

Overview



Tuesday, May 18, 2021

8:30 – 10 am

Tuesday Keynote Session

Keynote Speaker:

- Dr. Melissa Orme, Vice President, Boeing Additive Manufacturing

10 – 10:30 am

Networking Break & Special Programming

10 am – 3:30 pm

Virtual Exhibits and Student Posters

10:30 am – 1 pm

Tuesday Technical Sessions:

- 3A – Condition Monitoring I
- 3B – Lab to Field: Bridging the Gap Between Bench and Engine: Engine & Drivetrain & Lubrication Fundamentals Joint Session I
- 3C – Nonferrous Metals I
- 3D – Materials Tribology II
- 3E – Metalworking Fluids III
- 3F – Nanotribology III
- 3G – Rolling Element Bearings I
- 3H – Lubrication Fundamentals I: Non-Tribological Oil Properties
- 3I – Commercial Marketing Forum III

1 – 2 pm

STLE Virtual Business Meeting

2 – 6 pm

Tuesday Technical Sessions:

- 4A – Condition Monitoring II
- 4B – Additive Manufacturing I: Special Symposium
- 4C – Nonferrous Metals II: Tribology and Biobased Session in Memory of Dr. Girma Biresaw
- 4D – Materials Tribology III
- 4E – Metalworking Fluids IV
- 4F – Nanotribology IV
- 4G – Rolling Element Bearings II
- 4H – 2D Materials/Superlubricity: Material Tribology & Nanotribology Joint Session I
- 4I – Commercial Marketing Forum IV

3 – 3:30 pm

Networking Break & Exhibitor Appreciation

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 – Tuesday, May 18, 2021

TIME	SESSION 3A Condition Monitoring I	SESSION 3B Engine/Drivetrain/Lubrication Fundamentals	SESSION 3C Nonferrous Metals I
	Virtual Meeting Room 1	Virtual Meeting Room 2	Virtual Meeting Room 3
10:30 – 11 am	Monitoring of EGR Diesel Engines Lubricant: Should the Nitration be Considered?, J. Fotue, p. 36	Correlation of Engine Oil Degradation in Large Scale Alteration Device and Engine Test Rig, N. Doerr, p. 36	A Non-Ferrous Study Investigating the Lubricity and Film Thickness Behavior of Rolling Oils Containing Mixed Ester Packages on Varying Grades of Aluminum, E. Pates, p. 36
11 – 11:30 am	Laboratory Aging of Ester Oils and Its Effect on Friction and Wear, D. Patro, p. 36	Piston Ring Coating Development – From Bench to Vehicle, P. Lee, p. 36	Metal Corrosion: Looking Farther Than the Eye Can See, C. Cooper, p. 36
11:30 – Noon	Diagnosing the Root Cause of an Overheated Gearbox, E. Zabawski, p. 36	Cavitation Initiation and Patterns in Engine Lubricants as a Result of Different Operating Conditions and Lubricant Properties, P. Dellis, p. 36	Nuclear Magnetic Resonance Spectroscopy as a Useful Tool for Routinely Analyzing the Composition of Aluminum Hot Rolling Emulsions, J. Leimhofer, p. 36
Noon – 12:30 pm	Product Quality Maintenance & Reliability in the Lubricant Supply Chain, M. Roe, p. 36	Low Friction Powertrains: Current Advances in Lubricants and Coatings, B. Zhmud, p. 36	Lubricant Additive Response Comparisons in a Commercial Post Lubricant on 3104 Aluminum D&I Can Stock Using Twist Compression Tests (TCT), T. McClure, p. 36
12:30 – 1 pm		Cooperativity Between Zirconium Dioxide Nanoparticles and Extreme Pressure Additives in Forming Protective Tribofilms: Toward Enabling Low Viscosity Lubricants, R. Carpick, p. 36	Tramp Oils – What Are They and How Do They Effect a Hot Rolling Emulsion?, A. Knopp, p. 36
1 – 2 pm	STLE Virtual Business Meeting	STLE Virtual Business Meeting	STLE Virtual Business Meeting
	SESSION 4A Condition Monitoring II	SESSION 4B Additive Manufacturing I	SESSION 4C Nonferrous Metals II
	Virtual Meeting Room 1	Virtual Meeting Room 2	Virtual Meeting Room 3
2 – 2:30 pm	Fluid Analysis in Condition-Based Monitoring and Reliability, J. Acosta, p. 42	Wear and Friction of Additively Manufactured Stainless Steel Materials, R. Jackson, p. 42	Correlation Between Microscopic Surface Damage and Frictional Behavior of Lubricants for Stamping Automotive Aluminum Sheet Products, M. Shafiei, p. 42
2:30 – 3 pm	Fast and Reliable Quality Control of Fresh and In-Service Lubricants by FT-MidIR Spectrometry, A. Mendez, p. 42	Tribological and Mechanical Properties of High Entropy Alloys, M. Jones, p. 42	Filtration of Rolling Fluids, C. Thomas, p. 42
3 – 3:30 pm	Networking Break	Networking Break	Networking Break
3:30 – 4 pm	Analysis of Metal Additives and Wear Metals in Lubricants by High-Resolution ICP-OES, O. Buettel, p. 42	Surface Texture Characterization of Metal Selective Laser Melted Part with Varying Surface Inclinations, S. Lou, p. 42	Biobased Disulfide Additive Based on Soybean Oil, G. Bantchev, p. 42
4 – 4:30 pm	Diagnosing Improper Bearing Lubrication Using Oil Analysis, E. Zabawski, p. 42	Tribological Effects of Surface Textures on the Sliding Behavior of Short Carbon Fiber Reinforced Nylon Composites Fabricated by 3D Printing Techniques, L. Chang, p. 42	Vegetable Oils for Metalworking Lubricants: Physico-Chemical and Stability Aspects of Different Options, J. Pattathilchira Varghese, p. 42
4:30 – 5 pm	Condition Monitoring Business Meeting	Fabrication and Testing of Bioinspired Surface Designs for Friction Reduction at the Piston Ring and Liner Interface, S. Maddox, p. 42	Nonferrous Metals Business Meeting
5 – 5:30 pm		Designing a Bioinspired Surface for Improved Wear Resistance and Friction Reduction, J. Hoskins, p. 42	

