in Human Milk. Francesca Giuffrida*¹, Emmanuelle Bertschy², Isabelle Tavazzi³, and Cynthia Marmet³, ¹*Nestec SA, Switzerland;* ²*Nestlé Research, Vers-chez-les-Blanc, Switzerland;* ³*Nestlé Research Vers-chez-les-Blanc, Switzerland*

Analyzing thousands of individual cellular lipid species without HPLC separation. Xianlin Han*, *University of Texas Health Science Center at San Antonio, USA*

Normal Phase HPLC of Hydroxylated Neutral Lipids and Polar Lipids Compatible with UV, ELSD and Radio Detectors. Hari Kiran Kotapati*¹ and Philip D. Bates², ¹*Washington State University, USA;* ²*The University of Southern Mississippi, USA*

ANA 2b: Advanced Methods of Analysis, including Automation

Chairs: William Byrdwell, USDA, ARS, BHNRC, FCMDL, USA; and Arun Moorthy, National Institute of Standards and Technology, USA

Covalent Adduct CI-MS/MS for FAME Double Bond Position Assignment without Standards on Shimadzu Triple Quadrupole. J. Thomas Brenna*¹, Hui Gyu Park², Dong Hao Wang², Zhen Wang³, Riki Kitano⁴, and Kumar S.D Kothapalli², ¹*Cornell University, USA;* ²*Dell Medical School/Dell Pediatric Research Institute, USA;* ³*Cornell University/University of Texas at Austin, USA;* ⁴*Shimadzu Scientific Instruments, Inc, USA*

Lipidomics Workflows – from Sample Preparation to Data Analysis. Sheher Mohsin*, *Agilent, USA*
Comprehensive Multidimensional LCMS Analysis of Milk: Working Toward LC3MS4 = LC1MS2 x (LC1MS1+LC1MS1). William C. Byrdwell*, *USDA, ARS, BHNRC, FCMDL, USA*

Simultaneous Analysis of Desired Aroma-active Compounds and Undesired Food-borne Toxicants. Michael Granvogl*, *Technical University of Munich, Germany*

On the Reliability of Identifications using Mass Spectral Library Searching. Arun S. Moorthy*, *National Institute of Standards and Technology, USA*

A Fast Analytical Approach for Simultaneous Determination of Biphenyl, 2-Phenyl phenol and Anthraquinone in Coconut Oil Using Stable Isotope Dilution and Gas Chromatography-Tandem. XueQing Wei*, ZhiMin Jiao, Ruifeng Zhang, Chuan Zhou¹, Wen Ming Cao², Hai Zhang, Yang Zhao, and Xuebing Xu³, ¹*Wilmar Biotechnology Research & Development Center (Shanghai) Co., Ltd, China, China;*

²Wilmar Biotechnology R&D Center (Shanghai) Co., Ltd., China; ³Wilmar Global Research and Development Center, China

ANA 2c / LOQ 2b: Chemical and Sensory Methods to Predict Food Stability

Chairs: J. David Pinkston, Kellogg Company, USA; and Lan Ban, Kemin Food Technologies, USA

Stabilization of Omega-3 Fatty Acid in Edible Oil Blends During Storage and Frying. Anand A. Zanwar*¹, Pramod D. Farde², Prakash B. Ghorpade², P.K. Singh³, and Mahbaleswar V. Hegde⁴, ¹Center for Innovation in Nutrition Health Disease, Interactive Research School for Health Affairs, Bharati Vidyapeeth (Deemed to be University), Pune, India; ²Center for Innovation in Nutrition Health Disease, Interactive Research School for Health Affairs, Bharati Vidyapeeth Deemed University, India; ³ICAR- Project Coordinating Unit Linseed, ICAR- Indian Institute of Pulses Research (ICAR-IIPR), Kanpur - 208024, India; ⁴Centre for Innovation in Nutrition Health Disease, Interactive Research School for Health Affairs, Bharati Vidyapeeth (Deemed to be University), India

