

Overview



Wednesday, May 19, 2021

8:30 – 10 am

Wednesday Keynote Session

Keynote Speaker:

- Dr. Armit Parikh, Research Manager, Smith & Nephew, Inc.

10 – 10:30 am

Networking Break & Special Programming

10 am – 3:30 pm

Virtual Exhibits and Student Posters

10:30 am – 1 pm

Wednesday Technical Sessions:

- 5A – Biotribology I
- 5B – 2D Materials/Superlubricity: Material Tribology & Nanotribology Joint Session II
- 5C – Engine & Drivetrain I
- 5D – Lubrication Fundamentals II: Additives I
- 5E – Wear I
- 5F – Tribotesting I
- 5G – Rolling Element Bearings III
- 5H – Nonferrous Metals III
- 5I – Commercial Marketing Forum V

1 – 2 pm

Plenary Program – Session #1

Plenary Speaker:

- Dr. Jack Zakarian, Consultant, JAZTech Consulting LLC

2 – 6 pm

Wednesday Technical Sessions:

- 6A – Biotribology II
- 6B – 2D Materials/Superlubricity: Material Tribology & Nanotribology Joint Session II
- 6C – Engine & Drivetrain II
- 6D – Lubrication Fundamentals III: Additives II
- 6E – Wear II
- 6F – Tribotesting II
- 6G – Rolling Element Bearings IV
- 6H – Tribochemistry – Materials Tribology & Nanotribology Joint Session I
- 6I – Grease I
- 6J – Commercial Marketing Forum VI

3 – 3:30 pm

Networking Break & Special Programming

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 – Wednesday, May 19, 2021

TIME	SESSION 5A Biotribology I	SESSION 5B 2D Materials/Superlubricity II	SESSION 5C Engine & Drivetrain I
	Virtual Meeting Room 1	Virtual Meeting Room 2	Virtual Meeting Room 3
10:30 – 11 am	Impact of Metal Release on Chondrocytes Due to Biotribocorrosion in CoCrMo Sliding Against Articular Cartilage, M. Rodríguez Ripoll, p. 52	The Fascinating Frictional Properties of Layered Materials, M. Urbakh, p. 52	Component Wear in Diesel Engine High Pressure Fuel Pumps Operating with Heavy Fuel, N. Murthy, p. 52
11 – 11:30 am	Experimental Biotribological Testing of Hydrogels and Articular Cartilage for Medical Engineering Applications, P. Staudinger, p. 52		The Measurement of Wear in a GDI Engine Using Radioactive Wear Measurements – Phase II, P. Lee, p. 52
11:30 – Noon	The Mechanics of Single Cross-Links which Mediate Cell Attachment at a Hydrogel Surface, A. Çolak, p. 52	Robust Vibration Induced Lubricity, A. Bhattacharjee, p. 52	Development and Testing of a Low Viscosity, Fuel Efficient, Heavy-Duty Diesel Engine Oil for Severe Service, A. Comfort, p. 52
Noon – 12:30 pm	A New Method to Evaluate Compression, Adhesion and Thread Formation (Tackiness) in Biomedical and Healthcare Products, E. Georgiou, p. 52	2D Materials as Solid Lubricants: Ab Initio Comparative Study of Tribochemical, and (Super)Lubric Properties, M. Clelia Righi, p. 52	Development and Demonstration of a Prototype OW-20 Heavy Duty Diesel Engine Oil, J. Pettingill, p. 52
12:30 – 1 pm			Engine Efficiency Testing on Aggregated Textured Components, S. Hsu, p. 52
1 – 2 pm	Plenary Program #1	Plenary Program #1	Plenary Program #1
	SESSION 6A Biotribology II	SESSION 6B 2D Materials/Superlubricity III	SESSION 6C Engine & Drivetrain II
	Virtual Meeting Room 1	Virtual Meeting Room 2	Virtual Meeting Room 3
2 – 2:30 pm	Acoustic Emission Signals as a Diagnostic Tool for Joint Wear, K. Olorunlambe, p. 56	Phase Transitions in Alkanes Confined at Graphitic Interface, P. Nalam, p. 56	The Effect of Engine Oil and Lubrication System Design on Engine Friction as Demonstrated in a Motored Engine, W. Anderson, p. 58
2:30 – 3 pm	Wear of Antibacterial Coatings on CoCrMo Under Butterfly Motion and Dynamic Loads in a Biotribometer, D. Halenahally Veeregowda, p. 56	Nanotribology of 2D Transition Metal Dichalcogenides: The Effect of Chalcogen Variation on Frictional Behavior of MoS ₂ , MoSe ₂ and MoTe ₂ , M. Vazirisereshk, p. 56	Friction and Wear of Thermal Spray Coatings for Cylinder Bores, A. Gangopadhyay, p. 58
3 – 3:30 pm	Networking Break	Networking Break	Networking Break
3:30 – 4 pm	Oral Tribology, Lubrication and Adsorption of Alternative Food Proteins, B. Kew, p. 56		Benchtop Test for Screening Wet Clutch Materials, C. Sanchez, p. 58
4 – 4:30 pm	Soft Matter Tribology in Biology, A. Pitenis, p. 56	Contact Aging in Structural Superlubricity, W. Oo, p. 56	Road to Ultra-Low Viscosity OW Oils: Quantifying Frictional Benefits on the Journal Bearing Machine, P. Desai, p. 58
4:30 – 5 pm	Biotribology Business Meeting	Inverse Layer Dependence of Friction on Chemically Doped MoS ₂ , M. Baykara, p. 58	Engine and Drivetrain Business Meeting
5 – 5:30 pm		Why is Friction at the Graphene Step Edge So High While Friction on the Basal Plane is So Low?, Z. Chen p. 58	
5:30 – 6 pm			
6 – 6:30 pm			