SESSION 3D Materials Tribology II		SESSION 3E Metalworking Fluids III		SESSION 3F Nanotribology III	
Virtual Meeting Room 4		Virtual Meeting Room 5		Virtual Meeting Room 6	
Data Science Techniques Applied to In Situ XRD Measurements of Copper Under Tribological Load, N. Garabedian, p. 38		Model MWFs Based on Naphthenic Base Oils – Straight Cut or Blend?, T. Norrby, p. 38		Mechanical Dissipation of Energy: From Breaking of Bonds to the Release of Adhesive Contacts, L. Pastewka, p. 38	
Extreme Environment Tribological Study of Advanced Bearing Polymers for Space Applications, K. Bashandeh, p. 38		Novel Self Emulsifiable Esters for High Lubricity and Low Foam MWFs, R. Hoogendoorn, p. 38			
Reduced Cost NiTi-Alloy Bearings Made via Near Net Shape Powder Metallurgy Processes, C. DellaCorte, p. 38		A New Method to Simulate Strip Drawing Tests on the Lab-Scale, D. Drees, p. 38		Tribological Experiments in the Age of Big Data, N. Garabedian, p. 38	
Ultralow Wear Plasma Enhanced Atomic Layer Deposited Nitrides: Exploring Processing, Structure, Properties and Mechanisms at Multiple Scales, T. Grejtak, p. 38		Surface Behavior and Lubricative Properties of Hydroxyproline Rich, Natural Proteins in Metalworking Fluids, E. Yezdimer, p. 38		Isopropanol Vapor Phase Lubrication of Multi-Asperity Interfaces: The Role of Capillarity and Boundary Lubrication, B. Weber, p. 38	
Origin of Self-Healing in Dynamic Crosslinked Polymers: Experiments and Simulations, Z. Ye, p. 38		Tribological Study of Materials for Effective Cutting Tool Life, C. Sanchez, p. 38		Tribological Performance of Piston Compression Ring in Artificial Intelligence-Based Design Green Lubricant During Cold Start-up, S. Imran, p. 38	
STLE Virtual Business Meeting		STLE Virtual Business Meeting		STLE Virtual Business Meeting	
SESSION 4D Materials Tribology III		SESSION 4E Metalworking Fluids IV		SESSION 4F Nanotribology IV	
Virtual Meeting Room 4		Virtual Meeting Room 5		Virtual Meeting Room 6	
Method for Tribological Experiment to Study Scuffing Instigation on AISI 52100 Steel and Hard Ceramic Coatings, K. Jacques, p. 44		The Future of Metalworking Fluids: It's Biobased!, J. Mackey, p. 44		MD Study of Adhesion Between a Si Tip and Si Substrate During Indentation and Sliding, J. Harrison, p. 44	
Tribological Behavior of Textured Polymer Surfaces, M. Hossain, p. 44		New Solution for Aluminum Machining with Synthetic Fluids, M. Ponsardin, p. 44		Interfacial Interactions and Tribological Behavior of Metal-Oxide/2D-Material Contacts, T. Filleter, p. 44	
Networking Break		Networking Break		Networking Break	
Determination of Scuffing and Wear of Materials in Low-Lubricity Fuels, S. Berkebile, p. 44		Measuring Tapping Performance Parameters – Using Tapping Torque to Evaluate Coolants and Coolant Additives, M. Miller, p. 44		Structure, Solvation and Friction of Cyclic-Hydrocarbons Confined at Graphitic Interface, B. Sattari Baboukani, p. 44	
Paleo-Tribology: Inspiration from Fossil Grinding Dentitions – From Wear Models to Damage Tolerant Composites, T. Grejtak, p. 44		Polyglykol as Performance Wear Lubricant and Synergism with Extreme Pressure Additives on Net Oil Metalworking Fluid, E. Lima, p. 44		Nanoparticle Sintered Tribofilm Removal Study: An Experimental Approach, S. Thrush, p. 46	
A Novel Method to Assess Conventional Tribological Properties of Hard Coatings by Pin-On-Disc Testing, E. Goti, p. 44		Multiple Light Scattering for Physical Stability Analysis of Concentrated Dispersions, G. Irvine, p. 44		In Situ SEM Nanomechanical Characterization of Tribofilms Derived from Inorganic Nanoparticles, K. Farokhzadeh, p. 46	
Materials Tribology Business Meeting		Preview of the Metalworking Fluids (MWF) 105 Education Course, P. Kuenzi, p. 44		Nanotribology Business Meeting	

