

# Overview



## Monday, May 17, 2021

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### 8:30 – 10 am

Opening Welcome and Monday Keynote Session

#### Keynote Speakers:

- Dr. Said Jahanmir, Assistant Director of Federal Partnerships, National Institute of Standards and Technology (NIST) Office of Advanced Manufacturing
- Dr. Mike Lovell, President, Marquette University
- Dr. Kathy Wahl, Head of Molecular Interfaces and Tribology Section, Naval Research Laboratory

### 10 – 10:30 am

Networking Break & Special Programming

### 10 am – 4 pm

Virtual Exhibits and Student Posters

### 10:30 am – 1 pm

#### Monday Technical Sessions:

- 1A – Seals I
- 1B – Environmentally Friendly Fluids I
- 1C – Fluid Film Bearings I
- 1D – Gears I
- 1E – Metalworking Fluids I
- 1F – Nanotribology I
- 1G – Power Generation and Wind Turbine Tribology I
- 1H – Commercial Marketing Forum I
- 1I – Synthetic Lubricants and Hydraulics I

### 1 – 2 pm

Networking Break & Special Programming

### 2 – 6 pm

#### Monday Technical Sessions:

- 2A – Engine & Drivetrain Session on Electric Vehicles I
- 2B – Environmentally Friendly Fluids II
- 2D – Materials Tribology I
- 2E – Metalworking Fluids II
- 2F – Nanotribology II
- 2G – Power Generation and Wind Turbine Tribology II
- 2I – Commercial Marketing Forum II
- 2J – Synthetic Lubricants and Hydraulics II

### 3 – 4 pm – Exhibitor Appreciation Hour & Networking Break

### 6:30 – 8 pm

Virtual Networking Reception

### *Trade Show Hours:*

- Monday, May 17: 10 am – 4 pm
- Tuesday, May 18: 10 am – 3:30 pm
- Wednesday, May 19: 10 am – 3:30 pm
- Thursday, May 20: 10 am – 3:30 pm

(All times listed are Eastern Daylight Time)

## Technical Sessions Time Grids – Monday, May 17, 2021

TIME	SESSION 1A Seals I	SESSION 1B Environmentally Friendly Fluids I	SESSION 1C Fluid Film Bearings I
	Virtual Meeting Room 1	Virtual Meeting Room 2	Virtual Meeting Room 3
10:30 – 11 am	On Surface Energy and Friction of Hydraulic Rod Seals, O. Feuchtmüller, p. 24	Global Fluid Trends, E. Jones, p. 24	Influence of Journal Surface Scratch Characteristics on the Performance of a Two-Lobe Journal Bearing – Comparison Between Experimental Data and Numerical Results, A. Vo, p. 24
11 – 11:30 am	Advanced Sealing Concepts for Redox Flow Batteries, D. Jannes, p. 24	EU Ecolabel for Lubricants – European Approach to Evaluate EALs, S. Rea, p. 24	Effect of Pad Fixations on the Tribological Performance of Parallel-Surface Fixed-Pad Thrust Bearings, A. Charitopoulos, p. 24
11:30 – Noon	A Method of Direct Measurement of Mechanical Seal Wear In Pumps and Compressors, M. Slivinski, p. 24	Sustainability in the Lubricants Industry, I. Herrmann, p. 24	Experimental Characterization of Hydrodynamic Bearing During Oil Flow Interruption Event, L. Naldi, p. 24
Noon – 12:30 pm	Computational Fluid Dynamics Analysis & Experimental Results for the Dynamic Performance of Two Long Smooth Surface Annular Seals Operating with a Liquid in Air Mixture, J. Yang, p. 24	New Hydrolytic Stability Testing on Biobased Lubricants and Base Fluids, M. Miller, p. 24	A Study of the Dynamic Properties of the Elastic Supports of an Air Journal Bearing, A. Paridie, p. 24
12:30 – 1 pm	Seals Business Meeting	Bio-Based and Biodegradable Base Oils for Environmentally Acceptable Lubricants (EALs), Z. Hunt, p. 24	Fluid Film Bearings Business Meeting
1 – 2 pm	<b>Networking Break</b>	<b>Networking Break</b>	<b>Networking Break</b>
	SESSION 2A Engine & Drivetrain on Electric Vehicles I	SESSION 2B Environmentally Friendly Fluids II	
	Virtual Meeting Room 1	Virtual Meeting Room 2	
2 – 2:30 pm	Test Rig to Investigate Function and Efficiency of the Speed 4E Hyper-High-Speed Electromechanical Powertrain, L. Pointner-Gabriel, p. 26	Latest in Biosynthetic Base Oils – Evaluating Estolide Performance Characteristics in Expanding Viscosity Ranges, M. Kriech, p. 26	
2:30 – 3 pm	Fluid Cooling Performance Understanding for Electric Drivetrain Applications, Y. Kwak, p. 26	Lubricity Behavior of HVOs, D. Halenahally p. 26	
3 – 4 pm	<b>Exhibitor Appreciation Hour</b>	<b>Exhibitor Appreciation Hour</b>	<b>Exhibitor Appreciation Hour</b>
4 – 4:30 pm	Lubricant & Greases Solutions for the Whole Electrical Vehicle Drivetrain Including the Thermal Management of Batteries, T. Murr, p. 26		
4:30 – 5 pm	Thermal Properties of Group V Base Fluids for Fast Charge Battery Cooling Applications, B. Warren, p. 26	EALs for Marine Vessel Stern Tubes – Not All Esters Are Equal, K. Duncan, p. 26	
5 – 5:30 pm	Prediction of Power Losses in Electric Vehicle Transmissions, A. Kadirci, p. 26	How Polyalkylene Glycols Save Energy in Industrial Gear Application – A Sustainability Case Study, T. Meyers, p. 28	
5:30 – 6 pm	Ultra-Low Viscosity Synthetic Fluids to Enhance Performance and Durability for Electric Vehicles (EVs), B. Lotfi, p. 26	Soy-Based Lubricants: Performance and Sustainability, R. Brentin, p. 28	
6 – 6:30 pm		Environmentally Friendly Fluids Business Meeting	