SESSION 5D Lubrication Fundamentals II: Additives I		SESSION 5E Wear I		SESSION 5F Tribotesting I	
Virtual Meeting Room 4		Virtual Meeting Room 5		Virtual Meeting Room 6	
Tribocchemistry – Past, Present, and Future, S. Hsu, p. 52		The Effect of Friction on Micropitting, M. Ueda, p. 54		Fretting Wear in Contacts Representative of Wire Rope Internal Interfaces: The Influence of Key Lubrication Parameters, C. Dyson, p. 54	
Torque Tightening of Threaded Fasteners: The Influence of Lubrication on Friction, C. Dyson, p. 52		Wear Characterization and Mitigation for Knife Mills Used in Biomass Size Reduction, K. Lee, p. 54		Comparing Afton's Bespoke Stick Slip Rig with the Former Cincinnati Milacron Rig, R. Lumby, p. 54	
Graphite: a New Reinforcing Filler to Polymer, H. Liu, p. 54		Effect of Nitriding and Carbonitriding on the Scuffing Resistance of Aerospace Bearing Steels, D. Isaac, p. 54		Depletion of MoDTC and Synergism with OFM in Boundary Lubricated Tribological Contacts, A. Morina, p. 54	
Using Oil-Soluble Ionic Liquids Together with Other Additives in a Lubricant, J. Qu, p. 54		Developing an Innovative Next Generation Anti-Wear, C. Chretien, p. 54		Reconditioning Lubricating Oils: The Tribological Performance Perspective, A. Ruellan, p. 54	
Research on Durable Organic Friction Modifiers for PCMO and HDDEO Applications, B. Casey, p. 54		Suppressed Triboluminescence Attributed to Electron Structure Changes in the Doped Surface, C. Song, p. 54		Electric Current Effects on Wind Turbine Bearing Steel: Test Rig and Results, R. Erck, p. 54	
Plenary Program #1		Plenary Program #1		Plenary Program #1	
SESSION 6D Lubrication Fundamentals III: Additives II		SESSION 6E Wear II		SESSION 6F Tribotesting II	
Virtual Meeting Room 4		Virtual Meeting Room 5		Virtual Meeting Room 6	
Engine Test of Microencapsulated Friction Modifier Additives for Fuel Economy Enhancement, S. Hsu, p. 58		Effects of Lubricant Additives on Fretting Wear, A. Kontou, p. 60		Repeatability of Friction and Wear of Different Material Pairs at 1000°C under Unidirectional Sliding Motion, D. Patro, p. 60	
Fuel Economy Improvement Using Ultralow Viscosity Lubricants, S. Hsu, p. 58		Friction and Surface Interaction Analysis of PDC on Granite and Carbonate Rocks, J. Bomidi, p. 60		Testing for Friction Differences Between Oils, K. Budinski, p. 60	
Networking Break		Networking Break		Networking Break	
Tuned Polar Methacrylate Viscosity Index Improvers for Enhanced Shear Stability and Wear Prevention, L. Cosimbescu, p. 58		A Review of Tribological and Surface Behavior of MAX Phase-Based Composites, S. Gupta, p. 60		Wear and Viscosity Effects of Mineral Oil Dilution by Biodiesels and their Methyl Esters, G. Molina, p. 60	
Exploring New and Innovative Additives for Extreme Tribological (ET) Performance, L. Wei, p. 58		The Surface Effects of Nanofluid Action on Heat-Exchanger Materials: Testing and Assessment, G. Molina, p. 60		Extracting More Value From Tribofilm Images, O. Ogunsola, p. 60	
Investigation on the Superlubricity and Nanomechanics of Liposome Adsorption on Titanium Alloys, Y. Liu, p. 58		Elevated Temperature Fretting Wear Study of Additively Manufactured Inconel 625 with Varying Process Parameters, M. Tripathy, p. 60		Advanced Capacitance Sensors for Tribological Characterization of Superlubricity Conditions, T. Khosla, p. 60	
The Importance of Tribology in Climate Discussions and for Sustainability Goals, M. Woydt, p. 58		Statistical Considerations in Wear Scar Measurement in Antifriction Coatings, M. Mushrush, p. 60		Synergistic Action of Friction Modifier (MoDTC) with PTFE NPs as an Additive, V. Saini, p. 60	
Lubrication Fundamentals Business Meeting		Wear Business Meeting		Tribotesting Business Meeting	

