

# TRIBOINDIA 2020

## Program Schedule



Room1



Room 2



Room 3

### Room-1 link

<https://tinyurl.com/Triboindia2020-R1>

<https://gpeducation.zoom.us/j/94476509082>

### Room-2 link

<https://tinyurl.com/Triboindia2020-R2>

<https://zoom.us/j/92624592024>

### Room-3 link

<https://tinyurl.com/Triboindia2020-R3>

<https://zoom.us/j/9461079874>

## DAY 1: December 10, 2020

<b>09:30 – 10:45</b>	<b>Inaugural Session (Room 1)</b>
<b>Welcome Address</b>	Prof. M. Cheralathan, Head, Mechanical Engineering, SRMIST
<b>About the Conference</b>	Dr. Shubrajit Bhaumik, Jt. Organizing Secretary, TRIBOINDIA 2020
<b>About TSI</b>	Dr. Barun Chakrabarti, Vice President, TSI
<b>Presidential Address</b>	Prof. C. Muthamizhchelvan, Pro Vice Chancellor, SRMIST
<b>Felicitation</b>	Prof. T.V. Gopal, Dean CET, SRMIST
<b>Felicitation</b>	Prof. D. Kingsly Jeba Singh, Chairperson, Mechanical Engineering, SRMIST
<b>Inaugural Address</b>	Prof. Ali Erdemir, Texas A&M, USA, President, International Tribology Council (Frontiers research on super lubricity: A historical perspective)
<b>Vote of thanks</b>	Dr. P. Nandakumar, Head, Design Division, Dept. of Mechanical Engineering, SRMIST
<b>10:45 – 12:30</b>	<b>Plenary Session I (Room 1)</b>
<b>Plenary Lecture 1</b>	The process of wear; A synergistic process – Prof. S.V. Kailas, IISc Bengaluru, India
<b>Plenary Lecture 2</b>	Tribology of traction motor bearings of electric vehicles – Prof. R. Gnanamoorthy IIT Madras, India
<b>12:30 – 13:00</b>	<b>Break</b>
<b>13:00 – 16:00</b>	<b>Technical Session 1A (Room 1): Surface Engineering and Tribology I</b>
<b>Keynote Lecture</b>	Malaysian agricultural waste as new sustainable tribological materials – Prof. Md. Fadzli Bin Abdollah, Universiti Teknikal, Malaysia
<b>Contributory Papers</b>	T003: Ecofriendly and facile fabrication of superhydrophobic aluminum alloy
	T009: Medico-tribological investigation of pulsed plasma nitrided austenitic stainless steel
	T011: Influence of mechanical properties of coating and substrate on wear performance of h-DLC or tin- coated AISI 5140 steel
	T018: Correlating the stress state with morphological and tribological properties of thin coatings
<b>Keynote Lecture</b>	EHL of Non-conformal contacts and isotropic surface textures – Dr. G. Rajaram, Thejo Engineering Limited, India
<b>Contributory Papers</b>	T019: Tribological characteristics of thermomechanically processed 7075 Al alloy through nano-scratch characterization
	T027: Influence of powder feed rate on the slurry abrasive wear behavior of Co-Cr alloys deposited on SS-316l material.

	T030: Molykote – anti friction lubrication coating process establishment on solenoid armature and its tribo performance
<b>13:00 – 16:00</b>	<b>Technical Session 1B (Room 2): Wear Behavior of Alloys &amp; Composites I</b>
<b>Keynote Lecture</b>	On the correlation of wear behaviour with subsurface characteristics of die steel – Dr. Debdulal Das, IEST Shibpur, India
<b>Contributory Papers</b>	T002: Review on optimization of process parameters for hybrid metal matrix composites (HMMC)
	T005: Tribological characterization of iron based self-lubricating composite under dry sliding conditions
	T026: Tribo-mechanical behaviour assessment of magnesium based fibre metal laminates
	T039: Fabrication and optimization of wear parameters of B <sub>4</sub> C reinforced Al2024 nano metal matrix composites
<b>Keynote Lecture</b>	Research advances and development trend on magnesium alloys and composites - Prof. A. Elaya Perumal, Anna University, India
<b>Contributory Papers</b>	T044: Wear behaviour of magnesium hybrid composite reinforced with Al <sub>2</sub> O <sub>3</sub> and MoS <sub>2</sub> particles through PM route
	T045: Cavitation erosion behavior of MoNbTiZr medium entropy alloy
	T053: Erosion wear behaviour of A357/fly ash composites
	T57: Tribological characterization of aluminium metal matrix composites
<b>13:00 – 16:00</b>	<b>Technical Session 1C (Room 3): Lubrication I</b>
<b>Keynote Lecture</b>	Graphene: Next generation lubricant additive - Dr. Md. Khalid, Sunway University, Malaysia
<b>Contributory Papers</b>	T006: Investigating graphite added glycerol as metalworking fluid in turning of steel
	T008: Tribological properties of h-BN additivated lubricants
	T040: Comparative study of thermo-physical and tribological properties of coconut oil based nano lubricant using CuO nanoparticle and MoS <sub>2</sub> nanoparticle
	T041: Addition of surfactant in CeO <sub>2</sub> nanoparticles and its synergistic effect on diesel fuel
<b>Keynote Lecture</b>	Oil vs. grease behaviour in rolling/sliding contacts – on the beneficial thickener effects: with a focus on wind turbine application - Dr. Balasubramaniam Vengudusamy, Klueber Lubrication, Germany
<b>Contributory Papers</b>	T042: Friction and wear behaviour of non-edible oil based lubricant
	T043: The enhanced tribological performance of hexagonal boron nitride (hBN) nanoparticle additives in various type of engine oil
	T047: Flash temperature of sliding contacts - a comparative study

