



# ECOTRIB 2023 European Conference on Tribology

**Bari (Italy), June 21-23 2023**

**The Nicolaus Hotel**

# Patronages



ASSOCIAZIONE ITALIANA TRIBOLOGIA ÖSTERREICHISCHE TRIBOLOGISCHE GESELLSCHAFT



SLOVENIAN SOCIETY FOR TRIBOLOGY



SWISS SOCIETY FOR TRIBOLOGY



GRUPPO AIMETA DI TRIBOLOGIA



Dipartimento  
Meccanica  
Matematica  
Management



Politecnico di Bari



**lubricants**  
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## Welcome letter



Dear Colleagues,

We are very much delighted to welcome you to **ECOTRIB 2023** that this year is held, for the first time, in the wonderful city of **Bari, Apulia region, Italy**.

**ECOTRIB** is organised on a biennial basis by the tribology societies of Austria, Italy, Slovenia and Switzerland. The conference aims at bringing together researchers at forefront of tribology research from Academia and Industry in Europe and world-wide, to present the latest insights in traditional and new areas of the tribology such as: (i) fundamentals of tribology, (ii) lubricants, (iii) industrial tribology and green applications, (iv) materials, coatings & thin films, (v) biotribology & biomimetics, (vi) modelling and simulation, (vii) interfacial phenomena, adhesion, wetting, (viii) wear, friction, and corrosion, (ix) contact mechanics, (x) machine learning in tribology.

The city of Bari, with a seafront of more than 10km (the longest in Italy), extends itself along the Adriatic sea coast. It is known for the amazing historical centre, a city within the city, characterized by narrow alleys, courtyards, historical places, romanesque monuments, churches, bars and restaurants where everyone can taste the amazing local cuisine based on seafood and superb wine.

Enjoy your congress and stay.

*On behalf of the Organising Committee*  
**Prof. Giuseppe Carbone, Conference Chair**

[www.ecotrib2023.poliba.it](http://www.ecotrib2023.poliba.it)

# Ecotrib 2023

## COMMITTEES

### ORGANIZING COMMITTEE

Giuseppe Carbone, **Politecnico di Bari** – Italy  
Adolfo Senatore, **University of Salerno** – Italy  
Carmine Putignano, **Politecnico di Bari** – Italy  
Luciano Afferrante, **Politecnico di Bari** – Italy  
Andreas Pauschitz, **AC2T research GmbH** – Austria  
Ewald Badisch, **AC2T research GmbH** – Austria  
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Tomaž Požar, **University of Ljubljana** – Slovenija  
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Mirjam Bäse, **Magna Powertrain GmbH & Co KG** – Austria  
Gerwin Preisinger, **SKF Österreich AG** – Austria  
Mitjan Kalin, **University of Ljubljana** – Slovenija  
Uroš Gorjanc, **Olma d.o.o.** – Slovenija  
Marko Polajnar, **University of Ljubljana** – Slovenija  
Nicholas Spencer, **ETH Zürich** – Switzerland



**JUNE 21**

**PLENARY SESSION  
ROOM A**

**8:30 REGISTRATION**

**9:00 INTRODUCTION**

**THE ROLE OF TRIBOLOGY IN SUSTAINABLE DEVELOPMENT**

**GIUSEPPE CARBONE**

**GENERAL CHAIR European Conference on TRIBology (ECOTRIB 2023)**

**9:30 THE TRIBOLOGY GOLD LECTURE 2023**

**MULTISCALE CONTACT MECHANICS WITH APPLICATIONS**

**BO N. J. PERSSON**

**Research Center Jülich and MultiscaleConsulting, Germany**

**PRESENTED BY ROBERT YOUNG**

**DISCUSSION ON PERSSON'S THEORY: MARTIN MÜSER**

**SIMULATIONS OF ADHESIVE, VISCOELASTIC, AND RANDOMLY ROUGH CONTACTS**

**10:40 Coffee break**

**INDUSTRIAL TRIBOLOGY - ROOM A - 11:00 - 12:45**  
**CHAIRS: NICOLE DÖRR, BO N. J. PERSSON**

**YOUNG RESEARCHERS IN TRIBOLOGY: KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:00	Experimental methodology for testing tribological systems under a pressurized gas atmosphere	Ausserer	Florian	Ausserer Florian, Velkavrh Igor, Gachot Casten	TU Wien, Institute of Engineering Design and Product Development, Vienna, Austria	TU Wien, Institute of Engineering Design and Product Development, Vienna, Austria, V-Research GmbH, Tribodesign, Dornbirn, Austria

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:20	Innovative lubricant solutions for high-pressure hydrogen systems	Adler	Michael	Adler Michael, Nagl Christoph, Eder Rosa-Maria	AC2T reserach GmbH, TAL, Wiener Neustadt, Austria	AC2T reserach GmbH, LUB, Wiener Neustadt, Austria, AC2T reserach GmbH, TAL, Wiener Neustadt, Austria, Maximator advanced Technology GmbH, Hydrogen, Wien, Austria
11:35	In-situ FT-IR Study about Boundary Lubrication Condition of Rubber	Aoyagi	Ayako	Aoyagi Ayako, Sugimura Joichi	NOK Corporation, NOK R&D, Fujisawa-shi, Japan	Kyushu University, Department of Mechanical Engineering, Faculty of Engineering, Fukuoka-shi, Japan, NOK Corporation, NOK R&D, Fujisawa-shi, Japan
11:50	The influence of synthetic fuels on tribology in engine operation	Hick	Hannes	HICK Univ.-Prof. Dr. techn. Dipl. Ing. Hannes, FRAUSCHER Marcella, KOPSCH Peter, AGOCS Adam, PLETTENBERG Mirko, GELL Johannes	Institute for Machine Components, University of Technology Graz, Austria	AC2T research GmbH, Area Sustainable Lubrication, Wiener Neustadt, Österreich, AVL List GmbH, Head of Verification, Validation & Reliability, Engineering and Technology Powertrain Systems, Graz, Österreich, AVL List GmbH, Lead Engineer Pass. Car & LD Powertrains Verification, Validation & Reliability, Graz, Österreich, Graz University of Technology, Institute of Machine Compotents and Methodes of Developement, Graz, Österreich
12:05	Gaining new insights from tribological data using machine learning and advanced statistical methods	Dörr	Nicole	Dörr Nicole, Pfeiffer Pia, Prost Josef, Ronai Bettina, Vorlauffer Georg	AC2T research GmbH, Research Cooperation, Wiener Neustadt, Austria	AC2T research GmbH, Exploratory Data Science, Wiener Neustadt, Austria, AC2T research GmbH, Research Cooperation, Wiener Neustadt, Austria, TU Wien, Institute of Statistics and Mathematical Methods in Economics, Vienna, Austria