WEDNESDAY >>

Technical Sessions Time Grids – Wednesday, May 19, 2021

TIME	SESSION 5G Rolling Element Bearings III	SESSION 5H Nonferrous Metals III	SESSION 5I Commercial Marketing Forum V
	Virtual Meeting Room 7	Virtual Meeting Room 8	Virtual Meeting Room 9
10:30 – 11 am		Structure-Performance Evaluation of Synthetic Metalworking Fluid Additives, T. Meyers, p. 56	Functional Products: Introducing V-705, a New and Unique Synthetic Basestock for Automotive and Industrial Applications, G. Duckworth, p. 56
11 – 11:30 am	A Mechanistic Approach to Understand Rolling Contact Fatigue (RCF) Induced Microstructural Alterations, M. Abdullah, p. 54	Chemistry Behind Settling Metal Fines in Aqueous Metalworking Fluids, S. Velez, p. 56	ANGUS Chemical Co.: Benefits of CORRGUARD™ Additives in Metalworking Fluid Formulations and Beyond, M. Chen, p. 56
11:30 – Noon	Mechanistic Study of White Etching Bands Formation in Bearing Steel Due to RCF, M. El Laithy, p. 54	Gas-to-Liquids (GTL) Technology Offers Advances in Metalworking and Aluminum Rolling Fluids while Enhancing Safety, Performance, and Environmental Sustainability, G. Wehr, p. 56	King Industries: NA-LUBE KR Alkylated Naphthalenes for High Temperature Application, A. Harris, p. 56
Noon – 12:30 pm	Fracture-Mechanical Evaluation of Inclusions – Comparison with Test Results, J. Binderszewsky, p. 54		TestOil: Should I Change My Lubricant When the Color Changes?, H. Vercillo, p. 56
12:30 – 1 pm	Rolling Element Bearings Business Meeting		Chevron Phillips Chemical Company: PAOs and Electric Applications, K. Hope, p. 56
1 – 2 pm	Plenary Program #1	Plenary Program #1	Plenary Program #1
	SESSION 6G Rolling Element Bearings IV	SESSION 6H Tribochemistry I	SESSION 6I Grease I
	Virtual Meeting Room 7	Virtual Meeting Room 8	Virtual Meeting Room 9
2 – 2:30 pm	Influence of Vibration Induced Standstill Marks (Fretting) on Bearings of E-drives, M. Grebe, p. 62	Wear Penalty for Steel Rubbing Against Hard Coatings in Reactive Lubricants, X. He, p. 62	Fully Customizable Calcium Sulfonate Greases for Optimum Performances, M. Legatte, p. 62
2:30 – 3 pm	Numerical Modeling of Three-Dimensional Crack Propagation Under Rolling Contact Fatigue, F. Meray, p. 62	Investigation of Friction and Wear Behavior in Chloride Molten Salt for Concentrating Solar Power Pump Bearings, X. He, p. 62	Adhesion and Tackiness of Greases: From Concept to an ASTM Standard Method, E. Georgiou, p. 62
3 – 3:30 pm	Networking Break	Networking Break	Networking Break
3:30 – 4 pm	Experimental Investigation of Influence of Different Heat Treatments on Fracture Behavior of High Strength Bearing Steels, N. Londhe, p. 62	Tribological Behavior of PS400-Related Tribopairs for Space Exploration, V. Tsigkis, p. 62	New Method to Measure Grease Tackiness and Comparison with Water Resistance and Low-Temperature Mobility, A. Kumar, p. 62
4 – 4:30 pm	Propagation of Rolling Contact Fatigue Cracks in Ball Bearing, K. Matsumoto, p. 62	Development of Self-Adaptive Lubricating Silver Aluminum Borate Composite for Wide Temperature Range, A. Kasar, p. 62	Back to the Basics – Part II: Fundamental Building Blocks of Grease Formulation – The Next Story, J. Kaperick, p. 62
4:30 – 5 pm	The Effect of Electrical Current on Premature Fatigue and Microstructural Alterations in Bearing Steel, B. Gould, p. 62	Dependence of Tribological Performance and Tribopolymerization on the Surface Binding Strength of Selected Cycloalkane-Carboxylic Acid Additives, Q. Ma, p. 62	
5 – 5:30 pm			
5:30 – 6 pm			SESSION 6J Commercial Marketing Forum VI
			Virtual Meeting Room 10
6 – 6:30 pm			BYK (2 – 2:30 pm) Clariant (2:30 – 3 pm)

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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Wednesday, May 19, 2021**

5A • Virtual Meeting Room 1

BIOTRIBOLOGY I

Session Chair: Angela Pitenis, University of California, Santa Barbara, CA

10:30 – 11 am

3499561: Impact of Metal Release on Chondrocytes Due to Biotribocorrosion in CoCrMo Sliding Against Articular Cartilage

Manel Rodriguez Ripoll, Bojana Simlinger, Friedrich Franek, AC2T research GmbH, Wiener Neustadt, Austria; Christoph Bauer, Christoph Stotter, Thomas Klestil, Stefan Nehrer, Danube University Krems, Krems, Niederösterreich, Austria

11 – 11:30 am

3490856: Experimental Biotribological Testing of Hydrogels and Articular Cartilage for Medical Engineering Applications

Paul Staudinger, Anton-Paar GmbH, Graz, Austria; Florian Rummel, Anton Paar Germany GmbH, Ostfildern, Germany; Kartik Pondicherry, Anton Paar India, Hyderabad, India; Dominique Felk, Tuebingen University, Tuebingen, Germany

11:30 am – Noon

3499124: The Mechanics of Single Cross-Links which Mediate Cell Attachment at a Hydrogel Surface

Arzu Çolak, Clarkson University, Potsdam, NY; Bin Li, Technical University of Munich, München, Germany; Johanna Blass, Aránzazu del Campo, Roland Bennewitz, Leibniz Institute for New Materials, Saarbrücken, Germany