Technical Sessions Time Grids – Tuesday, May 18, 2021

TIME	SESSION 3G Rolling Element Bearings I	SESSION 3H Lubrication Fundamentals I	SESSION 3I Commercial Marketing Forum III
	Virtual Meeting Room 7	Virtual Meeting Room 8	Virtual Meeting Room 9
10:30 – 11 am	Contact Protection by Grease in Aeronautical Heavily Charged Oscillating Bearings, L. Frache, p. 40	Analytical Approaches to Chemical Structure and Physical Property Measurements of Lubricant Oils, E. Riches, p. 40	BASF Corporation: IRGAPAC® T 1668 M – New Premium Turbine Package Meeting MP Specifications, A. Mannion, p. 40
11 – 11:30 am	Film Thickness and Starvation in Grease Lubricated Bearings, P. Lugt, p. 40	Practical Considerations for the Development of Amine and Phenol Synergies, J. Dong, p. 40	Evonik Oil Additives: Life Cycle Analysis of an Efficient Hydraulic Fluid, T. Krapfl, p. 40
11:30 – Noon	Friction-Based Calibration of Raceway and Flange Lubrication Models for Railway Bearing Performance Prediction, A. Ruellan, p. 40	Oxidative Stability of Estolides, T. Thompson, p. 40	Münzing: Effects of Filtration on Münzing Defoamer Performance in Aqueous Metal Removal Fluids, J. Sullivan, p. 40
Noon – 12:30 pm	Wear Development Due to Oscillating Movement Operating Conditions as Employed in Rotor Blade Bearings in Wind Turbines, S. Wandel, p. 40	Modeling Thermal Conductivity of Lubricants, J. Ahmed, p. 40	Colonial Chemical: High-performance Corrosion Inhibitors for Aluminum and Its Alloys, S. Tang, p. 40
12:30 – 1 pm	Transient Finite Element Simulation of Bearing Surface Damage Due to Oscillating Motion with Consideration of Mixed Lubrication Conditions, J. Hwang, p. 40	Mechanistic Insights into Lubricant Foaming and Foam Control Utilizing Single Bubble Techniques, V. Chandran Suja, p. 40	Evonik Oil Additives: High VI 0W-16 and 0W-20 Engine Oils using Evonik's VISCOPLEX® Viscosity Index Improvers – The Optimal Choice for Hybrid Electric Vehicles, P. Moore, p. 40
1 – 2 pm	STLE Virtual Business Meeting	STLE Virtual Business Meeting	STLE Virtual Business Meeting
	SESSION 4G Rolling Element Bearings II	SESSION 4H 2D Materials/Superlubricity I	SESSION 4I Commercial Marketing Forum IV
	Virtual Meeting Room 7	Virtual Meeting Room 8	Virtual Meeting Room 9
2 – 2:30 pm	The Next Generation Aircraft Engine High Speed Bearing, P. Glöckner, p. 46	Mechanical and Tribological Properties of MXene Nano-Sheets, B. Zhang, p. 46	Afton Chemical's Key Driver Seminar IIoT Technologies Leading to Engaged, Optimized and Profitable Customer Relationships, S. Steen, p. 46
2:30 – 3 pm	Innovative Bearing Solutions for E-Mobility Applications, J. Modi, p. 46	Wear Life of Ni-doped MoS ₂ Dry Film Lubricants for Space Applications, A. Vellore, p. 46	
3 – 3:30 pm	Networking Break	Networking Break	Networking Break
3:30 – 4 pm	An Investigation of the Effects of Surface Roughness on Rolling Contact Fatigue, S. Lorenz, p. 46	Probing the Influence of Water and Oxygen on the Friction and Wear of MoS ₂ , T. Babuska, p. 46	Sea-Land Chemical Company Update, P. Pendergast, p. 46
4 – 4:30 pm	Tribological and Tribochemical Evaluation of Various Lubricants on Steel as well as WC-DLC Coating under Extreme-Pressure Boundary Lubrication Conditions: Rig Test, K. Mistry, p. 46	Robust Solid Lubricant Operable in Multifarious Environments, A. Ayyagari, p. 46	The Lubrizol Corporation: Reduce, Renew, Regenerate: Sustainability of Industrial Lubricants, S. Basu, p. 46
4:30 – 5 pm		Achieving Direct Macroscale Liquid Superlubricity Under Boundary and Mixed Lubrication, Q. Ma, p. 46	
5 – 5:30 pm		Super Lubricity of Solids from Quantum Mechanics, B. Zhang, p. 46	TestOil: Visual Cues of Lubrication & Reliability Programs with TestOil PRO, H. Vercillo, p. 46

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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | Tuesday, May 18, 2021

3A • Virtual Meeting Room 1 CONDITION MONITORING I

Session Chair: Michael Plumley, U.S.
Coast Guard Academy, New London, CT

10:30 – 11 am

3533615: Monitoring of EGR Diesel Engines Lubricant: Should the Nitration be Considered?

Joseph Fotue, TOTAL Cameroon, Douala, Cameroon

11 – 11:30 am

3499071: Laboratory Aging of Ester Oils and Its Effect on Friction and Wear

Debdutt Patro, Fabio Alemanno, Deepak Halenahally
Veeregowda, Ducom Instruments, Groningen,
Netherlands

11:30 am – Noon

3500168: Diagnosing the Root Cause of an Overheated Gearbox

Evan Zabawski, TestOil, Strongsville, OH

Noon – 12:30 pm

3472067: Product Quality Maintenance & Reliability in the Lubricant Supply Chain

Michael Roe, MJR Lubricant Distribution Consulting &
Auditing, Cypress, TX

3B • Virtual Meeting Room 2 LAB TO FIELD: BRIDGING THE GAP BETWEEN BENCH AND ENGINE

Engine and Drivetrain and Lubrication Fundamentals Joint Session I

Session Chair: Babak Lotfi, ExxonMobil,
Houston, TX

10:30 – 11 am

3485580: Correlation of Engine Oil Degradation in Large Scale Alteration Device and Engine Test Rig

Nicole Doerr, Adam Agocs, Serhiy Budnyk, Andjelka Ristic, Marcella Frauscher, AC2T research GmbH, Wiener Neustadt, Austria

11 – 11:30 am

3498159: Piston Ring Coating Development – From Bench to Vehicle

Peter Lee, Southwest Research Institute, San Antonio, TX

11:30 am – Noon

3471731: Cavitation Initiation and Patterns in Engine Lubricants as a Result of Different Operating Conditions and Lubricant Properties

Polychronis Dellis, ASPETE, Athens, Attiki, Greece

Noon – 12:30 pm

3495414: Low Friction Powertrains: Current Advances in Lubricants and Coatings

Boris Zhmud, BIZOL Germany GmbH, Berlin, Germany;
Peter Lee, Southwest Research Institute, San Antonio, TX

12:30 – 1 pm

3499242: Cooperativity Between Zirconium Dioxide Nanoparticles and Extreme Pressure Additives in Forming Protective Tribofilms: Toward Enabling Low Viscosity Lubricants