12:20 Discussion

13:00 Break

**LUBRICANTS AND LUBRICATION - ROOM B - 11:00 - 12:45**  
**CHAIRS: STEVEN CHATTERTON, ROWENA CROCKETT**

**YOUNG RESEARCHERS IN TRIBOLOGY: KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION
11:00	Tribological Performance of Zinc Phosphated High Carbon Manganese Steel	Alinezhadfar	Mohammad	Alinezhadfar Mohammad, Crockett Rowena, Angst Ueli	Empa / ETH Zürich, Tribology and Surface Analysis / Durability of Engineering Materials, Dübendorf / Zürich, Switzerland

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION
11:20	Validating Wind Turbine Composites' Surface Fatigue Model with a Rain Erosion Simulator.	Veeregowda	Deepak H	Alemanno Fabio, Veeregowda Deepak H.	Ducom Instruments (EUROPE) B.V., Global Applications Lab, Groningen, Netherlands
11:35	High-temperature tribological performance of Ti2C3Tx multi-layer and Ti2C3Tx / MoS2 coatings	Varga	Markus	Boidi Guido, Varga Markus, Rodríguez Ripoll Manel, Badisch Ewald, Grützmacher Philipp, Gachot Carsten, Rosenkranz Andreas	AC2T research GmbH, Tribometrical Analysis of Lubricants (TAL), Wiener Neustadt, Austria
11:50	The V-shaped double peeling behavior of thin viscoelastic tapes from rigid substrate	Ceglie	Marco	Ceglie Marco, Menga Nicola, Carbone Giuseppe	Politecnico di Bari, Departement of Mechanics, Mathematics and Management, Bari, Italy
12:05	Comparison of PEEK and Babbitt lined bearings	Chatterton	Steven	Chatterton Steven, Massocchi Davide, Gheller Edoardo, Dassi Ludovico, Vania Andrea, Pennacchi Paolo	Politecnico di Milano, Mechanical Engineering, Milano, Italy

12:20 Discussion

13:00 Break



**MODELLING AND SIMULATION - ROOM C - 11:00 - 12:30**  
**CHAIRS: EUGENIU GRABOVIC, ROBERT YOUNG**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:00	<b>A New Multiscale Approach for the Modelling of Mechanochemical Interactions and Tribofilm Growth</b>	<b>Dini</b>	<b>Daniele</b>	Dini Daniele, Ntioudis Stavros, Ayestaran Latorre Carlos, Ewen James, Turner C. Heath	Imperial College London, Mechanical Engineering, London, United Kingdom	Imperial College London, Mechanical Engineering, London, United Kingdom, University of Alabama, Department of Chemical and Biological Engineering, Tuscaloosa, United States

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:20	<b>A modified viscosity approach for shear thinning lubricants</b>	<b>Ahmed</b>	<b>Humayun</b>	Ahmed Humayun, Biancofiore Luca	Bilkent University, Mechanical Engineering, Ankara, Turkey	Bilkent University, Mechanical Engineering, Ankara, Turkey
11:35	<b>Numerical Analysis of Wear in Hypoid Gears: Influence of Lubrication properties and Wear Partition Factor</b>	<b>Grabovic</b>	<b>Eugeniu</b>	Grabovic Eugeniu, Ciulli Enrico, Artoni Alessio, Gabiccini Marco, Di Puccio Francesca, Mattei Lorenza	Università di Pisa, Dipartimento di Ingegneria Civile e Industriale, Pisa, Italy	Università di Pisa, Dipartimento di Ingegneria Civile e Industriale, Pisa, Italy
11:50	<b>Non-destructive characterization of polymers viscoelastic properties: Towards WLF Coefficients Identification</b>	<b>Maglione</b>	<b>Raffaele</b>	Maglione Raffaele, Farroni Flavio, Genovese Andrea, Sakhnevych Aleksandr, Sanfelice Michele, Timpone Francesco	University of Naples Federico II, Department of Industrial Engineering, Naples, Italy	University of Naples Federico II, Department of Industrial Engineering, Naples, Italy

12:05 **Discussion**

13:00 **Break**

**BIOTRIBOLOGY & BIOMIMETICS - ROOM D - 11:00 - 12:25**  
**CHAIRS: GIUSEPPE CARBONE, CARLOTTA MUMMOLO**

**PRESENTATIONS**

H	TITLE	PRESENTER	LIVIA	AUTHORS	AFFILIATION 1	AFFILIATION 2
11:00	<b>Investigating tactile perception by Friction-Induced Vibrations</b>	<b>Felicetti</b>	<b>Livia</b>	Felicetti Livia, Chatelet Eric, Massi Francesco	Sapienza Università di Roma, Dipartimento di Ingegneria Meccanica e Aerospaziale (DIMA), Roma, Italy	Sapienza Università di Roma, Dipartimento di Ingegneria Meccanica e Aerospaziale (DIMA), Roma, Italy, University of Lyon, Univ. Lyon, INSA Lyon, CNRS, LAMCOS, UMR5259, 69621 Villeurbanne, France, Villeurbanne, France
11:15	<b>Viscoelastic Foot-Ground Contact Model for Balance Assessment</b>	<b>Mummolo</b>	<b>Carlotta</b>	Mummolo Carlotta, Duvert Oceane, Torres Pardo Adriana, Rodriguez Cianca David, Torricelli Diego, Carbone Giuseppe	Politecnico di Bari, Mechanics, Mathematics, Management, Bari, Italy	Politecnico di Bari, Mechanics, Mathematics, Management, Bari, Italy, Spanish National Research Council (CSIC), Cajal Institute, Madrid, Spain
11:30	<b>Lubrication Film Thickness Development of CoCrMo and Ti6Al4V Alloys in a Simulated Small Joint Implant</b>	<b>Odehnal</b>	<b>Lukáš</b>	Odehnal Lukáš, Ranuša Matúš, Vrbka Martin, Krupka Ivan	Brno University of Technology, Faculty of Mechanical Engineering, Department of Tribology, Brno, Czech Republic	Brno University of Technology, Faculty of Mechanical Engineering, Department of Tribology, Brno, Czech Republic
11:45	<b>The Curious Case of Soft Tribology</b>	<b>Pondicherry</b>	<b>Kartik</b>	Pondicherry Kartik, Staudinger Paul, Heinrich Julius	Anton Paar GmbH, Tribology, Graz, Austria	Anton Paar Germany GmbH, Rheometry, Ostfildern, Germany, Anton Paar GmbH, Rheometry and Tribology, Graz, Austria, Anton Paar GmbH, Tribology, Graz, Austria