Noon – 12:30 pm

3484432: A New Method to Evaluate Compression, Adhesion and Thread Formation (Tackiness) in Biomedical and Healthcare Products

Emmanuel Georgiou, Falex Tribology NV, Rotselaar, Belgium; Olaf Mollenhauer, Kompass Sensor GmbH, Ilmenau, Germany; Dirk Drees, Falex Tribology NV, Rotselaar, Belgium

5B • Virtual Meeting Room 2

2D MATERIALS/ SUPERLUBRICITY

Materials Tribology & Nanotribology Joint Session II

Session Chair: Kora Farokhzadeh, Bruker Nano Surfaces, San Jose, CA

Session Vice Chair: Mohammad Vazirisereshk, University of California Merced, Merced, CA

10:30 – 11:30 am

INVITED TALK

3565696: The Fascinating Frictional Properties of Layered Materials

Michael Urbakh, Tel Aviv University School of Chemistry, Tel Aviv, Israel

11:30 am – Noon

3501572: Robust Vibration Induced Lubricity

Arnab Bhattacharjee, Nikolay Garabedian, David Burris, University of Delaware, Newark, DE

Noon – 1 pm

INVITED TALK

3570304: 2D Materials as Solid Lubricants: Ab Initio Comparative Study of Tribochemical, and (Super)Lubric Properties

M. Clelia Righi, Università di Bologna, Bologna, Emilia-Romagna, Italy

5C • Virtual Meeting Room 3

ENGINE AND DRIVETRAIN I

Session Chair: William Anderson, Afton Chemical Corp., Richmond, VA

10:30 – 11 am

3483460: Component Wear in Diesel Engine High Pressure Fuel Pumps Operating with Heavy Fuel

Nikhil Murthy, Blake Johnson, CCDC Army Research Laboratory, Aberdeen Proving Ground, MD; Caleb Matzke, University of North Dakota, Grand Forks, ND; Stephen Berkebile, Army Research Laboratory, Aberdeen Proving Ground, MD

11 – 11:30 am

3498163: The Measurement of Wear in a GDI Engine Using Radioactive Wear Measurements – Phase II

Peter Lee, Gregory Hansen, Carlos Sanchez, Southwest Research Institute, San Antonio, TX

11:30 am – Noon

3502029: Development and Testing of a Low Viscosity, Fuel Efficient, Heavy-Duty Diesel Engine Oil for Severe Service

Allen Comfort, Steven Thrush, US Army CCDC GVSC, Warren, MI

Noon – 12:30 pm

3493035: Development and Demonstration of a Prototype 0W-20 Heavy Duty Diesel Engine Oil

John Pettingill, Petro-Canada Lubricants Inc, Mississauga, Ontario, Canada

12:30 – 1 pm

3497070: Engine Efficiency Testing on Aggregated Textured Components

Stephen Hsu, Govindaiah Patakamuri, George Washington University, Germantown, MD; Timothy Cushing, General Motors Corp., Detroit, MI

5D • Virtual Meeting Room 4

LUBRICATION FUNDAMENTALS II: ADDITIVES I

Session Chair: Jun Qu, Oak Ridge National Laboratory, Oak Ridge, TN

Session Vice Chair: Nicole Döerr, AC2T Research GmbH, Wiener Neustadt, Austria

10:30 – 11 am

3497203: Tribochemistry – Past, Present, and Future

Stephen Hsu, GWU, Germantown, MD

11 – 11:30 am

3479334: Torque Tightening of Threaded Fasteners: The Influence of Lubrication on Friction

Christopher Dyson, William Hopkins, ITW ROCOL, Leeds, West Yorkshire, United Kingdom; Martin Priest, Malcolm Fox, University of Bradford, Bradford, West Yorkshire, United Kingdom



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A W O R L D O F L U B R I C A T I O N U N D E R S T A N D I N G



2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Wednesday, May 19, 2021**

5D | Lubrication Fundamentals II (con't)

11:30 am – Noon

3579761: Graphite: a New Reinforcing Filler to Polymer

Hong Liu, Lanzhou Jiaotong University, Lanzhou, China

Noon – 12:30 pm

3494251: Using Oil-Soluble Ionic Liquids Together with Other Additives in a Lubricant

Jun Qu, Oak Ridge National Laboratory, Oak Ridge, TN

12:30 – 1 pm

3490135: Research on Durable Organic Friction Modifiers for PCMO and HDDEO Applications

Brian Casey, Vincent Gatto, Vanderbilt Chemicals, LLC, Norwalk, CT

5E • Virtual Meeting Room 5 WEAR I

Session Chair: Yan Zhou, Houghton International, Oak Ridge, TN

Session Vice Chair: John Bomidi, Baker Hughes Company, The Woodlands, TX

10:30 – 11 am

3471693: The Effect of Friction on Micropitting

Mao Ueda, Benjamin Wainwright, Hugh Spikes, Amir Kadiric, Imperial College London, London, United Kingdom

11 – 11:30 am

3498612: Wear Characterization and Mitigation for Knife Mills Used in Biomass Size Reduction

Kyungjun Lee, Oak Ridge National Laboratory, Knoxville, TN

11:30 am – Noon

3490952: Effect of Nitriding and Carbonitriding on the Scuffing Resistance of Aerospace Bearing Steels