The Effect of Rosemary Extract and Phospholipase A2 on the Color Stability and Lipid Oxidation of Fresh Pork Sausage. James Whalin*, Ling Liu, and Mark P. Richards, *University of Wisconsin-Madison, USA*

Correlation of Oxidative Shelf-life to Test Conditions and Physical Stability of Antioxidants. Chia-Yu F. Shen*¹, Kristen Robbins², and Lan Ban¹, ¹Kemin Food Technologies, USA; ²Kemin Food Technologies, USA

When is "Rancid" Rancid? Influence of Food Composition on Sensory Perception of Oxidative Rancidity and Correlation with Analytical Measurements. J. David Pinkston*, and Nancy Swarthout, *Kellogg Company, USA*

The use of Sensory Evaluation in Assessing the Shelf Life of Foods- Predicting Consumer Acceptability through Sensory Analysis. Andrew Livermore*¹, and Nancy Swarthout², ¹Kellogg's, USA; ²Kellogg Company, USA

Evaluation of Oxipres™ Apparatus to Study Oxidative Stability and Antioxidant Activity. Cindy Tian*, *Kalsec, Inc., USA*

Tuesday Afternoon

ANA 3a: Rapids Methods of Analysis, including Portable Devices

Chairs: Hongshun Yang, National University of Singapore, Singapore; and Magdi Mossoba, US Food and Drug Administration, USA

Rapid Evaluation of Extra Virgin Olive Oil Authenticity: A Targeted FT-NIR Spectroscopic Procedure. Magdi Mossoba*, Sanjeewa R. Karunathilaka, Kyungeun Lee, Zachary Ellsworth, Lea Brückner, and Betsy J. Yakes, *US Food and Drug Administration, USA*

Effects of Molar Mass and Ester Functionalities on Terahertz Spectra of Oils. Svajus J. Asadauskas*, Mindaugas Karaliunas, and Gintaras Valušis, *FTMC, Lithuania*

Near-Infrared Spectroscopy as a Rapid Screening Technique to Determine Authenticity and Adulteration of Avocado Oil. Kathryn J. Lawson-Wood*¹, Hannah Rance¹, and Ariel Bohman², ¹PerkinElmer, United Kingdom; ²PerkinElmer, USA

The Development of a Robust Spectrometer for Online and Real-time Monitoring of Oil Quality.

Jonathon D. Speed*, *Keit Spectrometers, UK*

ANA 3b: General Analytical

Chairs: Torben Kuchler, Eurofins Analytik GmbH, Germany; and Pierluigi Delmonte, US Food and Drug Administration, USA

A comparative study on the change of quality, free radical and molecular structure in different edible oils during deep-frying by EPR and FTIR spectroscopy. lirong Xu*¹, Qingzhe Jin², and Xingguo Wang², ¹*jiangnan university, China;* ²*Jiangnan University, China*

Practical analyzing method of triacylglycerol isomers by using supercritical fluid chromatography. Koji Masuda*¹, Kosuke Abe², and Yoshihiro Murano¹, ¹*The Nisshin Oillio Group, Ltd., Japan;* ²*Nisshin Global Research Center Sdn. Bhd, Malaysia*

Direct quantification of valuable furan fatty acids in fish oils by NMR. Walter Vetter*¹, Veter Gottstein², Johannes Günther³, Marco Müller², and Katharina Wasmer², ¹*University of Hohenheim, Deutschland;* ²*University of Hohenheim, Germany;* ³*Core Facility Hohenheim*

Simultaneous GC-FID and MS Analysis of Trans-Fatty Acids in Human Plasma. Heather C. Kuiper*¹, Emily J. Mueller², and Hubert W. Vesper¹, ¹*CDC, USA;* ²*CDC, USA*

ANA 3c / LOQ 3a: Advanced Analytical Techniques for Lipid Oxidation

Chairs: Rick Della Porta, PepsiCo / Frito-Lay, USA; and Matthew Phaner, University of Michigan-Flint, USA