12:00 Discussion

13:00 Break

## INTERFACIAL PHENOMENA, ADHESION, WETTING - **ROOM E** - 11:00 - 12:50

CHAIRS: ADOLFO SENATORE, NICHOLAS SPENCER

### YOUNG RESEARCHERS IN TRIBOLOGY: KEYNOTE LECTURE

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2	
11:00	Effect of contact history in unloading a flat circular punch from a soft viscoelastic substrate	Papangelo	Antonio	Papangelo Antonio, Ciavarella Michele	Politecnico di Bari, Mechanics, Bari, Italy	Politecnico di Bari, DMMM, Bari, Italy

### PRESENTATIONS

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2	
11:20	The Role of Transfer Films in the Transition between Abrasive and Adhesive Wear in Dry Sliding of PA-GR15 on 52100 Steel	Gebhard	Andreas	Gebhard Andreas, Kuksa Eduard	Leibniz-Institut für Verbundwerkstoffe GmbH, Material Science, Kaiserslautern, Germany	Leibniz-Institut für Verbundwerkstoffe GmbH, Material Science, Kaiserslautern, Germany
11:35	Perfluoroalkyl carboxylic acids as friction modifiers in EHD lubrication	Požar	Tomaž	Požar Tomaž, Polajnar Marko, Kalin Mitjan	University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia	University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia
11:55	Viscoelastic adhesion and fracture: role of rate and size effects	Violano	Guido	Guido Violano, Massimo Capurso and Luciano Afferrante	Department of Materials Science and Engineering, Saarland University, Germany	Department of Materials Science and Engineering, Saarland University, Germany Department of Mechanics, Mathematics and Management, Polytechnic of Bari, Italy
12:10	Electroadhesion tribology for soft robotic grippers: spontaneous zipping induces a 4-orders-of-magnitude increase in the holding force by changing the grasping posture from peeling to wrapping	Cacucciolo	Vito	Massimiliano Mastrangelo, Fabio Caruso, Giuseppe Carbone and Vito Cacucciolo	Dept. of Mechanics Mathematics and Management, Politecnico di Bari, Italy	

12:25 Discussion

13:00 Break

## LUBRICANTS AND LUBRICATION - **ROOM A** - 15:00 - 16:45

CHAIRS: DANIELE DINI, ADAM KARL

### YOUNG RESEARCHERS IN TRIBOLOGY: KEYNOTE LECTURE

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
15:00	Assessment and design of modern lubricants supported by mass spectrometry	Frauscher	Marcella	Frauscher Marcella	AC2T research GmbH, Sustainable Lubrication, Wiener Neustadt, Austria	AC2T research GmbH, Sustainable Lubrication, Wiener Neustadt, Austria

### PRESENTATIONS

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
15:20	Characterization of a tribological contact using in operando Raman Spectroscopy technique	Bolle	Bastien	Bolle Bastien, Wong Janet, Aleiferis Pavlos	Imperial College London, Mechanical Engineering Department, London, United Kingdom	Imperial College London, Mechanical Engineering Department, London, United Kingdom
15:35	Lubricants droplets Can Bounce off Wetted Cylinders	Dai	Qingwen	Dai Qingwen, Chuchen Yue, Wang Jinjiu, Huang Wei, Wang Xiaolei	College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing 210016, China, College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing 210016, China	College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing 210016, China, College of Mechanical and Electrical Engineering, Nanjing University of Aeronautics & Astronautics, Nanjing 210016, China
15:50	Assessment of Stability and Safety of Water-based Hydraulic Fluids	Karl	Adam	Adler Michael, Adam Karl, Riss Arnaud, Neroutsou Aimilia, Drangai Larissa	AC2T research GmbH, TAL, Wiener Neustadt, Austria	AC2T research GmbH, TAL, Wiener Neustadt, Austria, TotalEnergies Lubrificants, Industry, Nanterre, France, TotalEnergies Onetech, Fuels and lubricants, Solaize, France, voestalpine Stahl GmbH, Technical service and energy, Linz, Austria
16:05	Assessment of anti-scuffing properties of stationary gas engine oils	Novotny-Farkas	Franz	Franz Novotny-Farkas, Ameneh Schneider, Christoph Schneiderhofer, Rainer qqqqFranz	Lubex Consulting e.U., Lubricants & Lubrication, Schwechat, Austria	AC2T research GmbH, Oil Condition Sensors, Wiener Neustadt, Austria, AC2T research GmbH, Tribological Testing, Wiener Neustadt, Austria, Lubex Consulting e.U., Lubricants & Lubrication, Schwechat, Austria, Optimal Instruments Prüftechnik GmbH, Area Manager Europe & Asia, Munich, Germany

16:20 Discussion

ASSEMBLEA SOCIETA' ITALIANA DI TRIBOLOGIA - **ROOM A** - 18:00 -20:00

**CONTACT MECHANICS - ROOM B - 15:00 - 16:45**  
**CHAIRS: BHARAT BHUSHAN, MICHELE SCARAGGI**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2
15:00	<b>A macro-scale investigation of the apparent contact between Cross-Country Skis and Snow</b>	<b>Almqvist</b>	<b>Andreas</b> Almqvist Andreas, Kalliorinne K., Sandberg J., Hindér G., Larsson R.	Division of Machine Elements, Luleå University of Technology, Sweden	Division of Machine Elements, Luleå University of Technology, Sweden