Daulton Isaac, Mathew Kirsch, Air Force Research Laboratory, Wright-Patterson AFB, OH; Hitesh Trivedi, UES Inc., Dayton, OH

Noon – 12:30 pm

3476697: Developing an Innovative Next Generation Anti-Wear

Christelle Chretien, SOLVAY, Bristol, PA

12:30 – 1 pm

3565800: Suppressed Triboluminescence Attributed to Electron Structure Changes in the Doped Surface

Changhui Song, Liran Ma, Jianbin Luo, Tsinghua University, Beijing, China

5F • Virtual Meeting Room 6 TRIBOTESTING I

Session Chair: Christopher DellaCorte, NASA, Cleveland, OH

Session Vice Chair: Ashish Kasar, University of Nevada Reno, Reno, NV

10:30 – 11 am

3479342: Fretting Wear in Contacts Representative of Wire Rope Internal Interfaces: The Influence of Key Lubrication Parameters

Christopher Dyson, William Hopkins, Michael Cassidy, ITW ROCOL, Leeds, West Yorkshire, United Kingdom; Richard Chittenden, University of Leeds, Leeds, West Yorkshire, United Kingdom; Martin Priest, Malcolm Fox, University of Bradford, Bradford, West Yorkshire, United Kingdom

11 – 11:30 am

3483644: Comparing Afton's Bespoke Stick Slip Rig with the Former Cincinnati Milacron Rig

Ralph Lumby, Afton Chemical Ltd., Bracknell, United Kingdom

11:30 am – Noon

3519445: Depletion of MoDTC and Synergism with OFM in Boundary Lubricated Tribological Contacts

Arrian Morina, Simon Barnes, Shahriar Kosarieh, Anne Neville, University of Leeds, Leeds, Leeds, United Kingdom; David Gillespie, Gareth Moody, Croda International, Goole, United Kingdom

Noon – 12:30 pm

3499299: Reconditioning Lubricating Oils: The Tribological Performance Perspective

Arnaud Ruellan, Aldara Naveira-Suarez, SKF Group, Goteborg, Sweden

12:30 – 1 pm

3484933: Electric Current Effects on Wind Turbine Bearing Steel: Test Rig and Results

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

5G • Virtual Meeting Room 7 ROLLING ELEMENT BEARINGS III

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

11 – 11:30 am

3483981: A Mechanistic Approach to Understand Rolling Contact Fatigue (RCF) Induced Microstructural Alterations

Muhammad Abdullah, Zulfiqar Khan, Bournemouth University, Bournemouth, Dorset, United Kingdom; Wolfram Kruhoefter, Schaeffler Technologies AG and Co KG, Herzogenaurach, Bayern, Germany

11:30 am – Noon

3489226: Mechanistic Study of White Etching Bands Formation in Bearing Steel Due to RCF

Mostafa El Laithy, Ling Wang, Terry Harvey, University of Southampton, Southampton, Hampshire, United Kingdom; Bernd Vierneusel, Schaeffler Technologies AG and Co KG, Schweinfurt, Germany

Noon – 12:30 pm


3495122: Fracture-Mechanical Evaluation of Inclusions – Comparison with Test Results

Joerg Binderszewsky, Wolfram Kruhoefter, Toni Blass, Schaeffler Technologies AG & Co. KG, Herzogenaurach, Germany

12:30 – 1 pm – Rolling Element Bearings Business Meeting



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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Wednesday, May 19, 2021**

5H • Virtual Meeting Room 8

NONFERROUS METALS III

Session Chair: Tom Oleksiak, Quaker Houghton, Acworth, GA

10:30 – 11 am

3485144: Structure-Performance Evaluation of Synthetic Metalworking Fluid Additives

Tiffany Meyers, Stephanie Cole, Clariant, Mount Holly, NC

11 – 11:30 am

3476767: Chemistry Behind Settling Metal Fines in Aqueous Metalworking Fluids

Stefanie Velez, Münzing Chemie GmbH, Bloomfield, NJ

11:30 am – Noon

3495372: Gas-to-Liquids (GTL) Technology Offers Advances in Metalworking and Aluminum Rolling Fluids while Enhancing Safety, Performance, and Environmental Sustainability

Gregory Wehr, ChemGroup, Inc., Louisville, KY

5I • Virtual Meeting Room 9

COMMERCIAL MARKETING FORUM V

10:30 – 11 am – Functional Products

3577954: Introducing V-705, a New and Unique Synthetic Basestock for Automotive and Industrial Applications

Gavin Duckworth

11 – 11:30 am – ANGUS Chemical Co.

3577794: Benefits of CORRGUARD™ Additives in Metalworking Fluid Formulations and Beyond

Min Chen

11:30 am – Noon – King Industries

3578764: NA-LUBE KR Alkylated Naphthalenes for High Temperature Application

Amanda Harris

Noon – 12:30 pm – TestOil

3578640: Should I Change My Lubricant When the Color Changes?