Robert Carpick, Meagan Elinski, Parker LaMascus,
Andrew Jackson, University of Pennsylvania,
Philadelphia, PA; Lei Zhang, Robert Wiacek, Pixelligent,
Baltimore, MD

3C • Virtual Meeting Room 3 NONFERROUS METALS I

Session Chair: Ariane Viat, Constellium
Technology Center, Saint Egreve, France

10:30 – 11 am

3484255: A Non-Ferrous Study Investigating the Lubricity and Film Thickness Behavior of Rolling Oils Containing Mixed Ester Packages on Varying Grades of Aluminum

Emma Pates, Stephen Chestnutt, Total UK Ltd.,
Manchester, United Kingdom; Annie King, Total
Specialties USA, Inc., Houston, TX

11 – 11:30 am

3480774: Metal Corrosion: Looking Farther Than the Eye Can See

Clayton Cooper, ANGUS Chemical Co., Buffalo Grove, IL

11:30 am – Noon

3489606: Nuclear Magnetic Resonance Spectroscopy as a Useful Tool for Routinely Analyzing the Composition of Aluminum Hot Rolling Emulsions

Josef Leimhofer, AMAG Rolling GmbH, Ranshofen,
Austria

Noon – 12:30 pm


3499533: Lubricant Additive Response Comparisons in a Commercial Post Lubricant on 3104 Aluminum D&I Can Stock Using Twist Compression Tests (TCT)

Ted McClure, Sea-Land Chemical Co./SLC Testing Services,
Westlake, OH

12:30 – 1 pm

3497932: Tramp Oils – What Are They and How Do They Effect a Hot Rolling Emulsion?

Andrea Knopp, Constellium, Ravenswood, WV



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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | Tuesday, May 18, 2021

3D • Virtual Meeting Room 4 MATERIALS TRIBOLOGY II

Session Chair: Morgan Jones, Sandia National Laboratories Albuquerque, NM

Session Vice Chair: Kylie Van Meter, Florida State University, Tallahassee, FL

10:30 – 11 am

3499636: Data Science Techniques Applied to In Situ XRD Measurements of Copper Under Tribological Load

Nikolay Garabedian, Patric Gruber, Christian Greiner, Karlsruhe Institute of Technology, Karlsruhe, Germany

11 – 11:30 am

3484803: Extreme Environment Tribological Study of Advanced Bearing Polymers for Space Applications

Kian Bashandeh, Vasilis Tsigkis, Texas A&M University, College Station, TX; Pixiang Lan, ATSP Innovations, Champaign, IL; Andreas Polycarpou, Texas A&M University, College Station, TX

11:30 am – Noon

3483431: Reduced Cost NiTi-Alloy Bearings Made via Near Net Shape Powder Metallurgy Processes

Christopher DellaCorte, NASA, Cleveland, OH

Noon – 12:30 pm

3503429: Ultralow Wear Plasma Enhanced Atomic Layer Deposited Nitrides: Exploring Processing, Structure, Properties and Mechanisms at Multiple Scales

Tomas Grejtak, Tomas Babuska, Jewel Haik, Istiaque Chowdhury, Nicholas Strandwitz, Lehigh University, Bethlehem, PA; Kylie Van Meter, Brandon Krick, Florida State University, Tallahassee, FL; Mark Sowa, Veeco, Waltham, MA; Alexander Kozen, University of Maryland, College Park, MD

12:30 – 1 pm

3485898: Origin of Self-Healing in Dynamic Crosslinked Polymers: Experiments and Simulations

Zhijiang Ye, Nethmi De Alwis Watuthantrige, Ballal Ahammed, Madison Dolan, Mehdi Zanjani, Dominik Konkolewicz, Miami University, Oxford, OH; Jian Wu, Harbin Institute of Technology, Weihai, Shandong, China

3E • Virtual Meeting Room 5 METALWORKING FLUIDS III

Session Chair: Jeffrey Mackey, Biosynthetic Technologies, Indianapolis, IN

Session Vice Chair: Chad Crocker, S&S Chemical, Northport, NY

10:30 – 11:00 am

3485651: Model MWFs Based on Naphthenic Base Oils – Straight Cut or Blend?

Thomas Norrby, Linda Visuri, Jinxia Li, Nynas AB, Nynashamn, Sweden

11 – 11:30 am

3492540: Novel Self Emulsifiable Esters for High Lubricity and Low Foam MWFs

Ronald Hoogendoorn, Patech, Moordrecht, Nederland, Netherlands

11:30 am – Noon

3484684: A New Method to Simulate Strip Drawing Tests on the Lab-Scale

Dirk Drees, Emmanuel Georgiou, Falex Tribology NV, Rotselaar, Belgium; Mark Veldhuis, Philips, Drachten, Netherlands; Javad Hazrati, Universiteit Twente, Enschede, Overijssel, Netherlands

Noon – 12:30 pm

3485050: Surface Behavior and Lubricative Properties of Hydroxyproline Rich, Natural Proteins in Metalworking Fluids

Eric Yezdimer, Gelita USA, Sergeant Bluff, IA; Matthias Reihmann, Gelita AG, Eberbach, Germany

12:30 – 1 pm

3499841: Tribological Study of Materials for Effective Cutting Tool Life

Carlos Sanchez, Peter Lee, Michael Moneer, Southwest Research Institute, San Antonio, TX

3F • Virtual Meeting Room 6 NANOTRIBOLOGY III

Session Chair: Suvrat Bhargava, TE Connectivity, Middletown, PA

Session Vice Chair: Arnab Bhattacharjee, University of Delaware, Newark, DE

10:30 – 11:30 am

INVITED TALK:

3565571: Mechanical Dissipation of Energy: From Breaking of Bonds to the Release of Adhesive Contacts

Lars Pastewka, Antoine Sanner, Albert-Ludwigs-Universität Freiburg, Freiburg im Breisgau, Germany; Richard Jana, Aalto-yliopisto, Aalto, Finland