**PRESENTATIONS**

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2
15:20	<b>On the Role of Sliding on Contact Area and Interface Separation in Rough Soft Contact Mechanics: An Experimental Study</b>	<b>Scaraggi</b>	<b>Michele</b> L. Algieri1, L. Portaluri1,2, F. Kaiser3, D. Savio3, R. Bactavatchalou3, M. De Vittorio1,2 and M. Scaraggi*,1,2	1 Istituto Italiano di Tecnologia, Center for Biomolecular Nanotechnologies, Arnesano, Lecce, 73010 Italy 2 Dipartimento di Ingegneria Dell'Innovazione, Università del Salento, Lecce, 73100 Italy 3 Freudenberg Technology Innovation SE & Co. KG, Corporate R&D, Weinheim,69469 Germany *correspondence E-mail: michele.scaraggi@unisalento.it	1 Istituto Italiano di Tecnologia, Center for Biomolecular Nanotechnologies, Arnesano, Lecce, 73010 Italy 2 Dipartimento di Ingegneria Dell'Innovazione, Università del Salento, Lecce, 73100 Italy 3 Freudenberg Technology Innovation SE & Co. KG, Corporate R&D, Weinheim,69469 Germany *correspondence E-mail: michele.scaraggi@unisalento.it
15:35	<b>In situ characterization of contact mechanics through X-ray Computed Tomography</b>	<b>Acito</b>	<b>Vito</b> Acito Vito, Dancette Sylvain, Scheibert Julien, Adrien Jerome, Maire Eric, Dalmas Davy	Laboratoire de Tribologie et Dynamique des Systèmes UMR 5513, Univ Lyon, Ecole Centrale de Lyon, ENIS, ENTPE, CNRS,, Auvergne Rhone Alpes, Ecully, France	Laboratoire de Tribologie et Dynamique des Systèmes UMR 5513, Univ Lyon, Ecole Centrale de Lyon, ENIS, ENTPE, CNRS,, Auvergne Rhone Alpes, Ecully, France, Laboratoire MATEIS UMR CNRS 5510, Univ Lyon, INSA Lyon, Auvergne Rhone Alpes, Villeurbanne, France
15:50	<b>Experimental Investigation on Brake Squeal Unpredictability: Role of the Friction Noise</b>	<b>Ciprari</b>	<b>Simone</b> Ciprari Simone, Tonazzi Davide, Saulot Aurélien, Massi Francesco	"La Sapienza" Università di Roma, Dipartimento di Ingegneria Meccanica ed Aerospaziale, Roma, Italy	"La Sapienza" Università di Roma, DIMA, Dipartimento di Ingegneria Meccanica ed Aerospaziale, Roma, Italy, INSA Lyon, LaMCoS, Laboratoire de Mécanique des Contacts et des Structures, Villeurbanne, France
16:05	<b>A Combined Experimental and Numerical Approach to assess Base Excitation of a Viscoelastic Substrate</b>	<b>De Carolis</b>	<b>Simone</b> De Carolis Simone, Putignano Carmine, Soria Leonardo, Carbone Giuseppe	Politecnico di Bari, Dipartimento di Meccanica Matematica e Management, Bari, Italy	Politecnico di Bari, Dipartimento di Meccanica Matematica e Management, Bari, Italy

**WEAR, FRICTION, AND CORROSION - ROOM C - 15:00 - 16:30**  
**CHAIRS: KALIN MITJAN, FELIX POTRYKUS**

**YOUNG RESEARCHERS IN TRIBOLOGY: KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
15:00	<b>Laser surface processing of cutting tools for enhanced wear performance</b>	<b>Pacella</b>	<b>Manuela</b>	Pacella Manuela, Hazzan Kafayat	Loughborough University, Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Loughborough, United Kingdom	Loughborough University, Wolfson School of Mechanical, Electrical and Manufacturing Engineering, Loughborough, United Kingdom

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
15:20	<b>Development of an Innovative Linear Friction Tester for Rubber Testing and Analysis</b>	<b>Avolio</b>	<b>Stefano</b>	Avolio Stefano, Farroni Flavio, Genovese Andrea, Sakhnevych Aleksandr, Timpone Francesco	Federico II, Department of Industrial Engineering, Naples, Italy	Federico II, Department of Industrial Engineering, Naples, Italy
15:35	<b>Experimental Investigation on the Tribocorrosion Behaviour of Metallic Pairs</b>	<b>De Stefano</b>	<b>Marco</b>	De Stefano Marco, Sicilia Alessandro, Ruggiero Alessandro	University of Salerno, Industrial Engineering, Fisciano (SA), Italy	University of Salerno, Industrial Engineering, Fisciano (SA), Italy
15:50	<b>Analysing the DC Voltage Response of Roller Element Bearings under WEC-Critical Conditions</b>	<b>Potrykus</b>	<b>Felix</b>	Potrykus Felix, Pircher Thomas, Wensing Michael, Schlücker Eberhard	Friedrich-Alexander-Universität Erlangen-Nürnberg, Professorship for Fluid System Technology, Erlangen, Germany	Friedrich-Alexander-Universität Erlangen-Nürnberg, Institute of Process Machinery and Systems Engineering, Erlangen, Germany, Friedrich-Alexander-Universität Erlangen-Nürnberg, Professorship for Fluid System Technology, Erlangen, Germany

16:05 Discussion

**FUNDAMENTALS OF TRIBOLOGY - ROOM D - 15:00 - 16:30**  
**CHAIRS: ENRICO CIULLI, STEVE FRANKLIN**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
15:00	<b>Friction increase induced by surface roughness effects in full and mixed lubrication regimes</b>	<b>Sperka</b>	<b>Petr</b>	Sperka Petr, Fryza Josef, Krupka Ivan	Brno University of Technology, Faculty of Mechanical Engineering, Brno, Czech Republic	Brno University of Technology, Faculty of Mechanical Engineering, Brno, Czech Republic