Heather Vercillo

12:30 – 1 pm – Chevron Phillips

Chemical Company

3576286: PAOs and Electric Applications

Ken Hope

6A • Virtual Meeting Room 1

BIOTRIBOLOGY II

Session Chair: Alison Dunn, University of Illinois, Urbana, IL

2 – 2:30 pm

3483667: Acoustic Emission Signals as a Diagnostic Tool for Joint Wear

Khadijat Olorunlambe, Zhe Hua, Duncan Shepherd, Karl Dearn, University of Birmingham, Birmingham, United Kingdom

2:30 – 3 pm

3499235: Wear of Antibacterial Coatings on CoCrMo Under Butterfly Motion and Dynamic Loads in a Biotribometer

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

3 – 3:30 pm – Break

3:30 – 4 pm

3515762: Oral Tribology, Lubrication and Adsorption of Alternative Food Proteins

Ben Kew, Anwesha Sarkar, Melvin Holmes, University of Leeds, Leeds, Yorkshire, United Kingdom

4 – 4:30 pm

3512880: Soft Matter Tribology in Biology

Angela Pitenis, Allison Chau, Jonah Rosas, George Degen, University of California, Santa Barbara, Santa Barbara, CA

4:30 – 5 pm – Biotribology Business Meeting

6B • Virtual Meeting Room 2

2D MATERIALS/ SUPERLUBRICITY

Materials Tribology & Nanotribology Joint Session III

Session Chair: Azhar Vellore, Martini Research Group, University of California, Merced, Merced, CA

Session Vice Chair: Mohammad Vazirisereshk, University of California, Merced, Merced, CA

2 – 2:30 pm

3499763: Phase Transitions in Alkanes Confined at Graphitic Interface

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

2:30 – 3 pm

3492606: Nanotribology of 2D Transition Metal Dichalcogenides: The Effect of Chalcogen Variation on Frictional Behavior of MoS₂, MoSe₂ and MoTe₂

Mohammad Vazirisereshk, Ashlie Martini, University of California Merced, Merced, CA; Kathryn Hasz, Robert Carpick, University of Pennsylvania, Philadelphia, PA

3 – 3:30 pm – Break

(Session starts at 4 pm)

4 – 4:30 pm

3484804: Contact Aging in Structural Superlubricity

Wai Oo, Mehmet Baykara, University of California, Merced, Merced, CA

4:30 – 5 pm

3484587: Inverse Layer Dependence of Friction on Chemically Doped MoS₂

Mehmet Baykara, Ogulcan Acikgoz, University of California, Merced, Merced, CA; Alper Yanilmaz, Cem Celebi, Izmir Yuksek Teknoloji Enstitusu, Izmir, Turkey; Omur Dagdeviren, McGill University, Montreal, Quebec, Canada

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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Wednesday, May 19, 2021**

6B | 2D Materials/Superlubricity (con't)

5 – 5:30 pm

3498096: Why is Friction at the Graphene Step Edge So High While Friction on the Basal Plane is So Low?

Zhe Chen, Seong Kim, Pennsylvania State University, University Park, PA

6C • Virtual Meeting Room 3

ENGINE AND DRIVETRAIN II

Session Chair: Hamed Ghaednia, Gehring Group, Farmington Hills, MI

2 – 2:30 pm

3482399: The Effect of Engine Oil and Lubrication System Design on Engine Friction as Demonstrated in a Motored Engine

William Anderson, Kongsheng Yang, Zhang Yun, Sha Yang, Afton Chemical Corp., Richmond, VA; Yuele Ding, Pan Asia Technical Automotive Center Co. Ltd., Pudong, Shanghai, China

2:30 – 3 pm

3484731: Friction and Wear of Thermal Spray Coatings for Cylinder Bores

Arup Gangopadhyay, Cliff Maki, Larry Elie, Robert Zdrodowski, Zhiqiang Liu, Urban Morawitz, Ford Motor Company, Dearborn, MI; Hamed Ghaednia, Gehring Group, Farmington Hills, MI; Joachim Patschull, Ford Motor Company (Retired), Cologne, Germany

3 – 3:30 pm – Break

3:30 – 4 pm

3499847: Benchtop Test for Screening Wet Clutch Materials

Carlos Sanchez, Southwest Research Institute, San Antonio, TX

4 – 4:30 pm

3484474: Road to Ultra-Low Viscosity 0W Oils: Quantifying Frictional Benefits on the Journal Bearing Machine

Priyanka Desai, Shell Global Solutions (US) Inc., Houston, TX; Konstantinos Kalogiannis, Omar Mian, MAHLE Engine Systems UK Ltd., Rugby, United Kingdom; Francesco Manieri, Tom Reddyhoff, Imperial College London, London, United Kingdom; Robert Mainwaring, Shell Global Solutions UK, London, United Kingdom

4:30 – 5 pm – Engine and Drivetrain Business Meeting

6D • Virtual Meeting Room 4

LUBRICATION FUNDAMENTALS III: ADDITIVES II

Session Chair: Brendan Miller, Chevron Oronite Co., Richmond, CA

Session Vice Chair: Stephen Hsu, George Washington University, Germantown, MD

2 – 2:30 pm

3497165: Engine Test of Microencapsulated Friction Modifier Additives for Fuel Economy Enhancement

Stephen Hsu, Govindaiah Patakamuri, George Washington University, Germantown, MD; Timothy Cushing, General Motors Corp., Detroit, MI

2:30 – 3 pm

3497186: Fuel Economy Improvement Using Ultralow Viscosity Lubricants

Stephen Hsu, Govindaiah Patakamuri, GWU, Germantown, MD; Timothy Cushing, General Motors Corp, Detroit, MI

