

2022 AOCS Annual Meeting & Expo

Surfactants and Detergents Program

As of March 23, 2022. Subject to change.

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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; CO₂-switchable viscoelastic surfactants; and surfactant micelle structure and composition.

CO₂-switchable viscoelastic surfactants. Yujun Feng*, Polymer Research Institute, Sichuan University, China (People's Republic)

Surfactant micelle structure and composition. Samhitha Kancharla¹, Dengpan Dong², Dmitry Bedrov², Marina Tsianou¹, Paschalis Alexandridis*¹, University at Buffalo, The State University of New York (SUNY), United States; ²University 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*¹, Ronald Marquez², Jesus F. Ontiveros³, ¹*FIRP Laboratory, Universidad de Los Andes, Venezuela, Venezuela;* ²*Laboratoire Physico-Chimie des Interfaces Complexes, TotalEnergies, Lille University, ESPCI, France;* ³*ENSCL, France*

Biobased emulsions for lubrication applications. Brajendra K. Sharma*¹, Derek Vardon², ¹*SBCP, USDA-ARS-ERRC, United States,* ²*Alder Fuels, 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)

Metal salt-induced hydrogelation of biosurfactants. Alexandre Poirier*¹, Niki Baccile², ¹*Sorbonne Université, United States;* ²*Laboratoire de chimie de la matière condensée de Paris, France*

New high-performance starch-based emulsifiers using amylose inclusion complexes. Gordon Selling*¹, Milagros P. Hojilla-Evangelista², William Hay³, ¹*USDA/ARS, United States;* ²*USDA ARS NCAUR Plant Polymer Research, United States;* ³*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*¹, Naycarí Forfora², Luz Meza², Franklin Salazar-Rodríguez³, Ana Forgiarini⁴, ¹*Industrial and Applied Chemistry, FIRP Laboratory, Venezuela;* ²*FIRP Laboratory, Venezuela;* ³*Unit Operations, FIRP Laboratory, Venezuela;* ⁴*FIRP Laboratory, Universidad de Los Andes, Venezuela, United States*

Study on the application of surfactin for enhanced oil recovery. Yuichi Sugai*¹, Nao Miyazaki², Yoshifumi Okamoto³, Satohiro Yanagisawa³, ¹*Faculty of Engineering, Kyushu University, Japan;* ²*Graduate School of Engineering, Kyushu University, United States;* ³*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.

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*¹, Jatin Sharma², ¹*Novozymes North America Inc., United States*; ²*Consumer Biosolutions, Novozymes North America, Inc., United States*

Fatty acid methyl ester ethoxylates: New sustainable surfactants for next generation crop protection formulations. Dean Oester*¹, Timothy Anderson¹, Mel Long², Rodney Klima¹, ¹*AgChem Additives Development, BASF Corporation, United States*; ²*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*¹, Tim Young¹, Daniel S. Miller², ¹*Home and Personal Care, Dow Inc., United States*; ²*Core R&D, Formulation, Automation & Material Science, Dow Inc., 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.

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*¹, Ian McRobbie², Jon Preece³, Zhenyu Jason Zhang¹, ¹*Chemical Engineering, University of Birmingham, United Kingdom*; ²*Innospec, United Kingdom*; ³*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*¹, Luis Miguel Lopez², ¹*PD Bar Soaps, Colgate Palmolive, Mexico*; ²*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.

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*¹, Rachel M. Lang², ¹*Research & Development, Stepan Co, United States; ²Stepan Co, United States*

Advanced detergent formulation design by progressing from hydrophilic/lipophilic balance (HLB) to hydrophilic-lipophilic deviation (HLD). Parichat Phaodee*¹, Jeffrey Harwell², David Sabatini², ¹*Ecolab Inc., United States; ²University of Oklahoma, United States*

Cc variances as a result of sophorolipid lactone/lactonic acid ratios. Eric Theiner*¹, Stephanie Hochstetler², Christine Dunstan², Leon Zheng³, Fiona Dong³, ¹*Evonik Industries, United States; ²PL Cleaning Solutions, Evonik Corporation, United States; ³PL 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*

Biosurfactants

SURFACTANTS AND DETERGENTS

Joint session with the Biotechnology 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 α -monostearin for cleaner large-scale production of α -monoglycerides; sophorolipid potential as transport carrier; overview of the properties for oleo-furan surfactants; biopolymer-biosurfactant systems; and molecular simulation for biosurfactant-based cosmetic formulations.