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
15:20	<b>Temporal sequence of deformation twinning under tribological load</b>	<b>Antje</b>	<b>Dollmann</b>	Antje Dollmann, Christian Kübel, Lakshmi Mantha, Alexander Kauffmann, Christian Greiner	Karlsruhe Institute of Technology, IAM-ZM, Karlsruhe, Germany	Karlsruhe Institute of Technology, IAM-WK, Karlsruhe, Germany, Karlsruhe Institute of Technology, IAM-ZM, Karlsruhe, Germany, Karlsruhe Institute of Technology, INT, Karlsruhe, Germany
15:35	<b>Friction behavior of electrochemically corroded polycrystalline diamond and its relation to capillary adhesion</b>	<b>Franklin</b>	<b>Steve</b>	Xiao Chen, Peng Liang, Leriche Cyrian, Hsia Feng-Chun, Weber Bart, Franklin Steve	Advanced Research Center for Nanolithography (ARCNL), Contact Dynamics, Amsterdam, Netherlands	Advanced Research Center for Nanolithography (ARCNL), Contact Dynamics, Amsterdam, Netherlands, University of Amsterdam, Institute of Physics, Amsterdam, Netherlands
15:50	<b>Bi-stable response of a continuous system under dry contact</b>	<b>Tonazzi</b>	<b>Davide</b>	Tonazzi Davide, Massi Francesco	SAPIENZA UNIVERSITY OF ROME, Dept. of Mechanical and Aerospace Engineering, Rome, Italy	SAPIENZA UNIVERSITY OF ROME, Dept. of Mechanical and Aerospace Engineering, Rome, Italy

16:05 Discussion

**JUNE 22**

**PLENARY SESSION  
ROOM A**

**8:30 PLENARY LECTURES**

**LESSONS FROM NATURE:  
BIOINSPIRED MECHANICALLY DURABLE  
AND SELF-HEALING SUPERLIQUIPHILIC/PHOBIC SURFACES  
FOR GREEN TRIBOLOGY**

**BHARAT BHUSHAN**

Academy Professor, The Ohio State University (San Jose, CA)

**CARTILAGE, CONTACT LENSES AND CAR ENGINES:  
LUBRICATION WITH POLYMER BRUSHES**

**NICHOLAS SPENCER**

Department of Materials - ETH Zurich

**10:10 Coffee Break**



**INDUSTRIAL TRIBOLOGY - ROOM A - 10:30 - 12:15**  
**CHAIRS: BOJAN PODGORNIK, ANDREA TRIVELLA**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
10:30	Tribological properties of different base lubricants for stamping: role of their chemical structure and viscosity	Polajnar	Marko	Polajnar Marko, Coga Lucija, Kalin Mitjan	University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia	University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
10:50	A Test Rig for the Dynamic Characterisation of Elastomeric O-rings	Lentini	Luigi	Lentini Luigi, Colombo Federico, Raparelli Terenziano, Trivella Andrea	Politecnico di Torino, DIMEAS, Torino, Italy	Politecnico di Torino, DIMEAS, Torino, Italy
11:05	Study of the influence of diffusible hydrogen on white etching areas formation tendency in bearing steel	Panda	Ashutosh	Panda Ashutosh, Ramkumar Penchaliah, Amirthalingam Murugaiyan	Indian Institute of Technogy Madras, Mechanical Engineering, chennai, India	Indian Institute of Technogy Madras, Mechanical Engineering, Chennai, India, Indian Institute of Technogy Madras, Metallurgical and materials engineering, Chennai, India
11:20	Stratified surface layer – a potential fatigue crack initiation site on rail wheels	Freisinger	Matthias	Freisinger Matthias, Pichelbauer Kurt, Jakob Balasz, Trausmuth Andreas, Six Klaus	AC2T research GmbH, Materials Analysis ans Processings, Wiener Neustadt, Austria	AC2T research GmbH, Materials Analysis ans Processings, Wiener Neustadt, Austria, AC2T research GmbH, Tribological Testing, Wiener Neustadt, Austria, Virtual Vehicle Research GmbH, Rail Systems, Graz, Austria
11:35	Tribological contact in subzero forming of austenitic stainless steel	Podgornik	Bojan	Podgornik Bojan, Pepelnjak Tomaž	Institute of Metals and Technology, Materials testing, Ljubljana, Slovenia	Institute of Metals and Technology, Materials testing, Ljubljana, Slovenia, University of Ljubljana, Faculty of Mechanical Engineering, Ljubljana, Slovenia

11:55 Discussion

## LUBRICANTS AND LUBRICATION - **ROOM A** - 12:15 - 14:00

CHAIRS: ANTONIO PAPANGELO, MARIA CLELIA RIGHI

### YOUNG RESEARCHERS IN TRIBOLOGY: KEYNOTE LECTURE

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
12:15	A comprehensive approach for lubrication of soft viscoelastic and porous media	Putignano	Carmine	Putignano Carmine, Carbone Giuseppe	Polytechnic University of Bari, Department of Mechanics, Mathematics and Management, BARI, Italy	Polytechnic University of Bari, Department of Mechanics, Mathematics and Management, BARI, Italy

### PRESENTATIONS

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
12:35	Contribution of thickener layers to the film formation in grease-lubricated EHD contacts	Klinghart	Benjamin	Klinghart Benjamin, Jacobs Georg, König Florian	RWTH Aachen, MSE - Institute for Machine Elements and Systems Engineering, Aachen, Germany	RWTH Aachen, MSE - Institute for Machine Elements and Systems Engineering, Aachen, Germany
12:50	Aging of polyetheretherketone (PEEK) and polyphthalamide (PPA) in biodegradable base oils and the effects on the tribological behavior	Martins Ferreira	Pedro	Martins Ferreira Pedro, Trindade Bruno, Kalin Mitjan	University of Ljubljana, Laboratory for Tribology and Interface Nanotechnology, Ljubljana, Slovenia	University of Coimbra, Centre for Mechanical Engineering, Materials and Processes, Coimbra, Portugal, University of Ljubljana, Laboratory for Tribology and Interface Nanotechnology, Ljubljana, Slovenia
13:05	High throughput first-principle prediction of interfacial adhesion energies in metal-on-metal contacts	Righi	Maria Clelia	Restuccia Paolo, Marsili Margherita, Righi Clelia	University of Bologna, Physics, Bologna, Italy	University of Bologna, Physics, Bologna, Italy