3 – 3:30 pm – Break

3:30 – 4 pm

3478919: Tuned Polar Methacrylate Viscosity Index Improvers for Enhanced Shear Stability and Wear Prevention

Lelia Cosimbescu, Kristen Campbell, Miao Song, Dongsheng Li, Marie Swita, Pacific Northwest National Laboratory, Richland, WA; Robert Erck, Argonne National Laboratory, Lemont, IL

4 – 4:30 pm

3499618: Exploring New and Innovative Additives for Extreme Tribological (ET) Performance

Liwen Wei, Novitas Chem Solutions, Houston, TX

4:30 – 5 pm

3483942: Investigation on the Superlubricity and Nanomechanics of Liposome Adsorption on Titanium Alloys

Yuhong Liu, Tsinghua University, Beijing, China

5 – 5:30 pm

3483490: The Importance of Tribology in Climate Discussions and for Sustainability Goals

Mathias Woydt, MATRILUB, Berlin, Germany

5:30 – 6 pm – Lubrication Fundamentals Business Meeting



PRESENTING AT THE 2021 STLE ANNUAL MEETING

**"Reviewing the Performance of Permanently
Suspended Nanocarbons in Lubricants"**

When: Monday, May 17, 2021

Where: Virtual Meeting Room #6

Time: 4:00pm to 4:30pm EST

Session: Nanotribology II



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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Wednesday, May 19, 2021**

6E • Virtual Meeting Room 5

WEAR II

Session Chair: Ali Beheshti, George Mason University, Fairfax, VA

2 – 2:30 pm

3541859: Effects of Lubricant Additives on Fretting Wear

Artemis Kontou, Hugh Spikes, Imperial College London, London, United Kingdom; Ian Taylor, Shell Global Solutions UK, London, Cheshire West and Chester, United Kingdom

2:30 – 3 pm

3519346: Friction and Surface Interaction Analysis of PDC on Granite and Carbonate Rocks

John Bomidi, Chengjiao Yu, Marc Bird, Baker Hughes Company, The Woodlands, TX; Maria Cinta Lorenzo Martin, Oyelayo Ajayi, Argonne National Laboratory, Lemont, IL

3 – 3:30 pm – Break

3:30 – 4 pm

3486651: A Review of Tribological and Surface Behavior of MAX Phase-Based Composites

Surojit Gupta, Maharshi Dey, Sabah Javaid, Caleb Matzke, University of North Dakota, Grand Forks, ND; Nikhil Murthy, CDC Army Research Laboratory, Aberdeen Proving Ground, MD; Stephen Berkebile, Army Research Laboratory, Aberdeen Proving Ground, MD

4 – 4:30 pm

3496983: The Surface Effects of Nanofluid Action on Heat-Exchanger Materials: Testing and Assessment

Gustavo Molina, Fnu Aktaruzzaman, Mosfequr Rahman, Valentin Soloiu, Georgia Southern University, Statesboro, GA

4:30 – 5 pm

3498960: Elevated Temperature Fretting Wear Study of Additively Manufactured Inconel 625 with Varying Process Parameters

Manisha Tripathy, Ali Beheshti, George Mason University, Fairfax, VA; Keivan Davami, The University of Alabama, Tuscaloosa, AL

5 – 5:30 pm

3580118: Statistical Considerations in Wear Scar Measurement in Antifriction Coatings

Melissa Mushrush, DuPont de Nemours Inc, Wilmington, DE; Kevin Wier, Dow Chemical Co, Midland, MI

5:30 – 6 pm – Wear Business Meeting

6F • Virtual Meeting Room 6

TRIBOTESTING II

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

Session Vice Chair: Alessandro Ralls, University of Nevada Reno, Reno, NV

2 – 2:30 pm

3499215: Repeatability of Friction and Wear of Different Material Pairs at 1000°C under Unidirectional Sliding Motion

Debdutt Patro, Harish Prasanna, Sravan Kumar Josyula, Angela Maria Tortora, Fabio Alemanno, Deepak Halenahally Veeregowda, Ducom Instruments, Groningen, Netherlands

2:30 – 3 pm

3473453: Testing for Friction Differences Between Oils

Kenneth Budinski, Bud Labs, Rochester, NY

3 – 3:30 pm – Break

3:30 – 4 pm

3481715: Wear and Viscosity Effects of Mineral Oil Dilution by Biodiesels and their Methyl Esters

Gustavo Molina, John Morrison, Emeka Onyejizu, Valentin Soloiu, Georgia Southern University, Statesboro, GA

4 – 4:30 pm

3484531: Extracting More Value From Tribofilm Images

Oluwaseyi Ogunsola, Shell Global Solutions USA Inc., Houston, TX; Chaitanya Pradan, Aarthi Thyagarajan, Vishal Ahuja, Shell India Markets Private Limited, Bengaluru, Karnataka, India

4:30 – 5 pm

3522420: Advanced Capacitance Sensors for Tribological Characterization of Superlubricity Conditions

Tushar Khosla, Jun Xiao, Nick Doe, Rtec-Instruments, San Jose, CA; Pradeep Menezes, University of Nevada Reno, Reno, NV

5 – 5:30 pm

3479016: Synergistic Action of Friction Modifier (MoDTC) with PTFE NPs as an Additive