<b>SESSION 1D Gears I</b>		<b>SESSION 1E Metalworking Fluids I</b>		<b>SESSION 1F Nanotribology I</b>	
<b>Virtual Meeting Room 4</b>		<b>Virtual Meeting Room 5</b>		<b>Virtual Meeting Room 6</b>	
Permissible Water Content of Gear Lubricants Regarding the Pitting Performance of Case-Carburized Gears, N. Sagraloff, p. 24		IW5000, Oil-Free Aqueous AF/AW/EP Additive Based on IF-WS <sub>2</sub> Technology: Extending the Frontiers of Water-Based Lubrication Fluid Technologies, H. Kim, p. 25		Polymer Brushes on Gels: Imitating the Lubricious Properties of Cartilage, N. Spencer, p. 25	
Approach for the Development of an Alternative Classification Method for Gear Oils for High-Loaded Hypoid Gears Comparable to API GL-5, A. Drechsel, p. 24		Cross-Functional Benefits of Metalworking Fluid Additives, M. Stapels, p. 25			
The Effect of Surface Roughness and the Ratio on the Initiation and Progression of Micropitting Damage, B. Wainwright, p. 25		Improving and Expanding the Applicability of the ASTM D3233 Pin & Vee Block Method for Cutting Fluid Evaluation: Correlation with a Real Cutting Operation, D. Drees, p. 25		Formulation of Lubricant Additives Using AB Initio Computational Methods, C. Gattinoni, p. 25	
Gears Business Meeting		New Seal Compatibility Test Method for Metalworking Fluids, S. Baumgaertel, p. 25		Molecular Dynamics Simulations of Nanofluidics, M. Elewa, p. 25	
		Consistently Beating the Odds – How to Build Successful Products, E. Schnellbacher, p. 25		Rheo-Tribological Analysis of Cellulose Nano-Crystalline (CNC) Aqueous Suspensions, B. Zakani, p. 25	
<b>Networking Break</b>		<b>Networking Break</b>		<b>Networking Break</b>	
<b>SESSION 2D Materials Tribology I</b>		<b>SESSION 2E Metalworking Fluids II</b>		<b>SESSION 2F Nanotribology II</b>	
<b>Virtual Meeting Room 4</b>		<b>Virtual Meeting Room 5</b>		<b>Virtual Meeting Room 6</b>	
The Effect of Hot Compaction on the Tribological Performance of the PDA+PTFE Nanocomposite Coatings, S. Ghosh, p. 28		Foam Control & Formulation Techniques to Minimize Foam in Water Dilutable MWFs, M. Miller, p. 28		Nanotribology and Nanorheology of Confined Ionic Liquids, R. Espinosa-Marzal, p. 28	
The Effect of Environmental Factors on the Tribological Behavior of PDA/PTFE + Graphite Particles Coating on 60NiTi, D. Choudhury, p. 28		Adenylate Energy Charge – New Tool for Determining Metalworking Fluid Microbial Population's Sublethal Response to Microbicide Treatment, F. Passman, p. 28		Eco-Friendly Aqueous EP Additive Based on IF-WS <sub>2</sub> / Polyalkylene Oxides Combi Technology: Structure-Property-Performance Relationship Beyond the Horizon in Lubricant Industry, H. Kim, p. 28	
<b>Exhibitor Appreciation Hour</b>		<b>Exhibitor Appreciation Hour</b>		<b>Exhibitor Appreciation Hour</b>	
Effect of Filler Mechanical Properties on Fluoropolymer Composite Wear, M. Sidebottom, p. 28		Reserving Metalworking Formulation Space for the Impossibilities, H. Potnis, p. 28		Reviewing the Performance of Permanently Suspended Nanocarbons in Lubricants, A. Darnell, p. 28	
Effect of Counterface and Filler Particle Properties on Wear Performance of Fluoropolymer Composites, S. Ullah, p. 28		Panel Discussion: Metalworking Fluids Hot Topics, N. Canter, Chemical Solutions, Willow Grove, PA, p. 28		The Electrical and Tribological Performance of Silver Nanoparticle Laden Lubricants in Comparison to a Conventional Product, L. Crilly, p. 30	
Ultralow Wear Self-Mated PTFE Composites, K. Van Meter, p. 28				High Temperature Nanomechanical & Nanotribological Behavior of Sub-5 nm Nitrogen-Doped Carbon Overcoat Films, A. Shakil, p. 30	
Leveraging Trace Nanofillers to Stabilize & Discretize Already Low Wear Polymer Interfaces, I. Alam, p. 28		Metalworking Fluids Business Meeting		PEO-Chameleon as a Potential Protective Coating for High-Temperature Applications, A. Shirani, p. 30	