13:20 Discussion

14:10 Break

16:00 GUIDED TOUR AND SOCIAL DINNER

**MATERIALS, COATINGS & THIN FILMS - ROOM B - 10:30 - 12:15**  
**CHAIRS: FABIAN HÄRTWIG, MANUELA PACELLA**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2
10:30	<b>Nanostructured Multi-Responsive Coatings for Tuning Surface Properties</b>	<b>Giasson</b>	<b>Suzanne</b>	Suzanne Giasson	Université de Montréal, Chemistry and Pharmacy, Montréal, Canada

**PRESENTATIONS**

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2
10:50	<b>Case study research on the applicability of the micro-bending method in the field of tribology</b>	<b>Freisinger</b>	<b>Matthias</b>	Freisinger Matthias, Hahn Rainer, Delic Ivan, Ripoll Manel Rodriguez	AC2T research GmbH, Materials Analysis and Processings, Wiener Neustadt, Austria
11:05	<b>Novel a-C:MoSx hybrid coatings from vacuum arc deposition for use in dry air and high vacuum</b>	<b>Härtwig</b>	<b>Fabian</b>	Härtwig Fabian, Ojeil Mahmoud, Makowski Stefan, Lorenz Lars, Kaulfuß Frank, Weihnacht Volker, Lasagni Andrés Fabián	Technische Universität Dresden, Institute for Manufacturing Science and Technology, Dresden, Germany
11:20	<b>Microstructural and tribological properties of thermally sprayed high entropy alloys coating</b>	<b>Njarakkadu Venugopal</b>	<b>Abhijith</b>	N V Abhijith, Pattayak Abhijit, Kumar Deepak	Indian Institute of Technology Delhi, Centre for Atomotive Research and Tribology, New Delhi, India
11:35	<b>Aluminium Nanocomposites for Demanding Tribological Application</b>	<b>Poudel</b>	<b>Sunil</b>	Poudel Sunil, Bajwa Rizwan, Khan Zakir, Hussain Mian Zahid, Zhang Yi, Zhu Yanqiu, Xia Yongde	University of Exeter, Engineering, EXETER, United Kingdom

## CONTACT MECHANICS - ROOM B - 12:15 - 14:10

CHAIRS: JAN PETRA, ALESSANDRO RUGGIERO

### YOUNG RESEARCHERS IN TRIBOLOGY: KEYNOTE LECTURE

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2
12:15	<b>In-plane and normal elastic coupling in mechanical contacts</b>	<b>Menga</b>	<b>Nicola</b> Menga Nicola, Müller C., Müser M., Carbone Giuseppe	Politecnico di Bari – DMMM	Politecnico di Bari, Politecnico di Bari, Italy, Saarland University, Germany

### PRESENTATIONS

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2
12:35	<b>In-situ experimental study of real contact area formation in sliding contacts based on optical observation of the contact</b>	<b>Jan</b>	<b>Petra</b> Jan Petra, Kalin Mitjan	Faculty of Mechanical Engineering, University of Ljubljana, Laboratory for Tribology and Interface Nanotechnology, Ljubljana, Slovenia	Faculty of Mechanical Engineering, University of Ljubljana, Laboratory for Tribology and Interface Nanotechnology, Ljubljana, Slovenia
12:50	<b>Edge effect in non-adhesive and adhesive contacts of an elastic quarter space with freely sliding edge</b>	<b>Li</b>	<b>Qiang</b> Li Qiang, Popov Valentin L	Technical University of Berlin, Institute of Mechanics, Berlin, Germany	Technical University of Berlin, Institute of Mechanics, Berlin, Germany
13:05	<b>The interplay between adhesion and viscoelasticity in sliding contact mechanics</b>	<b>Mandriota</b>	<b>Cosimo</b> Mandriota Cosimo, Carbone Giuseppe, Menga Nicola	Politecnico di Bari, Department of Mechanics, Mathematics and Management, Bari, Italy	Politecnico di Bari, Department of Mechanics, Mathematics and Management, Bari, Italy
13:20	<b>Controlling the adhesion of elastic solids by means of properly texturized substrates</b>	<b>Pierro</b>	<b>Elena</b> Pierro Elena, Carbone Giuseppe	University of Basilicata, School of Engineering, Potenza, Italy	Polytechnic University of Bari, Department of Mechanics, Mathematics and Management, Bari, Italy, University of Basilicata, School of Engineering, Potenza, Italy
13:35	<b>A generalized Boundary Element methodology for viscoelastic dry and lubricated circular contact mechanics</b>	<b>Santeramo</b>	<b>Michele</b> Santeramo Michele, Putignano Carmine, Vorlauffer Georg, Krenn Stefan, Carbone Giuseppe	Politecnico di Bari, Department of Mechanics, Mathematics and Management, Bari, Italy	AC2T research GmbH, Tribosystem-Modelling and Simulation, Wiener Neustadt, Austria, Politecnico di Bari, Department of Mechanics, Mathematics and Management, Bari, Italy

13:50 Discussion

14:10 Break

16:00 GUIDED TOUR AND SOCIAL DINNER

**MODELLING AND SIMULATION - ROOM C - 10:30 - 12:15**  
**CHAIRS: MARTIN MÜSER, CARMINE PUTIGNANO**

**YOUNG RESEARCHERS IN TRIBOLOGY: KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
10:30	<b>The coaction of viscous and multi-stability hysteresis in adhesive contacts</b>	<b>Müller</b>	<b>Christian</b>	Müller Christian, Samri Manar, Müser Martin, Hensel René, Arzt Eduard	INM-Leibniz Institute for New Materials, Functional Microstructures, Saarbrücken, Germany	INM-Leibniz Institute for New Materials, Functional Microstructures, Saarbrücken, Germany, Saarland University, Materials Science, Saarbrücken, Germany