11:30 am – Noon

3499664: Tribological Experiments in the Age of Big Data

Nikolay Garabedian, Paul Schreiber, Christian Greiner, Karlsruhe Institute of Technology, Karlsruhe, Germany

Noon – 12:30 pm

3483709: Isopropanol Vapor Phase Lubrication of Multi-Asperity Interfaces: The Role of Capillarity and Boundary Lubrication

Bart Weber, Feng-Chun Hsia, Advanced Research Center for Nanolithography, Amsterdam, Netherlands

12:30 – 1 pm

3476540: Tribological Performance of Piston Compression Ring in Artificial Intelligence-Based Design Green Lubricant During Cold Start-up

Shahid Imran, HITEC University, Taxila, Pakistan



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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | Tuesday, May 18, 2021

3G • Virtual Meeting Room 7

ROLLING ELEMENT BEARINGS I

Session Chair: Trevor Slack, American Roller Bearing, Morganton, NC

Session Vice Chair: Hannes Grillenberger, Schaeffler Technologies AG and Co. KG, Herzogenaurach, Germany

10:30 – 11 am

3485603: Contact Protection by Grease in Aeronautical Heavily Charged Oscillating Bearings

Lucas Frache, David Philippon, LaMCoS Laboratory, Villeurbanne, Rhône Alpes, France; Francesco Massi, DIMA – University of Rome “La Sapienza”, Rome, Italy

11 – 11:30 am

3483102: Film Thickness and Starvation in Grease Lubricated Bearings

Piet Lugt, SKF Research and Technology Development, Houten, Utrecht, Netherlands; Hui Cen, Xuchang University, Xuchang, Henan, China

11:30 am – Noon

3499278: Friction-Based Calibration of Raceway and Flange Lubrication Models for Railway Bearing Performance Prediction

Arnaud Ruellan, Pietro Tesini, Lieuwe de Vries, Armin Schlereth, Giuseppe Guala, SKF Group, Vilar Perosa, Italy

Noon – 12:30 pm

3484440: Wear Development Due to Oscillating Movement Operating Conditions as Employed in Rotor Blade Bearings in Wind Turbines

Sebastian Wandel, Gerhard Poll, Leibniz Universität Hannover, Hannover, Niedersachsen, Germany; Arne Bartschat, Fraunhofer-Institut für Windenergiesysteme IWES, Bremerhaven, Bremen, Germany

12:30 – 1 pm

3482687: Transient Finite Element Simulation of Bearing Surface Damage Due to Oscillating Motion with Consideration of Mixed Lubrication Conditions

Jae-II Hwang, Josephine Kelley, Qiongdan Hu, Gerhard Poll, Institute of Machine Design and Tribology, Garbsen, Germany

3H • Virtual Meeting Room 8

LUBRICATION FUNDAMENTALS I: NON-TRIBOLOGICAL OIL PROPERTIES

Session Chair: Jodie Nelson, American Refining Group, Bradford, PA

Session Vice Chair: Q. Jane Wang, Northwestern University, Evanston, IL

10:30 – 11 am

3496577: Analytical Approaches to Chemical Structure and Physical Property Measurements of Lubricant Oils

Eleanor Riches, Caitlyn Da Costa, Jeff Goshawk, Michael Jones, Gordon Jones, Waters Corporation, Wilmslow, Cheshire, United Kingdom; James Browne, TA Instruments, New Castle, DE

11 – 11:30 am

3481748: Practical Considerations for the Development of Amine and Phenol Synergies

Jun Dong, SONGWON Industrial Group, Glen Allen, VA

11:30 am – Noon

3480826: Oxidative Stability of Estolides

Travis Thompson, Biosynthetic Technologies, Indianapolis, IN

Noon – 12:30 pm

3485249: Modeling Thermal Conductivity of Lubricants

Jannat Ahmed, Q. Jane Wang, Northwestern University, Evanston, IL; Ning Ren, Frances Lockwood, Valvoline Inc., Lexington, KY

12:30 – 1 pm

3497278: Mechanistic Insights into Lubricant Foaming and Foam Control Utilizing Single Bubble Techniques

Vineeth Chandran Suja, Gerald Fuller, Stanford University, Stanford, CA

3I • Virtual Meeting Room 9

COMMERCIAL MARKETING FORUM III

10:30 – 11 am – BASF Corporation

3578660: IRGAPAC® T 1668 M: New Premium Turbine Package Meeting MP Specifications

Alex Mannion

11 – 11:30 am – Evonik Oil Additives

3576684: Life Cycle Analysis of an Efficient Hydraulic Fluid

Thilo Krapfl

11:30 am – Noon – Münzing

3568227: Effects of Filtration on Münzing Defoamer Performance in Aqueous Metal Removal Fluids

James Sullivan

Noon – 12:30 pm – Colonial Chemical

3578734: High-performance Corrosion Inhibitors for Aluminum and Its Alloys

Steven Tang

12:30 – 1 pm – Evonik Oil Additives

3573199: High VI 0W-16 and 0W-20 Engine Oils using Evonik's VISCOPLEX® Viscosity Index Improvers – The Optimal Choice for Hybrid Electric Vehicles

Peter Moore

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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | Tuesday, May 18, 2021

4A • Virtual Meeting Room 1

CONDITION MONITORING II

Session Chair: Jatin Mehta, Fluitec International, Bayonne, NJ

2 – 2:30 pm

3498173: Fluid Analysis in Condition-Based Monitoring and Reliability

Julio Acosta, POLARIS Laboratories, Richmond, TX

2:30 – 3 pm

3531472: Fast and Reliable Quality Control of Fresh and In-Service Lubricants by FT-MidIR Spectrometry

Aaron Mendez, Analytical Instruments Inc., Houston, TX

3 – 3:30 pm – Break

3:30 – 4 pm

3559470: Analysis of Metal Additives and Wear Metals in Lubricants by High-Resolution ICP-OES