Technical Sessions Time Grids – Monday, May 17, 2021

TIME	SESSION 1G Power Generation/Wind Turbine Tribology I	SESSION 1H Commercial Marketing Forum I	SESSION 1I Synthetic Lubricants & Hydraulics I
	Virtual Meeting Room 7	Virtual Meeting Room 8	Virtual Meeting Room 9
10:30 – 11 am	Environmentally Acceptable Lubricant (EAL) Novel Esters That Are Extremely Hydrolytic and Oxidation Stable, R. Navaratnam, p. 25	Latest Advances in <b>Bruker</b> TriboLab Lubricant Testing Platform, S. Papanicolaou, p. 26	Novel Base Oil Technologies for Industrial Gear Oils, J. Langston, p. 26
11 – 11:30 am	Efficiency and Lifetime Improvement for Wind Turbines by Using Silicon-Based Additive Technology, S. Bill, p. 25	<b>Pilot Chemical</b> Will FLIP The Way You Think About Metalworking Fluids, R. Harpum, p. 26	Could the Latest Oil Technology Give You Cleaner, Longer-Lasting and More Productive Hydraulic Systems?, S. Gullapalli, p. 26
11:30 – Noon	Bio-Based Ionic Liquid Lubricants for Wind Turbine Applications, Md H. Rahman, p. 25	<b>ExxonMobil Chemical</b> Next Generation PAOs to Improve Fuel Economy and Automotive Fluids Performance, M. Sheehan, p. 26	New Hydrolytic Stability Testing on Biobased Lubricants and Base Fluids, M. Lutz, p. 26
Noon – 12:30 pm	Developing Accelerated Benchtop Testing Methodologies for Grease Lubricated Main Bearing Contacts in Wind Turbines, B. Gould, p. 25	<b>Kao Chemicals</b> Performance Highlights and Regional Formulations, C. Broer, p. 26	
12:30 – 1 pm	Power Generation Business Meeting	<b>LANXESS</b> New Mobility – Additive Solutions for Gear Oils in Electric Vehicle Drivetrains, S. Sandhoefner, p. 26	
1 – 2 pm	<b>Networking Break</b>	<b>Networking Break</b>	<b>Networking Break</b>
	SESSION 2G Power Generation/Wind Turbine Tribology II	SESSION 2I Commercial Marketing Forum II	SESSION 2J Synthetic Lubricants & Hydraulics II
	Virtual Meeting Room 7	Virtual Meeting Room 8	Virtual Meeting Room 9
2 – 2:30 pm	Salvaging Poorly Stored Turbine Oil, N. Achebe, p. 30	<b>Biosynthetic Technologies:</b> Estolides, High Performance Sustainable Base Oils for Lubricant and Metalworking Formulations, M. Kriech, p. 30	Tribological Performance of Used and Artificially Altered Hydraulic Oils, N. Döerr, p. 30
2:30 – 3 pm	Ksp and Thermodynamic Considerations Relevant to Effective Varnish-Removal, M. Hobbs, p. 30	<b>The Lubrizol Corporation:</b> PIBSA Emulsifier Developments for Metalworking, G. Kirsch, p. 30	Critical Shear Rate of Polymer-Enhanced Hydraulic Fluids, P. Panwar, p. 30
3 – 4 pm	<b>Exhibitor Appreciation Hour</b>	<b>Exhibitor Appreciation Hour</b>	<b>Exhibitor Appreciation Hour</b>
4 – 4:30 pm	Wind Turbine Business Meeting	<b>Evonik Oil Additives:</b> Get Electrified with Evonik VISCOPLEX® and VISCOBASE® for E-Fluids, J. Mills, p. 30	Dynamometer Testing of Energy Efficient Hydraulic Fluids and Fuel Savings Analysis for US Army Construction and Material Handling Equipment, P. Michael, p. 30
4:30 – 5 pm		<b>BASF Corporation:</b> Emgard 7103 XFE Gear Lubricant – Fuel Economy Improvement Technology, D. Mosher, p. 30	Fluid Effects on Stick-Slip Friction in Hydraulic Cylinder Rod Seals, P. Michael, p. 30
5 – 5:30 pm		<b>LANXESS:</b> Thermal Fluids for EV Battery Immersion Cooling, T. Benanti, p. 30	Synthetic Lubricants and Hydraulics Business Meeting
5:30 – 6 pm			
6 – 6:30 pm			