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
10:50	<b>Multi-Physics and Multi-Scale Prediction of Tribological Behavior of Electric Powertrain</b>	<b>Mohammadpour</b>	<b>Mahdi</b>	Mohammadpour Mahdi	Loughborough University, Wolfson School, Loughborough, United Kingdom	Loughborough University, Wolfson School, , United Kingdom
11:05	<b>Understanding the effect of viscoelasticity in thin film lubrication</b>	<b>Ahmed</b>	<b>Humayun</b>	AHMED HUMAYUN, BIANCOFIORE LUCA	BILKENT UNIVERSITY, MECHANICAL ENGINEERING, ANKARA, Turkey	BILKENT UNIVERSITY, MECHANICAL ENGINEERING, ANKARA, Turkey
11:20	<b>Unravelling disparate microscopic dissipation mechanisms with molecular dynamics: From simple alkanes via ice to bulk-metallic glasses</b>	<b>Müser</b>	<b>Martin</b>	Muser Martin, Atilla Achraf, Gao Hongyu	Dept. of Mat. Sci. & Eng., Saarland University, Germany	Dept. of Mat. Sci. & Eng., Saarland University, Germany
11:35	<b>The effect of fluid viscoelasticity in soft lubrication</b>	<b>Sari</b>	<b>Mehmet Hakan</b>	Sari Mehmet Hakan, Putignano Carmine, Corbone Giuseppe, Biancofiore Luca	Bilkent University, Mechanical Engineering, Ankara, Turkey	Bilkent University, Mechanical Engineering, Ankara, Turkey, Politecnico Di Bari, Mechanical Engineering, Bari, Italy

11:50 Discussion

**WEAR, FRICTION, AND CORROSION - ROOM C - 12:15 - 13:30**  
**CHAIR: HIROYOSHI TANAKA**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
12:15	Understanding the origins of wear in extreme environments by use of modern research equipment	Varga	Markus	Varga Markus	AC2T research GmbH, Synaptic Tribology, Wiener Neustadt, Austria	AC2T research GmbH, Synaptic Tribology, Wiener Neustadt, Austria

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
12:35	An Innovative Approach for Road Roughness Characterization Aimed to Tire Friction Analysis	Stefanelli	Raffaele	Stefanelli Raffaele, Romagnuolo Fabio, Napolitano Dell'Annunziata Guido, Farroni Flavio	University of Naples Federico II, Industrial Engineering, Naples, Italy	University of Naples Federico II, Industrial Engineering, Naples, Italy
12:50	Decomposition of lubricant oil and generation of hydrogen at nascent metal surface	Tanaka	Hiroyoshi	Tanaka Hiroyoshi	Kyushu University, mechanical engineering, Fukuoka, Japan	Kyushu University, mechanical engineering, Fukuoka, Japan

13:05 Discussion

14:10 Break

16:00 GUIDED TOUR AND SOCIAL DINNER

## BIOTRIBOLOGY & BIOMIMETICS - ROOM D - 10:30 - 11:25

CHAIR: ERIK WEIAND

### PRESENTATIONS

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
10:30	<b>Coupling multibody and tribological models to evaluate the artificial hip joint wear</b>	<b>Sicilia</b>	<b>Alessandro</b>	Sicilia Alessandro, De Stefano Marco, Ruggiero Alessandro	University of Salerno, Industrial Engineering, Fisciano (SA), Italy	University of Salerno, Industrial Engineering, Fisciano (SA), Italy
10:45	<b>Friction of Polymer-Surfactant Formulations on Biomimetic Hair Surfaces</b>	<b>Weiland</b>	<b>Erik</b>	Weiland Erik, Ewen James, Rodriguez- Ropero Francisco, Roiter Yuri, König Peter, Angioletti-Uberti Stefano, Dini Daniele	Imperial College London, Mechanical Engineering, London, United Kingdom	Imperial College London, Department of Materials, London, United Kingdom, Imperial College London, Department of Mechanical Engineering, London, United Kingdom, Procter & Gamble, Corporate Functions Analytical and Data & Modeling Sciences, Mason, United States

11:00 Discussion

## FUNDAMENTALS - ROOM D - 11:25 - 12:20

CHAIR: ALFRED JOHN WEYMOUTH

### PRESENTATIONS

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:25	<b>The influence of CO2 atmosphere on the friction of polymers in contact with steel under unlubricated sliding conditions</b>	<b>Velkavrh</b>	<b>Igor</b>	Velkavrh Igor, Kafexhiu Fevzi, Ritschel Falko, Wright Thomas, Fitzek Harald, Schröttner Hartmuth, Haider Heinz	V-Research GmbH, Tribo Design, Dornbirn, Austria	Austrian Centre for Electron Microscopy and Nanoanalysis, Micro-Characterization, Graz, Austria, Austrian Research Institute for Chemistry and Technology, Applied Plastics Technology, Vienna, Austria, V-Research GmbH, Tribo Design, Dornbirn, Austria
11:40	<b>Using lateral force microscopy to measure sliding friction at the atomic scale</b>	<b>Weymouth</b>	<b>Alfred John</b>	Weymouth Alfred John, Riegel Elisabeth, Gretz Oliver, Giessibl Franz J.	University of Regensburg, Physics, Regensburg, Germany	University of Regensburg, Physics, Regensburg, Germany

11:55 Discussion

14:10 Break

16:00 GUIDED TOUR AND SOCIAL DINNER



**JUNE 23**

**PLENARY SESSION  
ROOM A**

**9:00 PLENARY LECTURE**

**SUB-MICRON RESOLUTION EXPERIMENTAL EVIDENCE  
AND THE MECHANISMS OF HIGH LOAD-CARRYING CAPACITY  
OF MULTI-ASPERITY SURFACES**