Oliver Buettel, Analytik Jena US LLC, Beverly, MA

4 – 4:30 pm

3500173: Diagnosing Improper Bearing Lubrication Using Oil Analysis

Evan Zabawski, TestOil, Strongsville, OH

4:30 – 5 pm – Condition Monitoring Business Meeting

4B • Virtual Meeting Room 2

ADDITIVE MANUFACTURING I: SPECIAL SYMPOSIUM

Session Chair: Michael Khonsari, Louisiana State University, Baton Rouge, LA

2 – 2:30 pm

3551361: Wear and Friction of Additively Manufactured Stainless Steel Materials

Robert Jackson, Sanjeev KC, Pooriya Nezhadfar, Collin Phillips, Nima Shamsaei, Auburn University, Auburn, AL; Marian Kennedy, Clemson University College of Engineering Computing and Applied Sciences, Clemson, SC

2:30 – 3 pm

3482009: Tribological and Mechanical Properties of High Entropy Alloys

Morgan Jones, Andrew Kustas, Ping Lu, Michael Chandross, Nicolas Argibay, Sandia National Laboratory, Albuquerque, NM

3 – 3:30 pm – Break

3:30 – 4 pm

3580636: Surface Texture Characterization of Metal Selective Laser Melted Part with Varying Surface Inclinations

Shan Lou, Shubhavardhan Huddersfield, Weidong Liu, Wenhan Zeng, Paul Scott, Xiangqian Jiang, University of Huddersfield School of Computing and Engineering, Huddersfield, Kirklees, United Kingdom; Tian long See, The Manufacturing Technology Centre, Coventry, United Kingdom

4 – 4:30 pm

3581203: Tribological Effects of Surface Textures on the Sliding Behavior of Short Carbon Fiber Reinforced Nylon Composites Fabricated by 3D Printing Techniques

Li Chang, The University of Sydney, Sydney, New South Wales, Australia

4:30 – 5 pm

3582267: Fabrication and Testing of Bioinspired Surface Designs for Friction Reduction at the Piston Ring and Liner Interface

Shelby Maddox, Jiyu Cai, Xiaoxiao Han, Xiangbo Meng, Josué Goss, Min Zou, University of Arkansas, Fayetteville, AR; Arup Gangopadhyay, Ford Motor Company, Dearborn, MI; Hamed Ghaednia, Gehring Group, Farmington Hills, MI

5 – 5:30 pm

3581773: Designing a Bioinspired Surface for Improved Wear Resistance and Friction Reduction

Julia Hoskins, University of Arkansas Fayetteville, Fayetteville, AR

4C • Virtual Meeting Room 3

NONFERROUS METALS II

Tribology and Biobased Session in Memory of Dr. Girma Birresaw

Session Chair: Annie King, Houston, TX

2 – 2:30 pm

3476874: Correlation Between Microscopic Surface Damage and Frictional Behavior of Lubricants for Stamping Automotive Aluminum Sheet Products

Mehdi Shafiei, Shania Polson, Novelis, Novi, MI

2:30 – 3 pm

3479424: Filtration of Rolling Fluids

Craig Thomas, JR Schneider Co., Inc., Benicia, CA

3 – 3:30 pm – Break

3:30 – 4 pm

3482772: Biobased Disulfide Additive Based on Soybean Oil

Grigor Bantchev, Girma Biresaw, James Lansing, Rogers Harry-O'Kuru, Yunzhi Chen, USDA-ARS National Center for Agricultural Utilization Research, Peoria, IL

4 – 4:30 pm

3484628: Vegetable Oils for Metalworking Lubricants: Physico-Chemical and Stability Aspects of Different Options

Joseph Pattathilchira Varghese, Formerly Indian Oil R&D Center, Faridabad, Haryana, India

4:30 – 5 pm – Nonferrous Metals Business Meeting

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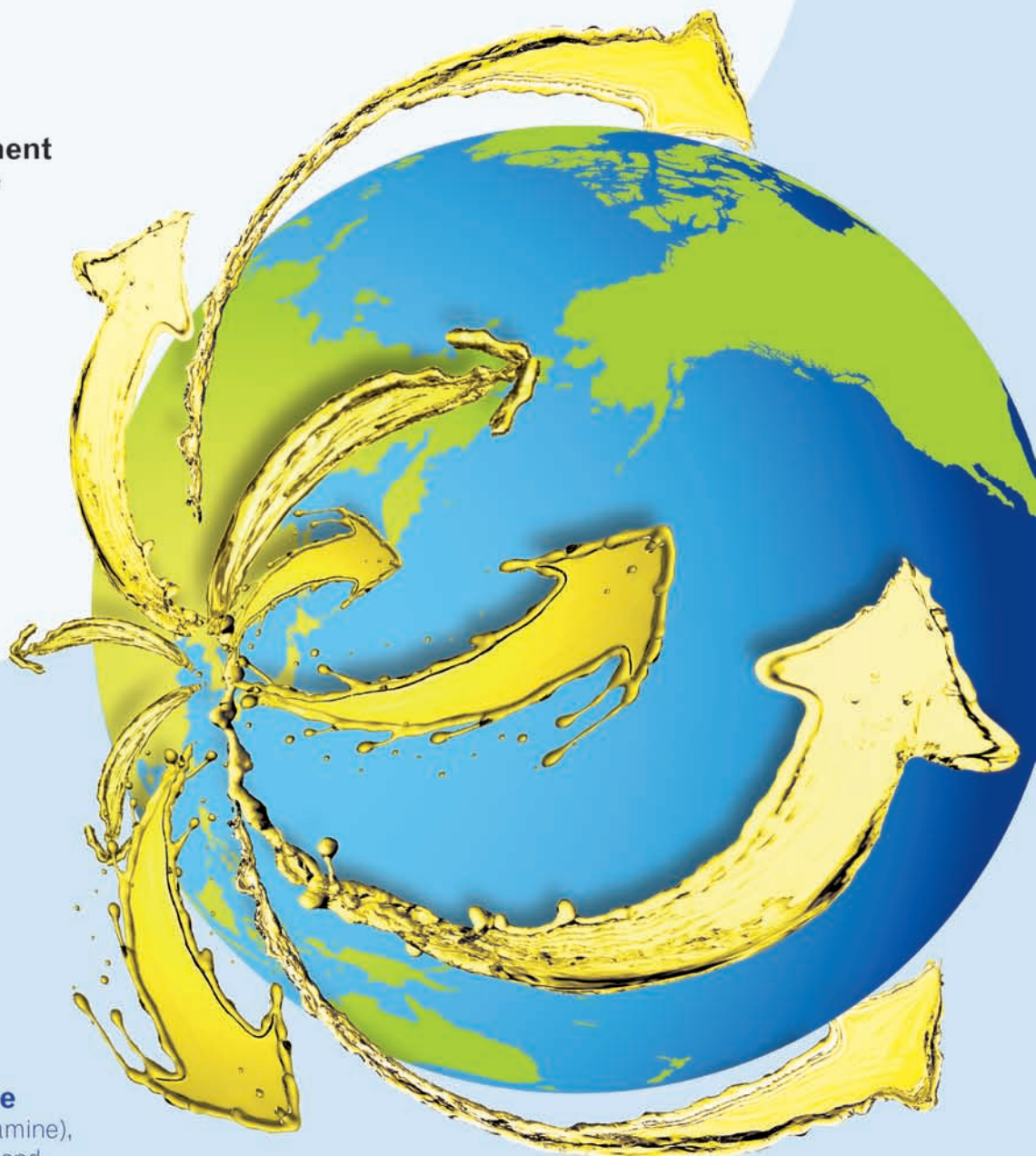
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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | Tuesday, May 18, 2021