New Method for the Investigation of Oxidation Stability of Fats, Oils and Complex Food Products. Carolin Edinger*, *Anton Paar ProveTec GmbH, Germany*

Application of Flow Cytometry as Novel Technology in the Study of Lipid Oxidation in Oil-in-Water Emulsions. Peilong Li*¹, D. Julian J. McClements², and Eric A. Decker², ¹*Dept. of Food Science, University of Massachusetts, Amherst, USA;* ²*University of Massachusetts Amherst, USA*

Electrochemistry as an Analytical Tool for Monitoring Antioxidant and Omega-3 Fatty Acid Levels during Degradation. Matthew Phaner*, *University of Michigan-Flint, USA*

Analysis of Polar Compounds Generated during Thermal Process of Oils and its Biochemical Function Evaluation. Chen Cao*, Yongjiang Xu, and Yuanfa Liu, *Jiangnan University, China*

ANA 3.1 / EAT 3.1 / IOP 3.1: Analysis of PUFA and Fat Soluble Vitamin Analysis with Emphasis on Nutrition Labeling, and Food Applications of Low Saturated Fats/Oils

Chairs: Jillonne Kevala, US Food and Drug Administration, USA; and Serpil Metin, Cargill, USA

Modernizing the Nutrition Facts and Supplement Facts Labels. Jillonne H. Kevala*, *Food and Drug Administration, USA*

Low Saturate High Oleic Canola Oil in Health and Nutrition. Xiaolan Luo*¹, Nisa Tharayil², and Diliara Iassonova³, ¹*Cargill, USA;* ²*Cargill, United States;* ³*Cargill Inc., USA*

Validation of a HPLC Method for Analysis of Provitamin A Carotenoids (β -carotene, α -carotene and β -cryptoxanthin). Sneha Bhandari*¹, and Ming Gao², ¹Merieux Nutrisciences, USA; ²Merieux NutriSciences, USA

Rheology and Baking Stability of Water in Oil Emulsion Designed as Low saturated Bakery Shortening. Fernanda Davoli*¹, Serpil Metin², and Paul Smith³, ¹Cargill, USA; ²Cargill R&D, USA; ³Cargill Global Foods Research, Belgium

Quantification of Furan Fatty Acids by LC-MS/MS and their Identification in New Zealand Marine Oils. Matthew R. Miller*¹, Donato Romanazzi², Hajime Uchida³, Johnathon Puddick², Yutaka Itabashi³, Masashi Hosokawa⁴, Toshiyuki Suzuki³, and Michael Boundy², ¹Cawthron, New Zealand; ²Cawthron Institute, New Zealand; ³National Research Institute of Fisheries Science, Japan; ⁴Hokkaido University, Japan

Wednesday Morning

ANA 4a: Trace Contaminants

Chairs: Jessica Beekman, US Food and Drug Administration, USA; and Jan Kuhlmann, SGS Germany GmbH, Germany

Managing Chemical Contaminants in Foods: a Review of Selected Chemicals and Mitigation Strategies. Richard Stadler*, Nestlé Research, Switzerland

Estimated Exposures to 3-MCPD Esters and Glycidyl Esters from U.S. Consumption of Infant Formula. Judith Spungen*, FDA, USA

Opportunities and Drawbacks in the Mitigation of 3-MCPD- and Glycidylesters. Nils Hinrichsen*, Archer Daniels Midland, Co., USA

Quantification of MCPDE and GE in Edible Oils and Fats: A High Throughput Method for QC Purposes. Ralph P. Zwagerman*¹, and Pierre Overman², ¹Bunge Lodders Croklaan, The Netherlands; ²Bunge Lodders Croklaan, Netherlands

Stability of food contaminants 3-MCPD-, 2-MCPD- and glycidyl fatty acid esters in foods during long-term storage. Jan Kuhlmann*, SGS Germany GmbH, Germany