Vinay Saini, Jayashree Bijwe, IIT Delhi, Delhi, India

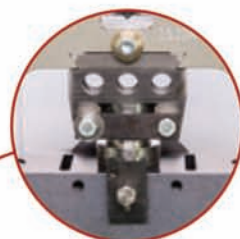
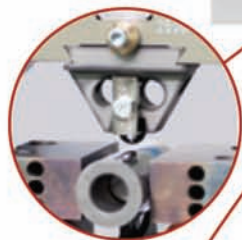
5:30 – 6 pm – Tribotesting Business Meeting



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2021 STLE Virtual Annual Meeting & Exhibition

TECHNICAL SESSIONS | **Wednesday, May 19, 2021**

6G • Virtual Meeting Room 7

ROLLING ELEMENT BEARINGS IV

Session Chair: Bryan Allison, SKF Aeroengine, Clymer, NY

2 – 2:30 pm

3543554: Influence of Vibration Induced Standstill Marks (Fretting) on Bearings of E-drives

Markus Grebe, Hochschule Mannheim, Mannheim, Germany

2:30 – 3 pm

3483088: Numerical Modeling of Three-Dimensional Crack Propagation Under Rolling Contact Fatigue

Florian Meray, Daniel Nelias, Anthony Gravouil, Thibaut Chaise, Univ Lyon, INSA-Lyon, CNRS, LaMCoS, Villeurbanne, France; Bruno Descharrieres, Airbus Helicopters, Aéroport International Marseille Provence, Marignane, France

3 – 3:30 pm – Break

3:30 – 4 pm

3480860: Experimental Investigation of Influence of Different Heat Treatments on Fracture Behavior of High Strength Bearing Steels

Nikhil Londhe, Scott Hyde, The Timken Company, Canton, OH

4 – 4:30 pm

3498853: Propagation of Rolling Contact Fatigue Cracks in Ball Bearing

Kenji Matsumoto, Honda Research and Development Japan Inc, Tochigi, Takanezawa, Tochigi, Japan; Naoaki Yoshida, Kyushu University, Kasuga, Fukuoka, Japan; Akira Sasaki, Maintek Consulting, Yokohama, Kanagawa, Japan

4:30 – 5 pm

3485677: The Effect of Electrical Current on Premature Fatigue and Microstructural Alterations in Bearing Steel

Benjamin Gould, Robert Erck, Nicholaos Demas, Oyelayo Ajayi, Maria Cinta Lorenzo Martin, Aaron Greco, Argonne National Laboratory, Lemont, IL

6H • Virtual Meeting Room 8

TRIBOCHEMISTRY

Materials Tribology & Nanotribology Joint Session I

Session Chair: Mark Sidebottom, Miami University, Oxford, OH

Session Vice Chair: Mary Makowiec, Pratt & Whitney, East Hartford, CT

2 – 2:30 pm

3498014: Wear Penalty for Steel Rubbing Against Hard Coatings in Reactive Lubricants

Xin He, Harry Meyer, Huimin Luo, Jun Qu, Oak Ridge National Laboratory, Oak Ridge, TN

2:30 – 3 pm

3498032: Investigation of Friction and Wear Behavior in Chloride Molten Salt for Concentrating Solar Power Pump Bearings

Xin He, Rick Wang, Dino Sulejmanovic, James Keiser, Kevin Robb, Jun Qu, Oak Ridge National Laboratory, Oak Ridge, TN

3 – 3:30 pm – Break

3:30 – 4 pm

3485147: Tribological Behavior of PS400-Related Tribopairs for Space Exploration

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

4 – 4:30 pm

3485317: Development of Self-Adaptive Lubricating Silver Aluminum Borate Composite for Wide Temperature Range

Ashish Kasar, Pradeep Menezes, University of Nevada, Reno, Reno, NV

4:30 – 5 pm

3484977: Dependence of Tribological Performance and Tribopolymerization on the Surface Binding Strength of Selected Cycloalkane-Carboxylic Acid Additives

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

6I • Virtual Meeting Room 9

GREASE I

Session Chair: Kuldeep Mistry, The Timken Company, North Canton, OH

Session Vice Chair: Cindy Liu, Klüber Lubrication NA, LP, Londonderry, NH

2 – 2:30 pm

3532329: Fully Customizable Calcium Sulfonate Greases for Optimum Performances

Marie Legatte, Guillaume Notheaux, SEQENS, Porcheville, France

2:30 – 3 pm

3484679: Adhesion and Tackiness of Greases: From Concept to an ASTM Standard Method

Emmanuel Georgiou, Dirk Drees, Michel De Bilde, Falex Tribology NV, Rotselaar, Belgium; Michael Anderson, Falex Corporation, Sugar Grove, IL; Satish Achanta, ASML Netherlands BV, Veldhoven, North Brabant, Netherlands; Manfred Jungk, MJ Tribology, Geisenheim, Germany

3 – 3:30 pm – Break

3:30 – 4 pm

3480662: New Method to Measure Grease Tackiness and Comparison with Water Resistance and Low-Temperature Mobility

Anoop Kumar, Chevron Lubricants, Richmond, CA

4 – 4:30 pm

3473181: Back to the Basics – Part II: Fundamental Building Blocks of Grease Formulation – The Next Story

Joseph Kaperick, Afton Chemical Corporation, Richmond, VA

6J • Virtual Meeting Room 10

COMMERCIAL MARKETING FORUM VI

2 – 2:30 pm – BYK

2:30 – 3 pm – Clariant

3 – 3:30 pm – Break