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# 2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Monday, May 17, 2021**

## 1A • Virtual Meeting Room 1

### SEALS I

**Session Chair:** Bo Tan, University of Kentucky, Lexington, KY

**Session Vice Chair:** Khalid Malik, Ontario Power Generation, Ajax, Ontario, Canada

**10:30 – 11 am**

#### 3492008: On Surface Energy and Friction of Hydraulic Rod Seals

Oliver Feuchtmüller, Frank Bauer, Lothar Hörl, Universität Stuttgart, Stuttgart, Germany

**11 – 11:30 am**

#### 3499704: Advanced Sealing Concepts for Redox Flow Batteries

Detlef Jannes, Lothar Hörl, Frank Bauer, University of Stuttgart, Stuttgart, Germany

**11:30 am – Noon**

#### 3476014: A Method of Direct Measurement of Mechanical Seal Wear In Pumps and Compressors

Mark Slivinski, Carbide Derivative Technologies, Tucson, AZ

**Noon – 12:30 pm**

#### 3497118: Computational Fluid Dynamics Analysis and Experimental Results for the Dynamic Performance of Two Long Smooth Surface Annular Seals Operating with a Liquid in Air Mixture

Jing Yang, Dung Tran, Luis San Andres, Texas A&M University, College Station, TX

**12:30 – 1 pm – Seals Business Meeting**

## 1B • Virtual Meeting Room 2

### ENVIRONMENTALLY FRIENDLY FLUIDS I

**Session Chair:** Brajendra Sharma, University of Illinois, Champaign, IL

**Session Vice Chair:** Selim Erhan, Oil Process Industries, Decatur, IL

**10:30 – 11 am**

#### 3492300: Global Fluid Trends

Edward Jones, Hangsterfer's Labs. Inc., Mantua, NJ

**11 – 11:30 am**

#### 3472961: EU Ecolabel for Lubricants – European Approach to Evaluate EALs

Salvatore Rea, Thomas Klein, Lanxess Solutions US, Inc., Shelton, CT

**11:30 am – Noon**

#### 3499043: Sustainability in the Lubricants Industry

Inga Herrmann, VSI Verband Schmierstoff-Industrie e.V., Hamburg, Germany

**Noon – 12:30 pm**

#### 3480821: New Hydrolytic Stability Testing on Biobased Lubricants and Base Fluids

Mark Miller, Biosynthetic Technologies, Indianapolis, IN

**12:30 – 1 pm**

#### 3500611: Bio-Based and Biodegradable Base Oils for Environmentally Acceptable Lubricants (EALs)

Zach Hunt, Tetramer Technologies LLC, Pendleton, SC

## 1C • Virtual Meeting Room 3

### FLUID FILM BEARINGS I

**Session Chair:** Bruce Fabijonas, Kingsbury, Inc., Philadelphia, PA

**10:30 – 11 am**

#### 3559597: Influence of Journal Surface Scratch Characteristics on the Performance of a Two-Lobe Journal Bearing – Comparison Between Experimental Data and Numerical Results

Anh Vo, Jean Bouyer, Michel Fillon, Université de Poitiers, Poitiers, Poitou-Charentes, France

**11 – 11:30 am**

#### 3519704: Effect of Pad Fixations on the Tribological Performance of Parallel-Surface Fixed-Pad Thrust Bearings

Anastassios Charitopoulos, Michel Fillon, Institut Pprime, CNRS – University of Poitiers – ISAE-ENSMA, Chasseneuil, Nouvelle Aquitaine, France; Christos Papadopoulos, Ethniko Metsobio Polytechnio, Zografou, Attica, Greece

**11:30 am – Noon**

#### 3488092: Experimental Characterization of Hydrodynamic Bearing During Oil Flow Interruption Event

Lorenzo Naldi, Riccardo Ferraro, Baker Hughes Company, Firenze, Italy

**Noon – 12:30 pm**

#### 3498814: A Study of the Dynamic Properties of the Elastic Supports of an Air Journal Bearing

Ahmed Paridie, Nicoleta Ene, The University of Toledo, Toledo, OH; Florin Dimofte, DiWave Technologies, Cleveland, OH

**12:30 – 1 pm – Fluid Film Bearings Business Meeting**

## 1D • Virtual Meeting Room 4

### GEARS I

**Session Chair:** Jeffrey Ewin, NAVAIR, Patuxent River, MD

**Session Vice Chair:** Weixue Tian, ExxonMobil Research & Engineering, Annandale, NJ

**10:30 – 11 am**

#### 3484437: Permissible Water Content of Gear Lubricants Regarding the Pitting Performance of Case-Carburized Gears

Nadine Sagraloff, Karsten Stahl, Gear Research Centre (FZG), Technical University of Munich (TUM), Garching, Germany; Christian Engelhardt, Patentanwälte von Bezold, Munich, Germany; Thomas Tobie