4D • Virtual Meeting Room 4

MATERIALS TRIBOLOGY III

Session Chair: Nikhil Murthy, U.S. Army Research Lab, Aberdeen Proving Ground, MD

2 – 2:30 pm

3485503: Method for Tribological Experiment to Study Scuffing Instigation on AISI 52100 Steel and Hard Ceramic Coatings

Kelly Jacques, Diana Berman, University of North Texas, Burleson, TX; Stephen Berkebile, Nikhil Murthy, Army Research Laboratory, Aberdeen Proving Ground, MD

2:30 – 3 pm

3484132: Tribological Behavior of Textured Polymer Surfaces

Mohammad Hossain, Emeka Chukwuonu, Texas A&M University-Kingsville, Kingsville, TX; Hung-Jue Sue, Texas A&M University, College Station, TX

3 – 3:30 pm – Break

3:30 – 4 pm

3482506: Determination of Scuffing and Wear of Materials in Low-Lubricity Fuels

Stephen Berkebile, Nikhil Murthy, CDC Army Research Laboratory, Aberdeen Proving Ground, MD; Kelly Jacques, Diana Berman, University of North Texas, Denton, TX; Caleb Matzke, Maharshi Dey, Surojit Gupta, University of North Dakota, Grand Forks, ND; Auezhan Amanov, Ruslan Karimbaev, Sun Moon University, Asan, Republic of Korea

4 – 4:30 pm

3500772: Paleo-Tribology: Inspiration from Fossil Grinding Dentitions – From Wear Models to Damage Tolerant Composites

Tomas Grejtak, Tomas Babuska, Lehigh University, Bethlehem, PA; Soumya Varma, Siddhartha Pathak, Iowa State University, Ames, IA; Tyler Hunt, Stephen Kuhn-Hendricks, Gregory Erickson, Brandon Krick, Florida State University, Tallahassee, FL; Mark Norell, American Museum of Natural History, New York, NY

4:30 – 5 pm

3565111: A Novel Method to Assess Conventional Tribological Properties of Hard Coatings by Pin-On-Disc Testing

Edoardo Goti, Luigi Mazza, Andrea Mura, Politecnico di Torino, Torino, Italy; Jiri Nohava, Pavel Sedmak, Anton Paar TriTec SA, Corcelles, Neuchâtel, Switzerland

5 – 5:30 pm – Materials Tribology Business Meeting

4E • Virtual Meeting Room 5

METALWORKING FLUIDS IV

Session Chair: Eric Yezdimer, Gelita, Sergeant Bluff, IA

Session Vice Chair: Robert Golden, Pilot Chemical, Cincinnati, OH

2 – 2:30 pm

3484869: The Future of Metalworking Fluids: It's Biobased!

Jeffrey Mackey, Biosynthetic Technologies, Indianapolis, IN

2:30 – 3 pm

3478594: New Solution for Aluminum Machining with Synthetic Fluids

Mickael Ponsardin, TOTAL Lubricants, Pindamonhangaba, SP, Brazil

3 – 3:30 pm – Break

3:30 – 4 pm

3475839: Measuring Tapping Performance Parameters – Using Tapping Torque to Evaluate Coolants and Coolant Additives

Michael Miller, Univar Solutions, Houston, TX

4 – 4:30 pm

3479656: Polyglykol as Performance Wear Lubricant and Synergism with Extreme Pressure Additives on Net Oil Metalworking Fluid

Eduardo Lima, Dow Chemical Brazil, Jundiai, Sao Paulo, Brazil

4:30 – 5 pm

3500883: Multiple Light Scattering for Physical Stability Analysis of Concentrated Dispersions

Gordon Irvine, Charles Nider, Pascal Bru, Formulacion, Inc, Worthington, OH; Christelle Tisserand, Yoann Lefevre, Gerard Meunier, Formulacion, Dallas, TX

5 – 5:30 pm

3580511: Preview of the Metalworking Fluids (MWF) 105 Education Course

Peter Küenzi, Blaser Swisslube AG, Hasle-Ruegsau, Bern, Switzerland; Brian Hovik, Viking Engineering, Leavenworth, WA; Michael Stapels, KAO Chemicals GmbH, Emmerich am Rhein, Nordrhein-Westfalen, Germany