Selective synthesis of alpha monoglycerides by clean method: Techno-economic and environmental assessment. Ahmad Mustafa*¹, Reham Mohsen², Fumiya Niiikura³, ¹*General Systems Engineering, October University for Modern Sciences and Arts (MSA), Egypt; ²Faculty of Biotechnology, October University for Modern Sciences and Arts (MSA), Egypt; ³Lion 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*¹, Michiaki Araki¹, Yoshihiko Hirata², Kentaro Matsumiya³, Yasuki Matsumura⁴, ¹*Biochemical Laboratory, Saraya Co., Ltd., Japan*; ²*Product Development Division and Biochemical Laboratory, Saraya Co., Ltd., Japan*; ³*Graduate School of Agriculture, Kyoto University, Japan*; ⁴*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*¹, Andrea Browning¹, Jeffrey Sanders², Mat Halls¹, ¹*Schrodinger, United States*; ²*Materials Science, Schrodinger, United States*

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.

Henkel's sustainability goals. Janet Coope-Epstein*¹, Thorsten Bastigkeit², Arndt Scheidgen³, Uta Steffan⁴, ¹*Laundry & Home Care, Henkel, United States*; ²*Future Science, Henkel, Germany*; ³*Regulatory, Henkel, Germany*; ⁴*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*

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.

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

Interfacial adsorption of gastrointestinal lipases onto heterogenous biomimetic vegetal membranes. Jeanne Duplessis-Kergomard*¹, Frédéric Carrière², Gérard Lambeau³, Gilles Paboeuf¹, Nathalie Barouh⁴, Pierre Villeneuve⁴, Claire Bourlieu-Lacanal⁵, Véronique Vié¹, ¹*Soft Matter, Institut de Physique de Rennes, Université De Rennes 1, France*; ²*Enzymology of Supramolecular Systems, UMR7281 Bioenergetics and Protein Engineering laboratory, France*; ³*Institut de Pharmacologie Moléculaire et Cellulaire (IPMC) UMR 7275, France*; ⁴*CIRAD, France*; ⁵*UMR IATE, INRAE/Univ Montpellier/Institut Agro, France*

Microemulsion bicontinuous polymeric 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*¹, David Benitez¹, Christoph Groß-Heitfeld², ¹*R&D, Applications, Sasol, United States*; ²*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*¹, Nina Rittereiser², Matthias Reihmann², ¹*Gelita, United States*; ²*Gelita AG, Germany*

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

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.

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*¹, Yingzhen Ma², Bhuvnesh Bharti², ¹*INRAE, France*; ²*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*¹, Vanessa DeMarco¹, Sarah Kovach², ¹*Consumer Products R&D, Stepan Company, United State;* ²*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*

Surface Methods and Analysis

SURFACTANTS AND DETERGENTS

Joint session with the Analytical 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 detergent; 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.

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*¹, Jeff Botts², ¹*Emulsifiers, Corbion, United States;* ²*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*¹, Paul Simutis²,

¹*DataPhysics Instruments GmbH, Germany;* ²*DataPhysics Instruments USA Corp., United States*

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

Ronald Marquez*¹, Jose Maria Zamora², ¹*Laboratoire Physico-Chimie des Interfaces Complexes, TotalEnergies, Lille Univ., ESPCI, France;* ²*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*¹, Franklin

Caputo¹, Auriana Hughes¹, Julian Barnes², ¹*Shell Global Solutions US Inc., United States,* ²*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*

Surfactants in Food

SURFACTANTS AND DETERGENTS

Joint session with the Edible Applications Technology 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.

Local distribution of limonene in phospholipid vesicles. Ann-Dorie Webley*¹, Stephanie Dungan¹, Susan Ebeler³, ¹Food Science and Technology, University of California Davis, United States; ³Viticulture 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*¹ (**Edible Applications Technology Division Student Award**), Karin Schroën¹, Claire Berton-Carabin², ¹Food Process Engineering, Wageningen University, Netherlands, ²INRAE 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*¹, Malick Samateh¹, Siddharth Marwaha², Jose James², Vikas Nanda², ¹Chemistry and Biochemistry, City College of New York (CUNY), United States; ²Biochemistry, 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

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.