**11 – 11:30 am**

#### 3484786: Approach for the Development of an Alternative Classification Method for Gear Oils for High-Loaded Hypoid Gears Comparable to API GL-5

Alexander Drechsel, Josef Pellkofer, Michael Hein, Karsten Stahl, Technische Universität München, Garching bei München, Germany

11:30 am – Noon

**3498786: The Effect of Surface Roughness and the  $\Delta$  Ratio on the Initiation and Progression of Micropitting Damage**

Benjamin Wainwright, Amir Kadiric, Imperial College London, London, United Kingdom

Noon – 12:30 pm – Gears Technical Committee Business Meeting

**1E • Virtual Meeting Room 5  
METALWORKING FLUIDS I**

**Session Chair:** Clayton Cooper, ANGUS Chemical Co, Buffalo Grove, IL

**Session Vice Chair:** Jennifer Lunn, JTM Products, Solon, OH

10:30 – 11 am

**3480913: IW5000, Oil-Free Aqueous AF/AW/EP Additive Based on IF-WS<sub>2</sub> Technology: Extending the Frontiers of Water-Based Lubrication Fluid Technologies**

Hoon Kim, George Diloyan, Rui Wu, Vasya Ignatyshyn, Nanotech Industrial Solutions, Avenel, NJ

11 – 11:30 am

**3482901: Cross-Functional Benefits of Metalworking Fluid Additives**

Michael Stapels, Kao Chemicals GmbH, Emmerich, Germany; Clayton Cooper, ANGUS Chemical Co., Buffalo Grove, IL

11:30 am – Noon

**3484653: Improving and Expanding the Applicability of the ASTM D3233 Pin & Vee Block Method for Cutting Fluid Evaluation: Correlation with a Real Cutting Operation**

Dirk Drees, Michel De Bilde, Emmanuel Georgiou, Falex Tribology NV, Rotselaar, Belgium

Noon – 12:30 pm

**3493012: New Seal Compatibility Test Method for Metalworking Fluids**

Stephan Baumgaertel, VSI Association German Lubricant Industry, Hamburg, Germany

12:30 – 1 pm

**3499803: Consistently Beating the Odds – How to Build Successful Products**

Emil Schnellbacher, Formulas & Solutions, LLC, Sterling Heights, MI

**1F • Virtual Meeting Room 6  
NANOTRIBOLOGY I**

**Session Chair:** Nikolay Garabedian, University of Delaware, Newark, DE

**Session Vice Chair:** Prathima Nalam, SUNY University at Buffalo, Buffalo, NY

10:30 am – 11:30 am

**INVITED TALK:**

**Polymer Brushes on Gels: Imitating the Lubricious Properties of Cartilage**

Nicholas Spencer, ETH Zurich, Zurich, Switzerland

11:30 am – Noon

**3499904: Formulation of Lubricant Additives Using AB Initio Computational Methods**

Chiara Gattinoni, Eidgenossische Technische Hochschule Zurich, Zurich, Switzerland

Noon – 12:30 pm

**3490400: Molecular Dynamics Simulations of Nanofluidics**

Mohamed Elewa, Hannes Holey, Karlsruhe Institute of Technology, Karlsruhe, Germany; Lars Pastewka, University of Freiburg, Freiburg, Germany; Peter Gumbsch, Karlsruhe Institute of Technology, Karlsruhe, Germany

12:30 – 1 pm

**3484404: Rheo-Tribological Analysis of Cellulose Nano-Crystalline (CNC) Aqueous Suspensions**

Behzad Zakani, Sohrab Entezami, Dana Grecov, University of British Columbia, Vancouver, British Columbia, Canada

1G • Virtual Meeting Room 7

**POWER GENERATION AND WIND TURBINE TRIBOLOGY I**

**Session Chair:** Salvatore Rea, Lanxess Corp., Perkasio, PA

10:30 – 11 am

**3483809: Environmentally Acceptable Lubricant (EAL) Novel Esters That Are Extremely Hydrolytic and Oxidation Stable**

Ramesh Navaratnam, Patech Fine Chemical, Dublin, OH

11 – 11:30 am

**3484486: Efficiency and Lifetime Improvement for Wind Turbines by Using Silicon-Based Additive Technology**

Stefan Bill, Croda International PLC, Goole, East Yorkshire, United Kingdom

11:30 am – Noon

**3485238: Bio-Based Ionic Liquid Lubricants for Wind Turbine Applications**

Md Hafizur Rahman, Pradeep Menezes, University of Nevada Reno, Reno, NV; Manish Patel, NanoTech Industrial Solutions, Lake Charles, LA; Ashlie Martini, University of California, Merced, Merced, CA

Noon – 12:30 pm

**3491278: Developing Accelerated Benchtop Testing Methodologies for Grease Lubricated Main Bearing Contacts in Wind Turbines**

Benjamin Gould, Nicholas Demas, Robert Erck, Aaron Greco, Argonne National Laboratory, Lemont, IL