ANA 4b: Authentication of High Value Oils including Olive Oil, Sensory Evaluation and Correlation with Analytical Results

Chairs: Luisito Cercaci, Pompeian, USA; and Rodney Mailer, Australian Oil Research, Australia

Assessment of Authenticity of Blended Oil by Triacylglycerols and Chemometrics Tools. Hong Yang*¹, Wen Ming Cao², and Yuan Rong Jiang², ¹Wilmar (Shanghai) Biotechnology Research & Development Center Co.,Ltd, CHINA; ²Wilmar Biotechnology R&D Center (Shanghai) Co., Ltd., China

Flash Gas-Chromatography in tandem with chemometrics: a screening tool to discriminate the olive oil quality. Alessandra Bendini*¹, Chiara Cevoli¹, Sara Barbieri¹, Diego L. García González², and Tullia GT Gallina Toschi³, ¹DISTAL University of Bologna, Italy; ²Instituto de la Grasa (CSIC), Spain; ³Alma Mater Studiorum - University of Bologna, Italy

Putting a Gate Around High Quality EVOOs from Specific Origins by ¹H NMR Profiling Databases.

Chiara Roberta Girelli, Laura Del Coco¹, Federica Angilè², Francesca Calò³, Paride Papadia³, Andrea Biagianti⁴, Daniele Barbini⁴, and Francesco Paolo Fanizzi*², ¹*Department of Biological and Environmental Sciences and Technologies (Di.S.Te.B.A.), University of Salento, , Italy;* ²*Dipartimento di Scienze e Tecnologie Biologiche ed Ambientali Università del Salento, Italy;* ³*Dipartimento di Scienze e Tecnologie Biologiche ed Ambientali Università del Salento 73100 Lecce, Italy;* ⁴*Certified Origins Italia Srl Loc. Madonnino 58100 Grosseto, Italy*

A New Identity Standard for Olive Oil Refined. Gina M. Clapper*¹, Kristie Laurvick², and Richard C. Cantrill³, ¹*USP, USA;* ²*USP, USA;* ³*Independent Consultant, Canada*

Olive Oil Authentication Using Raman Spectroscopy Combined with Pattern Recognition Analysis.

Didem P. Aykas*, and Luis E. Rodriguez-Saona, *The Ohio State University, USA*

ANA-P: Analytical Poster Session

Chair: *Ali Reza Fardin Kia, US Food and Drug Administration, USA*

Posters will be available for viewing from 10:00 a.m. on Monday, May 6 through 1:00 p.m. Wednesday, May 8, 2019.

High Pressure Preparative HPLC for Prepare Individual Tocopherol and Tocopherolquinone. Liyou Zheng*¹, Xingguo Wang², and Qingzhe Jin², ¹*State Key Laboratory of Food Science and Technology Synergetic Innovation Center of Food Safety and Nutrition School of Food Science and Technology, China;* ²*Jiangnan University, China*

Valuable Source of Antioxidants from Agri-industrial Waste. Stefano Casiraghi*, *VELP Scientific, Inc., USA*

Analysis of trans-Fatty Acids in Food Products Using Various GC Columns. Jana Rousova*¹, Joseph D. Konschnik², and Chris English¹, ¹*Restek, USA;* ²*RESTEK Corporation, USA*

Identification of Off-flavor Compounds in Cereals and Oils by HS-SPME Coupled to GC-MS-O Technique. Wang Jing*, *Wilmar, China*

Rapid Prediction of Low (< 1%) trans Fat Content by IR Spectroscopy and Chemometric Analysis: Edible Oils and Fast Food Lipid Extracts. Magdi Mossoba*, Samantha Farris, and Sanjeewa R. Karunathilaka, *US Food and Drug Administration, USA*