## DAY 2: December 11, 2020

<b>9:30 – 11:30</b>	<b>Technical Session 2A (Room 1): Surface Engineering and Tribology II</b>
<b>Contributory Papers</b>	T046: Wear behaviour of AA6061 processed by equal channel angular pressing
	T055: Wear, scratch and corrosion resistance of aluminide coating prepared on ferritic martensitic steel
	T067: Reciprocating sliding behaviour of solid lubricant coating over modified titanium alloy surfaces
	T080: Wettability of hydrophobic micro-dimpled HSS surfaces
	T081: Wear behaviour of friction stir welded AA7075 and AA6063 aluminium alloys
	T082: The effect of deep cryogenic treatments on the microstructure and wear behaviour of 3.6C-2.8Si ductile cast iron subjected to austempering
	T083: Prediction of suitable heat treatment for H13 tool steels by application of thermal shock fatigue cycle
<b>9:30 – 11:30</b>	<b>Technical Session 2B (Room 2): Wear Behavior of Alloys &amp; Composites II</b>
<b>Keynote Lecture</b>	Tribological investigation of white etching area (WEA) formation under severe sliding condition in bearing steel - Dr. P. Ramkumar, IIT Madras, India

<b>Contributory Papers</b>	T63: Effect of ball milling duration on tribological properties of CNT reinforced Al matrix composites
	T064: Machine learning approaches for analyzing tribological behavior of aluminium matrix composites
	T075: Assessment of mechanical and tribological characteristics of A356 reinforced with x wt% CaB <sub>6</sub> composites
	T076: Assessing the tribological behaviour of stir casted AA6063 with x wt% ZrSiO <sub>4</sub> and 6wt% TiB <sub>2</sub> hybrid composites
	T079: Dry and wet tribology of carbon nanotubes in Al/steel and AMMC/steel sliding contacts
	T090: Wear performance analysis using worn surfaces of different aluminium alloy composites - A comparative study
<b>9:30 – 11:30</b>	<b>Technical Session 2C (Room 3): Lubrication II</b>
<b>Keynote Lecture</b>	Nanolubricants dispersed with graphene and its derivatives: an assessment and review of the tribological performance – Dr. N.C. Murmu, CSIR-CMERI, India
<b>Contributory Papers</b>	T048: Surface morphology studies in end milling of AA7075 under MQL environment using tri-hybridized carbonaceous nano cutting fluids
	T054: The role of surface roughness frequencies in controlling lubricant wettability in hierarchical engineering surfaces
	T62: Evaluation of tribological performance of coconut oil-based grease with hybrid MoS <sub>2</sub> /SiO <sub>2</sub> additives under boundary lubrication regime
	T069: Viscous and molecular effects of fatty acid concentrations in thin film lubrication flow
	T072: Formulation and tribological evaluation of vegetable oil based grease
<b>11:30 – 12:30</b>	<b>Business Talks (Room 1)</b>
	Optimol Instruments
	Ducom Instruments
	RTec Instruments
<b>12:30 – 13:00</b>	<b>Break</b>
<b>13:00 – 16:00</b>	<b>Technical Session 3A (Room 1): Surface Engineering and Tribology III</b>
<b>Keynote Lecture</b>	Lubrication performance of hydrostatic / hybrid textured fluid film bearings - Prof. Satish C Sharma, IIT Roorkee, India
<b>Contributory Papers</b>	T084: Understanding the wear behavior of nylon coated steel surfaces in presence of commercial greases
	T086: Evaluation of PEEK to PEEK friction welded joint properties
	T087: Diamond like carbon coating on Y-TZP for dental implant.
	T096: Study of tribological properties of multilayer gradient Ti/tin coating.
	T101: Influence of countersurface roughness on two-body abrasive wear of hastelloy C-276 in dry sliding conditions
	T102: Transitions in two-body microscale abrasive wear of hastelloy C-22 superalloy
T104: Micro tribological properties of Ti-6Al-4V in comparison to Ti-6Al-4V shot-blasted	
<b>13:00 – 14:30</b>	<b>Technical Session 3B (Room 2): Wear Behavior of Alloys &amp; Composites III</b>
<b>Keynote Lecture</b>	Three-body abrasive wear property of a quenched and non-isothermally partitioned steel - Dr. Chiradeep Ghosh, Tata Steel Limited, India
<b>Contributory Papers</b>	T091: Effect of reinforcements on graphite/TiO <sub>2</sub> /Al nanohybrid composites
	T097: Assessment of mechanical properties for aluminium composites using rice husk ash as a reinforcement.
	T098: Evolution of mechanical and tribological behaviour of hybrid composites under dry and wet conditions
	T100: The effect of sliding speed on dry sliding wear behavior of A356 alloy with minor additions of magnesium
<b>14:30 – 16:00</b>	<b>Technical Session 3C (Room 2): Tribo-measurement</b>
<b>Keynote Lecture</b>	Importance of the study in fundamental wear mechanism and data analysis – Spatiotemporal mapping analysis - Prof. Kanao Fukuda, Malaysia-Japan IIT, Malaysia