12:30 – 1 pm – Power Generation Business Meeting



# 2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Monday, May 17, 2021**

## 1H • Virtual Meeting Room 8

### COMMERCIAL MARKETING FORUM I

10:30 – 11 am – Bruker

**3578865: Latest Advances in Bruker TriboLab Lubricant Testing Platform**

Steve Papanicolaou

11 – 11:30 am – Pilot Chemical

**3566002: Pilot Chemical Will FLIP The Way You Think About Metalworking Fluids**

Rob Harpum

11:30 am – Noon – ExxonMobil Chemical

**3577801: Next Generation PAOs to Improve Fuel Economy and Automotive Fluids Performance**

Michael Sheehan

Noon – 12:30 pm – Kao Chemicals

**3577917: Performance Highlights and Regional Formulations**

Cor Broer

12:30 – 1 pm – LANXESS

**3578521: New Mobility – Additive Solutions for Gear Oils in Electric Vehicle Drivetrains**

Steffen Sandhoefner

## 1I • Virtual Meeting Room 9

### SYNTHETIC LUBRICANTS AND HYDRAULICS I

**Session Chair:** Ryan Fenton, BASF Corp., Tarrytown, NY

**Session Vice Chair:** Rob Davidson, Afton Chemical, Richmond, VA

10:30 – 11 am

**3488536: Novel Base Oil Technologies for Industrial Gear Oils**

Justin Langston, Gabriela Fedor, Thomas Schimmel, Evonik Oil Additives, Horsham, PA

11 – 11:30 am

**3485682: Could the Latest Oil Technology Give You Cleaner, Longer-Lasting and More Productive Hydraulic Systems?**

Sravani Gullapalli, Sameer Sathaye, Shell Global Solutions USA Inc., Houston, TX

11:30 am – Noon

**3480820: New Hydrolytic Stability Testing on Biobased Lubricants and Base Fluids**

Marlon Lutz, Biosynthetic Technologies, Indianapolis, IN

## 2A • Virtual Meeting Room 1

### ENGINE AND DRIVETRAIN SESSION ON ELECTRIC VEHICLES I

**Session Chair:** Babak Lotfi, ExxonMobil, Houston, TX

2 – 2:30 pm

**3480287: Test Rig to Investigate Function and Efficiency of the Speed 4E Hyper-High-Speed Electromechanical Powertrain**

Lukas Pointner-Gabriel, Hermann Pflaum, Karsten Stahl, Technical University of Munich, Garching, Bavaria, Germany

2:30 – 3 pm

**3505568: Fluid Cooling Performance Understanding for Electric Drivetrain Applications**

Yungwan Kwak, Kun Liu, Afton Chemical Corp., Richmond, VA; Adam Banks, Afton Chemical Ltd., Bracknell, Bracknell Forest, United Kingdom

3 – 4 pm – Exhibitor Appreciation Hour

4 – 4:30 pm

**3483132: Lubricant & Greases Solutions for the Whole Electrical Vehicle Drivetrain Including the Thermal Management of Batteries**

Torsten Murr, Shell Global Solutions Germany, Hamburg, Hamburg, Germany

4:30 – 5 pm

**3485393: Thermal Properties of Group V Base Fluids for Fast Charge Battery Cooling Applications**

Bethan Warren, Croda International PLC, Goole, East Yorkshire, United Kingdom

5 – 5:30 pm

**3517639: Prediction of Power Losses in Electric Vehicle Transmissions**

Amir Kadiric, Joseph Shore, Imperial College London, London, United Kingdom

5:30 – 6 pm

**3490846: Ultra-Low Viscosity Synthetic Fluids to Enhance Performance and Durability for Electric Vehicles (EVs)**

Babak Lotfi, ExxonMobil, Houston, TX

## 2B • Virtual Meeting Room 2

### ENVIRONMENTALLY FRIENDLY FLUIDS II

**Session Chair:** Daniel Garbark, Battelle, Columbus, OH

**Session Vice Chair:** Brajendra Sharma, University of Illinois, Champaign, IL

2 – 2:30 pm

**3480823: Latest in Biosynthetic Base Oils – Evaluating Estolide Performance Characteristics in Expanding Viscosity Ranges**

Matthew Kriech, Biosynthetic Technologies, Indianapolis, IN

2:30 – 3 pm

**3497856: Lubricity Behavior of HVOs**

Deepak Halenahally Veeragowda, Angela Maria Tortora, Ducom Instruments, Groningen, Netherlands

3 – 4 pm – Exhibitor Appreciation Hour

4:30 – 5 pm

**3484497: EALs for Marine Vessel Stern Tubes – Not All Esters Are Equal**

Kevin Duncan, Croda International PLC, Goole, East Yorkshire, United Kingdom



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# 2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Monday, May 17, 2021**

2B | Friendly Fluids II (con't)