4F • Virtual Meeting Room 6

NANOTRIBOLOGY IV

Session Chair: Filippo Mangolini, The University of Texas at Austin, Austin, TX

2 – 2:30 pm

3529206: MD Study of Adhesion Between a Si Tip and Si Substrate During Indentation and Sliding

Judith Harrison, US Naval Academy, Annapolis, MD; Zachary Milne, Sandia National Laboratories, Albuquerque, NM; Robert Carpick, University of Pennsylvania, Philadelphia, PA; J. David Schall, North Carolina AT&T University, Greensboro, NC

2:30 – 3 pm

3484691: Interfacial Interactions and Tribological Behavior of Metal-Oxide/2D-Material Contacts

Tobin Filleter, Shwetank Yadav, Taib Arif, Guorui Wang, Rana Sodhi, Yu Hui Cheng, Chandra Veer Singh, University of Toronto, Toronto, Ontario, Canada; Guillaume Colas, 4Univ. Bourgogne Franche-Comté FEMTO-ST Institute, Besançon, France

3 – 3:30 pm – Break

3:30 – 4 pm

3499774: Structure, Solvation and Friction of Cyclic-Hydrocarbons Confined at Graphitic Interface

Behnoosh Sattari Baboukani, Prathima Nalam, SUNY University at Buffalo, Buffalo, NY; Zhijiang Ye, Miami University, Oxford, OH

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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | Tuesday, May 18, 2021

4F | Nanotribology IV (con't)

4 – 4:30 pm

3500077: Nanoparticle Sintered Tribofilm Removal Study: An Experimental Approach

Steven Thrush, US Army CCDC GVSC, Warren, MI

4:30 – 5 pm

3516653: In Situ SEM Nano - mechanical Characterization of Tribofilms Derived from Inorganic Nanoparticles

Kora Farokhzadeh, Praveena Manimunda, Bruker Nano Surfaces, San Jose, CA; Steve Shaffer, Shaffer Tribology Consulting, San Jose, CA

5 – 5:30 pm – Nanotribology Business Meeting

4G • Virtual Meeting Room 7
ROLLING ELEMENT BEARINGS II

Session Chair: Daulton Isaac, Air Force Research Laboratory, Wright Patterson AFB, OH

2 – 2:30 pm

3482402: The Next Generation Aircraft Engine High Speed Bearing

Peter Glöckner, Schaeffler Aerospace Germany GmbH & Co.KG, Schweinfurt, Bavaria, Germany

2:30 – 3 pm

3477365: Innovative Bearing Solutions for E-Mobility Applications

Jitesh Modi, Schaeffler Group USA, Troy, MI

3 – 3:30 pm – Break

3:30 – 4 pm

3499371: An Investigation of the Effects of Surface Roughness on Rolling Contact Fatigue

Steven Lorenz, Farshid Sadeghi, Purdue University, West Lafayette, IN

4 – 4:30 pm

3493327: Tribological and Tribochemical Evaluation of Various Lubricants on Steel as well as WC-DLC Coating under Extreme-Pressure Boundary Lubrication Conditions: Rig Test

Kuldeep Mistry, The Timken Company, North Canton, OH

4H • Virtual Meeting Room 8

**2D MATERIALS/
SUPERLUBRICITY**

*Materials Tribology &
Nanotribology Joint Session I*

Session Chair: Arzu Çolak, Clarkson University, Potsdam, NY

2 – 2:30 pm

3504641: Mechanical and Tribological Properties of MXene Nano-Sheets

Bo Zhang, Saga Daigaku Riko Gakubu Daigakuin Kogakukei Kenkyuka, Saga, Japan

2:30 – 3 pm

3492372: Wear Life of Ni-doped MoS₂ Dry Film Lubricants for Space Applications

Azhar Vellore, Sergio Romero Garcia, University of California, Merced, Merced, CA; Duval Johnson, NASA Jet Propulsion Laboratory, Pasadena, CA; Ashlie Martini, University of California, Merced, Merced, CA

3 – 3:30 pm – Break

3:30 – 4 pm

3504161: Probing the Influence of Water and Oxygen on the Friction and Wear of MoS₂

Tomas Babuska, Tomas Grejtak, Lehigh University, Bethlehem, PA; John Curry, Sandia National Laboratory, Albuquerque, NM; Brandon Krick, Florida State University, Tallahassee, FL

4 – 4:30 pm

3503112: Robust Solid Lubricant Operable in Multifarious Environments

Aditya Ayyagari, Kalyan Mutyala, Anirudha Sumant, Argonne National Laboratory, Lemont, IL

4:30 – 5 pm

3484970: Achieving Direct Macroscale Liquid Superlubricity Under Boundary and Mixed Lubrication

Qiang Ma, Arman Mohammad Khan, Q. Jane Wang, Yip-Wah Chung, Northwestern University, Evanston, IL

5 – 5:30 pm

3482121: Super Lubricity of Solids from Quantum Mechanics

Bo Zhang, Saga Daigaku Riko Gakubu Daigakuin Kogakukei Kenkyuka, Saga, Japan

4I • Virtual Meeting Room 9
COMMERCIAL MARKETING FORUM IV

2 – 3 pm – Afton Chemical

3576688: Afton Chemical's Key Driver Seminar IIoT Technologies Leading to Engaged, Optimized and Profitable Customer Relationships
Stephen Steen

3 – 3:30 pm – Break

3:30 – 4 pm – Sea-Land Chemical
Company Update
Pete Pendergast

4 – 5 pm – The Lubrizol Corporation

3578685: Reduce, Renew, Regenerate: Sustainability of Industrial Lubricants
Shubhamita Basu

5 – 5:30 pm – TestOil

3578799: Visual Cues of Lubrication & Reliability Programs with TestOil PRO
Heather Vercillo