<b>Contributory Papers</b>	T60: New multi-sensing nanotribology test with electrical contact resistance and friction measurement
	T085: Optimization of parameters of single point cutting tool for turning operation
	T092: Development of test method to detect gear failure using vibration and ferrography analysis
	T093: Development of test method for evaluation of engine oils in horizontal and inclined planes with oil recirculation system in SRY- 5
<b>13:00 – 14:00</b>	<b>Technical Session 3D (Room 3): Lubrication III</b>
<b>Contributory Papers</b>	T073: Transesterification of blended vegetable oils as cutting fluids and prediction of cutting forces using machine learning techniques
	T074: A comparative study on the tribological performance of solid lubricants over PEEK polymer
	T088: Anti-wear behaviour of polyalphaolefins with oleic acid treated LaF <sub>3</sub> nanoparticles as an additive under extreme pressure conditions
	T099: Tribological characterization of simarouba glauca biodiesel (SGME) with copper oxide nanoparticles
<b>14:00 – 16:00</b>	<b>Technical Session 3E (Room 3): Condition Monitoring</b>
<b>Keynote Lecture</b>	Sustainable efforts through lubrication: Balanced approach to performance and environmental acceptability - Dr. T.C.S.M Gupta, Apar Industries Ltd., India
<b>Contributory Papers</b>	SP001: Combination of analytical sciences with tribological quantities for an advanced condition monitoring
	T015: Ferrography – Specialized oil analysis for protection and diagnose gear and bearing deterioration
	T017: Vibration damping analysis using MR fluid assisted worktable for drilling
	T070: Friction analysis of aircraft landing gears due to landing impact
	T089: Experimental study to compare the performance of engine fueled with diesel and biodiesel blend on the basis of vibration signature analysis
<b>16:00 – 18:00</b>	<b>Plenary Session II (Room 1)</b>
<b>Plenary Lecture 3</b>	Application of topological optimization methodology in hydrodynamic lubrication – Prof. A. Almqvist, Lulea University of Technology, Sweden
<b>Plenary Lecture 4</b>	Experimental analysis and modelling for reciprocating wear behavior of nanocomposite coatings – Prof. Z. Khan, Bournemouth University, UK
<b>Plenary Lecture 5</b>	Surface design against third body fretting-corrosion of electrical connectors – Prof. T. Liskiewicz, The Manchester Metropolitan University, UK