5 – 5:30 pm

**3485148: How Polyalkylene Glycols Save Energy in Industrial Gear Application – A Sustainability Case Study**

Tiffany Meyers, Andy Michael, Clariant, Mount Holly, NC

5:30 – 6 pm

**3484505: Soy-Based Lubricants: Performance and Sustainability**

Robert Brentin, Omni Tech International, Midland, MI

6 – 6:30 pm – Environmentally Friendly Fluids Business Meeting

2D • Virtual Meeting Room 4

## MATERIALS TRIBOLOGY I: POLYMERS

**Session Chair:** Istiaque Alam, University of Delaware, Newark, DE

**Session Vice Chair:** Sifat Ullah, Miami University, Oxford, OH

2 – 2:30 pm

**3499517: The Effect of Hot Compaction on the Tribological Performance of the PDA+PTFE Nanocomposite Coatings**

Sujan Ghosh, Min Zou, Nathaniel Harris, University of Arkansas, Fayetteville, AR; Samuel Beckford, Neda Mahmoudi, SurfTec LLC, Fayetteville, AR

2:30 – 3 pm

**3499239: The Effect of Environmental Factors on the Tribological Behavior of PDA/PTFE + Graphite Particles Coating on 60NiTi**

Dipankar Choudhury, Min Zou, University of Arkansas, Fayetteville, AR

3 – 4 pm – Exhibitor Appreciation Hour

4 – 4:30 pm

**3522263: Effect of Filler Mechanical Properties on Fluoropolymer Composite Wear**

Mark Sidebottom, Sifat Ullah, Miami University, Oxford, OH; Nathan Heckman, Brad Boyce, Los Alamos National Labs, Albuquerque, NM; Tomas Babuska, Lehigh University, Bethlehem, PA; Brandon Krick, Florida State University, Tallahassee, FL

4:30 – 5 pm

**3522247: Effect of Counterface and Filler Particle Properties on Wear Performance of Fluoropolymer Composites**

Sifat Ullah, Mark Sidebottom, Miami University, Oxford, OH

5 – 5:30 pm

**3501523: Ultralow Wear Self-Mated PTFE Composites**

Kylie Van Meter, Tomas Babuska, Brandon Krick, Florida State University, Tallahassee, FL; Kasey Campbell, Lehigh University, Bethlehem, PA

5:30 – 6 pm

**3501937: Leveraging Trace Nanofillers to Stabilize & Discretize Already Low Wear Polymer Interfaces**

Istiaque Alam, David Burris, University of Delaware, Newark, DE

2E • Virtual Meeting Room 5

## METALWORKING FLUIDS II

**Session Chair:** Alexes Morgan, Sea-Land Chemical Co., Westlake, OH

**Session Vice Chair:** Ron Lemke, Italmatch Chemicals, Custer Park, IL

2 – 2:30 pm

**3475838: Foam Control & Formulation Techniques to Minimize Foam in Water Dilutable MWFs**

Michael Miller, Univar Solutions, Houston, TX

2:30 – 3 pm

**3473238: Adenylate Energy Charge – New Tool for Determining Metalworking Fluid Microbial Population's Sublethal Response to Microbicide Treatment**

Frederick Passman, Biodeterioration Control Associates, Inc., Princeton, NJ; Peter Küenzi, Blaser Swissslube AG, Hasle-Ruegsau, Bern, Switzerland; Jordan Schmidt, LuminUltra Technologies, Ltd., Fredericton, New Brunswick, Canada

3 – 4 pm – Exhibitor Appreciation Hour

4 – 4:30 pm

**3481361: Reserving Metalworking Formulation Space for the Impossibilities**

Harish Potnis, Angus Chemical Company, Mumbai, Maharashtra, India

4:30 – 5:30 pm

**PANEL DISCUSSION:**

**3575513: Metalworking Fluids Hot Topics**

Neil Canter, Chemical Solutions, Willow Grove, PA

5:30 – 6 pm – Metalworking Fluids Business Meeting

2F • Virtual Meeting Room 6

## NANOTRIBOLOGY II

**Session Chair:** Mehmet Baykara, UC Merced, Merced, CA

2 – 2:30 pm

**3507286: Nanotribology and Nanorheology of Confined Ionic Liquids**

Rosa Espinosa-Marzal, Mengwei Han, University of Illinois at Urbana-Champaign, Urbana, IL

2:30 – 3 pm

**3484465: Eco-Friendly Aqueous EP Additive Based on IF-WS<sub>2</sub> / Polyalkylene Oxides Combi Technology: Structure-Property-Performance Relationship Beyond the Horizon in Lubricant Industry**

Hoon Kim, George Diloyan, Rui Wu, Vasya Ignatyshyun, Nanotech Industrial Solutions, Avenel, NJ

3 – 4 pm – Exhibitor Appreciation Hour

4 – 4:30 pm

**3485187: Reviewing the Performance of Permanently Suspended Nanocarbons in Lubricants**

Aaron Darnell, Lubrication Specialties, Inc., Mount Gilead, OH



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presentations on May, 17<sup>th</sup>

Session: Metalworking Fluids I  
Title: Cross Functional Benefits of  
Metalworking Fluid Additives  
From 10:30 to 11:00 AM (EST)