Discrimination of Korean and Chinese Perilla Seeds by Mineral Analyses in Combination with a Multivariate Statistical Method. Jung Eun Lee*¹, Soo Jeong Lee², Hyang Sook Chun³, Sangdoo Ahn³, and Byung Hee Kim⁴, ¹*Sookmyung Women's University, Republic of Korea;* ²*Sookmyung Women's University, South Korea;* ³*Chung-Ang University, South Korea;* ⁴*Sookmyung Women's University, Korea*

Rapid separation of Fatty Acid Methyl Esters with Agilent DB-FastFAME and the Intuvo 9000 GC System. Yun Zou¹, Gustavo Serrano Izaguire*², and Phil Stremple³, ¹*Agilent, USA;* ²*Agilent, USA;* ³*Agilent Technologies, USA*

Stable isotope dilution assays in quantitation of 4-HNE and 4-HHE in vegetables oils by UPLC/MS/MS. Chuan Zhou*¹, Hai Ming Shi², Junmei Liang³, Wen Ming Cao², and Yuan Rong Jiang², ¹*Wilmar Biotechnology Research & Development Center (Shanghai) Co., Ltd, China, China;* ²*Wilmar Biotechnology*

R&D Center (Shanghai) Co., Ltd., China; ³Wilmar (Shanghai) Biotechnology Research & Development center Co., Ltd, China

Simultaneous determination of bisphenol A, alkylphenol and 2-phenylphenol in edible vegetable oil by solid phase extraction and liquid chromatography with tandem mass spectrometry. Mingming Zhang*¹, Chuan Zhou², Ruifeng Zhang, Wen Ming Cao³, and Yuan Rong Jiang³,
¹Wilmar(Shanghai)Biotechnology Research and Development Center Co. Ltd., China; ²Wilmar Biotechnology Research & Development Center (Shanghai) Co., Ltd, China, China; ³Wilmar Biotechnology R&D Center (Shanghai) Co., Ltd., China

Efficient method for a simultaneous determination of monochloropropanediol and glycidol in natural glycerin by GCMS. Ruifeng Zhang*, Chuan Zhou¹, Wen Ming Cao², and Tiankui Yang, ¹Wilmar Biotechnology Research & Development Center (Shanghai) Co., Ltd, China, China; ²Wilmar Biotechnology R&D Center (Shanghai) Co., Ltd., China

Comparison of Fat Content between Home Meal Replacement products and Restaurant Foods in Korea. Eunji Choi*¹, Jung Eun Lee¹, Soo Jeong Lee², Yejin Song², and Byung Hee Kim³, ¹Sookmyung Women's University, Republic of Korea; ²Sookmyung Women's University, South Korea; ³Sookmyung Women's University, Korea

Monitoring the oxidative stability of olive oils by Electron Spin Resonance forced oxidation assay. Matilde Tura¹, Mara Mandrioli¹, Enrico Valli*², David Barr³, Manfred Spraul³, Agnes Haber³, Alessandra Bendini⁴, and Tullia Gallina Toschi⁴, ¹Alma Mater Studiorum – Università di Bologna, Italy; ²University of Bologna; ³Bruker, USA; ⁴DISTAL University of Bologna, Italy

Separation of Trans Fatty Acids in Human Plasma by Silver Ion High-Performance Liquid Chromatography and Gas Chromatography-Mass Spectrometry. Na Wei*¹, Sarah Kingsley², Heather C. Kuiper¹, and Hubert W. Vesper¹, ¹CDC, USA; ²CDC, USA

Quantitation of Trans-Fatty Acids in Humans: An Assessment of Internal Standards. John M. Goodwin*¹, Heather C. Kuiper², Emily J. Mueller¹, Samuel P. Caudill², and Hubert W. Vesper², ¹CDC, USA; ²CDC, USA

Wednesday Afternoon

AOCS Member + Volunteers Appreciation Luncheon

12:30–2 p.m.

Complimentary with all meeting registration types.

“Meet Me in St. Louis” Afternoon Excursion

3–7 p.m.

Departs from the Marriott Grand

Optional event. Ticket purchase is required.