### DAY 3: December 12, 2020

<b>9:30 – 11:00</b>	<b>Plenary Session III (Room 1)</b>
<b>Plenary Lecture 6</b>	Roles of Nanoparticles in formation of tribofilm - Prof. Hong Liang, Texas A&M, USA
<b>Plenary Lecture 7</b>	The influence of double cardan joints kinematics and quasi-static effects on rolling bearings life in railway traction motors - Prof. Viorel Paleu, TUIASI, Romania
<b>11:00 – 12:30</b>	<b>Technical Session 4A (Room 1): Tribological Performance of Bearings I</b>
<b>Contributory Papers</b>	T004: Effect of eccentricity ratio on damping and stiffness coefficients for journal bearing with flexible liner taking micropolar lubrication
	T013: Limiting load capacity analysis of FGM texture bump foil journal bearing
	T021: Performance behaviors of micro-pocketed/textured tilting pad thrust bearings
	T025: Influence of span angle on the performance of hole-entry hybrid spherical journal bearing
	T031: Influence of textured shapes in hybrid slot entry journal bearing
	T032: Study of a hybrid spherical capillary compensated thrust bearing
<b>11:00 – 12:30</b>	<b>Technical Session 4B (Room 2): Polymer Composites &amp; Friction Materials I</b>
<b>Contributory Papers</b>	T001: Indentation behaviour of cellulosic fibres/fly ash incorporated polymer composites at sub-micron scale

	T012: Tribological /mechanical investigations of additive manufactured polymer composites
	T014: Effect of zirconium silicate and mullite with three different particle sizes on tribological behavior of non-asbestos organic (NAO) brake pad
	T020: Synergic effect of metallic fillers as heat dissipaters in tribological performance of a non-asbestos disc brake pad
	T022: Tribological and mechanical performance report of epoxy-resin composites reinforced with multi-walled carbon nanotubes
	T023: Influence of Alkali treatment in Areva Javanica fiber and its effect in mechanical, physical and tribological behaviour in NAO brake friction composites
<b>11:00 – 12:30</b>	<b>Technical Session 4C (Room 3): Bio-tribology I</b>
<b>Keynote Lecture</b>	Role of biomaterials for hip joint replacement applications - Dr. Amar Patnaik, MNIT Jaipur, India
<b>Contributory Papers</b>	T007: Tribological investigations of biological interfaces: from cartilages to catheters
	T016: Investigating the tribological properties of HAp/Cu-HAp-POM composites.
	T028: Mechanical behaviour of hydroxyapatite dispersed sulphonated polyetheretherketone based composite membrane at microstructural length scale
	T033: Study and optimization of wear characteristics of PLA/PMMA biopolymer composites
<b>12:30 – 13:00</b>	<b>Break</b>
<b>13:00 – 15:00</b>	<b>Technical Session 5A (Room 1): Tribological Performance of Bearings II</b>
<b>Contributory Papers</b>	T034: On the behaviour of asymmetric conical hole-entry hybrid journal bearing system
	T035: Fem analysis of a porous hybrid journal bearing under the turbulent regime
	T036: Effect of semi-cone angle on the performance of hybrid slot-entry conical journal bearing
	T037: Effect of non-Newtonian lubricant on the linear and non-linear stability analysis of the double-layered porous journal bearing
	T050: Tribological performance analysis of multi-lobe hydrodynamic journal bearing with nano-additives in lubricants
	T61: Housing light-weighting and its impact on bearing performance
	T078: Analysis of thermoelastohydrodynamic lubrication of journal bearing including the effect of surface roughness and cavitation
<b>13:00 – 15:00</b>	<b>Technical Session 5B (Room 2): Polymer Composites &amp; Friction Materials II</b>
<b>Contributory Papers</b>	T024: Tribo-mechanical behavior of basalt fiber reinforced polylactic acid and polypropylene hybrid polymer composites
	T029: Tribological behavior of cera –metallic clutch friction material in agriculture tractor applications.
	T038: A review on tribological behavior of silicon nitride based ceramics
	T051: Influence of aluminium foam on dry sliding wear behaviour of glass fiber reinforced epoxy composites
	T058: Tribological characterisation of banana/ sisal composites and hybrid composites: A review
	T066: Newly developed multiscale composites for tribological applications under water-based lubrication
	T094: Wear and morphological analysis on basalt/sisal hybrid fiber reinforced polylactic acid composites
	T095: Thermo-mechanical analysis of ventilated and solid disc brake pad model
<b>13:00 – 15:00</b>	<b>Technical Session 5C (Room 3): Bio-tribology II</b>
<b>Contributory Papers</b>	T056: Wear evaluation of polycarbonate urethane core for artificial disc in lumbar region
	T59: AI based design of hybrid UHMWPE composites with enhanced tribo-mechanical behavior
	T065: Bio-tribological performance of medical grade UHMW polyethylene based hybrid composite for cartilage replacement

	T068: New polycaprolactone polymer coated magnesium biodegradable alloy for cardiac stent application.
	T071: Temperature and load influence on adhesion wear in dry sliding contact in vacuum condition
	T077: Electrochemical and biological behaviour of near $\beta$ titanium alloy for biomedical implant applications
	T103: Wear performance of UHMWPE and PCU artificial disc materials
<b>15:00 – 16:00</b>	<b>Valedictory Session (Room 1)</b>