Session: Commercial Marketing Forum  
Title: Kao performance highlights and  
regional formulations  
From 12:00 to 12:30 PM (EST)



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# 2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Monday, May 17, 2021**

2F | Nanotribology II (con't)

4:30 – 5 pm

**3485307: The Electrical and Tribological Performance of Silver Nanoparticle Laden Lubricants in Comparison to a Conventional Product**

Larkin Crilly, Robert Jackson, Samuel Bond, German Mills, Auburn University, Auburn, AL; Suvrat Bhargava, TE Connectivity Ltd Berwyn, Middletown, PA

5 – 5:30 pm

**3485451: High Temperature Nanomechanical and Nanotribological Behavior of Sub-5 nm Nitrogen-Doped Carbon Overcoat Films**

Ahmad Shakil, Andreas Polycarpou, Texas A&M University College Station, College Station, TX

5:30 – 6 pm

**3498186: PEO-Chameleon as a Potential Protective Coating for High-Temperature Applications**

Asgar Shirani, Samir Aouadi, Andrey Voevodin, Diana Berman, University of North Texas, Denton, TX; Aleksey Yerokhin, University of Manchester, Manchester, United Kingdom; Andras Korenyi-Both, Tribologix Inc., Golden, CO

2G • Virtual Meeting Room 7

## POWER GENERATION AND WIND TURBINE TRIBOLOGY II

**Session Chair:** Salvatore Rea, Lanxess Corp, Perkasi, PA

2 – 2:30 pm

**3474239: Salvaging Poorly Stored Turbine Oil**

Nnamdi Achebe, Petrosave Integrated Services Ltd., Amuwo-Odofi, Nigeria

2:30 – 3 pm

**3491891: Ksp and Thermodynamic Considerations Relevant to Effective Varnish-Removal**

Matthew Hobbs, Peter Dufresne, EPT, Calgary, Alberta, Canada

3 – 4 pm – Exhibitor Appreciation Hour

4 – 4:30 pm – Wind Turbine Business Meeting

2I • Virtual Meeting Room 8

## COMMERCIAL MARKETING FORUM II

2 – 2:30 pm – Biosynthetic Technologies

**3566322: Estolides, High Performance Sustainable Base Oils for Lubricant and Metalworking Formulations**

Matthew Kriech

2:30 – 3 pm – The Lubrizol Corporation

**3578465: Lubrizol's PIBSA Emulsifier Developments for Metalworking**

Gabriel Kirsch

3 – 4 pm – Exhibitor Appreciation Hour

4 – 4:30 pm – Evonik Oil Additives

**3572948: Get Electrified with Evonik VISCOPLEX® and VISCOBASE® for E-Fluids**

Justin Mills

4:30 – 5 pm – BASF Corporation

**3578953: BASF Emgard 7103 XFE Gear Lubricant – Fuel Economy Improvement Technology**

Donna Mosher

5 – 5:30 pm – LANXESS

**3576222: Thermal Fluids for EV Battery Immersion Cooling**

Travis Benanti

2J • Virtual Meeting Room 9

## SYNTHETIC LUBRICANTS AND HYDRAULICS II

**Session Chair:** Ryan Fenton, BASF Corp., Tarrytown, NY

**Session Vice Chair:** Rob Davidson, Afton Chemical, Richmond, VA

2 – 2:30 pm

**3485572: Tribological Performance of Used and Artificially Altered Hydraulic Oils**

Nicole Döerr, Serhiy Budnyk, AC2T research GmbH, Wiener Neustadt, Austria; Daria Kolbas, Oksana Elagina, Gubkin Russian State University of Oil and Gas, Moscow, Russian Federation; Ameneh Schneider, Optimol Instruments Prueftechnik GmbH, Munich, Germany; Franz Novotny-Farkas, Ingenieurbuero fuer Erdoelwesen, Schwechat, Austria

2:30 – 3 pm

**3490868: Critical Shear Rate of Polymer-Enhanced Hydraulic Fluids**

Pawan Panwar, Ashlie Martini, University of California Merced, Merced, CA; Paul Michael, Milwaukee School of Engineering, Milwaukee, WI; Mark Devlin, Afton Chemical Corp, Richmond, VA

3 – 4 pm – Exhibitor Appreciation Hour

4 – 4:30 pm

**3498720: Dynamometer Testing of Energy Efficient Hydraulic Fluids and Fuel Savings Analysis for US Army Construction and Material Handling Equipment**

Paul Michael, Milwaukee School of Engineering, Milwaukee, WI; Jill Bramer, Eric Sattler, US Army CCDC Ground Vehicle Systems Center, Warren, MI

4:30 – 5 pm

**3483443: Fluid Effects on Stick-Slip Friction in Hydraulic Cylinder Rod Seals**

Paul Michael, Milwaukee School of Engineering, Milwaukee, WI; Oluwaseyi Oguniola, Shell Technology Center, Houston, TX

5 – 5:30 pm – Synthetic Lubricants and Hydraulics Business Meeting