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*¹, David Sabatini², ¹Ecolab Inc., United States; ²University of Oklahoma, United States

Effect of surfactant mixtures on the coalescence and rheology of densely packed emulsions – theory and experiments. Enric Santanach-Carreras*¹, Huy-Hong-Quan Dinh¹, Marie Lalanne-Aulet¹, Pascal Panizza², Veronique Schmitt³, François Lequeux⁴, ¹TotalEnergies SE, France; ²Université de Rennes 1/ESPCI/Laboratoire PIC, France; ³CRPP Bordeaux/CNRS, France; ⁴CNRS SIMM ESPCI/Laboratoire PIC CNRS/TotalEnergies/ESPCI, France

Exploration of surfactant additives for improvement of bitumen froth. Daniel S. Miller*¹, Heather Wiles², David Brennan², Adam Schmitt², Kathryn Grzesiak², Rohini Gupta², Tom Kalantar², Harpreet

Singh², Tzu-Chi Kuo³, ¹Core R&D, Formulation, Automation & Material Science, Dow Inc., United States; ²Dow Inc., United States; ³The 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

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.

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*¹, Melanie Fischer², Kristin Schirmer², ¹aQuaTox-Solutions Ltd., Switzerland; ²Department 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*¹, Tala R. Henry², ¹U.S. Environmental Protection Agency, United States; ²Office 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.

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*¹, Renata Hyczy², Jatin Sharma¹, ¹Consumer Biosolutions, Novozymes North America, Inc., United States, ²Household 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

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.

Innovative biofuels derived from wood pyrolysis bio-oil. Compatibility with petroleum cuts for applications in marine transportation. Ronald Marquez*¹, Sophie Gelade², François Lequeux³, Nicolas Sanson³, Jesus F. Ontiveros⁴, Veronique Rataj⁴, Jean-Marie Aubry⁴, Valerie Molinier², ¹Laboratoire Physico-Chimie des Interfaces Complexes, TotalEnergies, France; ²TotalEnergies, France; ³ESPCI, France; ⁴ENSCL, 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 Yu¹ 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*

Surfactants and Detergents Poster Session

Sponsored by Testfabrics Inc.

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

S&D-01 New insight in the structure-properties relationship of hydroxypropyl cellulose. Gilles Cremer*¹, Vera Van Hoed², Sabine Danthine³, Anne Dombree², Anne-Sophie Laveaux², Christophe Blecker⁴, ¹*Food Science, Uliege, Belgium*; ²*Puratos Group, Belgium*; ³*University of Liège Gembloux Agro-Bio Tech, Belgium*; ⁴*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*¹, Dallas Johnson², Timothy Durrett³, Umut Yucel¹, ¹*Food Science Institute/Department of Animal Sciences and Industry, Kansas State University, United States*; ²*Department of Statistics, Kansas State University, United States*; ³*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*¹, Angelica Maria Ortega¹, Jesús Guillermo Perez¹, Daniela Martínez², Mairis Guevara², Johnny Bullon², Ana Forgiarini², ¹*RD&I, Belcorp, Colombia*; ²*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*¹, Krassimir D. Danov², Romyana D. Stanimirova², Peter A. Kralchevsky², Tatiana G. Slavova², Veronika I. Yavrukova², Yee Wei Ung¹, Hui Xu³, Jordan T. Petkov¹, Ai Mun Cheong¹, ¹*KLK OLEO, Malaysia*; ²*Department of Chemical and Pharmaceutical Engineering, Sofia University, Bulgaria*; ³*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*¹, Daniela Martínez², Franklin Salazar-Rodríguez³, Johnny Bullon², ¹*FIRP Laboratory/University of Los Andes, Venezuela*; ²*FIRP Laboratory, Venezuela*; ³*Unit Operations, FIRP Laboratory, Venezuela*

S&D-06 Green surfactants as chemical herders for maritime oil spill remediation. George John*¹, Charles Maldarelli², ¹*Chemistry and Biochemistry, City College of New York (CUNY), United States*; ²*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*