**MITJAN KALIN**

**LABORATORY FOR TRIBOLOGY AND INTERFACE NANOTECHNOLOGY  
UNIVERSITY OF LJUBLJANA, SLOVENIA**

**9:40 Coffee Break**



**INDUSTRIAL TRIBOLOGY - ROOM A - 10:10 - 11:25**  
**CHAIR: NICOLA MENGA**

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
10:10	<b>Transient temperature measurements at sliding contacts</b>	<b>Senatore</b>	<b>Adolfo</b>	Nosko Oleksii, Tsybrii Yurii, Senatore Adolfo, Tarasiuk Wojciech	University of Salerno, Department of Industrial Engineering, Fisciano - Salerno, Italy	Department of Industrial Engineering, Faculty of Engineering, University of Salerno, Italy, Department of Mechanics and Applied Computer Science, Faculty of Mechanical Engineering, Bialystok University of Technology, Poland, Department of Mechanics and Biomechanics, Faculty of Mechanical Engineering and Ship Technology, Gdansk University of Technology, Poland
10:25	<b>Friction and Wear of Polymer Composites in High Purity Hydrogen under High Sliding Speed</b>	<b>Sawae</b>	<b>Yoshinori</b>	Sawae Yoshinori, Oka Taisei, He Yue, Chen Qian, Morita Takehiro	Kyushu University, Department of Mechanical Engineering, Fukuoka, Japan	Kyushu University, Department of Mechanical Engineering, Fukuoka, Japan
10:40	<b>Pneumatic cylinders breakaway forces measurement</b>	<b>Mazza</b>	<b>Luigi</b>	Raparelli Terenziano, Mazza Luigi, Trivella Andrea	Politecnico di Torino, Department of Mechanical and Aerospace Engineering, Torino, Italy	Politecnico di Torino, Department of Mechanical and Aerospace Engineering, Torino, Italy

10:55 **Discussion**

**LUBRICANTS AND LUBRICATION - ROOM A - 11:25 - 12:40**  
**CHAIR: PAUL STAUDINGER**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:25	<b>Tribological behaviour of MXenes flakes: substrate-dependent tribo-chemical reactions</b>	<b>Rota</b>	<b>Alberto</b>	Rota Alberto, Bellina Nicolas, Rosenkranz Andreas	Università di Modena e Reggio Emilia, Scienze Fisiche, Informatiche e Matematiche, Modena, Italy	Università di Modena e Reggio Emilia, Scienze Fisiche, Informatiche e Matematiche, Modena, Italy, University of Chile, Department of Chemical Engineering, Biotechnology and Materials, Santiago del Chile, Chile

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:45	<b>Enhancement of tribological behaviour of lubricant greases through carbon nanotubes based thickener</b>	<b>Pica</b>	<b>Giuseppe</b>	Senatore Adolfo, Hong Haiping, Pica Giuseppe, Lou Ding	University of Salerno, Department of Industrial Engineering, Fisciano - Salerno, Italy	South Dakota School of Mines and Technology, Department of Electrical Engineering, Rapid City, United States, University of Salerno, Department of Industrial Engineering, Fisciano - Salerno, Italy
12:00	<b>Advanced Tribological Testing of Static and Kinetic Friction Regimes of Lubricating Greases</b>	<b>Staudinger</b>	<b>Paul</b>	Staudinger Paul, Pondicherry Kartik, Heinrich Julius	Anton Paar GmbH, Rheometry, Graz, Austria	Anton Paar Germany GmbH, Rheometry, Ostfildern, Germany, Anton Paar GmbH, Rheometry, Graz, Austria

12:15 Discussion

**12:40 CLOSING REMARKS AND END OF CONFERENCE – ROOM A**

**MATERIALS, COATINGS & THIN FILMS - ROOM B - 10:00 - 11:15**  
**CHAIR: ROBERT YOUNG**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2	
10:00	<b>Micromechanics of the Deformation of 2D Nanomaterials Upon Surfaces</b>	<b>Young</b>	<b>Robert</b>	Young Robert, Li Zheling	University of Manchester, National Graphene Institute and Materials, Manchester, United Kingdom	University of Manchester, National Graphene Institute and Materials, Manchester, United Kingdom

**PRESENTATIONS**

H	TITLE	PRESENTER	AUTHORS	AFFILIATION 1	AFFILIATION 2	
10:20	<b>Substrate Effect on The Alumina Based Ceramic Coatings Developed Using HVOF Thermal Spray</b>	<b>Pattnayak</b>	<b>Abhijit</b>	Pattnayak Abhijit, N.V Abhijith, Kumar Deepak, Jain Jayant, Chaudhry Vijay	Indian Institute of Technology Delhi, Centre for automotive research and tribology, New Delhi, India, Centre for automotive research and tribology, New Delhi, India	Indian Institute of Technology Delhi, Centre for automotive research and tribology, New Delhi, India, Indian Institute of Technology Delhi, Department of materials science and engineering, New Delhi, India, Nuclear power corporation of India limited, Department of Atomic Energy, Mumbai, India
10:35	<b>High temperature tribology of Inconel alloy with B4C reinforcement manufactured by plasma arc deposition</b>	<b>Nohava</b>	<b>Jiri</b>	Nohava Jiri, Rohan Pavel, Novotny Adam	Anton Paar TriTec SA, Product Competence, Corcelles, Switzerland	Anton Paar TriTec SA, Product Competence, Corcelles, Switzerland, Czech Technical University in Prague, Faculty of mechanical engineering, Prague, Czech Republic

10:50 **Discussion**

**MODELLING AND SIMULATION - ROOM B - 11:15 - 12:30**  
**CHAIR: MUHAMMAD SHOAIB SIDDIQUI**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:15	<b>Analytical Model to Predict Temperature of a Railway Brake with Experimental Validation</b>	<b>Topczewska</b>	<b>Katarzyna</b>	Topczewska Katarzyna, Kuciej Michal, Yevtushenko Aleksander	BIALYSTOK UNIVERSITY OF TECHNOLOGY, Department of Mechanics and Computer Science, Bialystok, Poland	BIALYSTOK UNIVERSITY OF TECHNOLOGY, Department of Mechanics and Computer Science, Bialystok, Poland

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
11:35	<b>Ready to use the equation to predict the contact temperature in polymer-steel sliding contacts.</b>	<b>Siddiqui</b>	<b>Muhammad Shoab</b>	Siddiqui Muhammad Shoab, Pozar Tomaz, Kalin Mitjan	University of Ljubljana, Faculty of mechanical engineering, Ljubljana, Slovenia	University of Ljubljana, Faculty of mechanical engineering, Ljubljana, Slovenia
11:50	<b>Sensor integrating plain bearings: design of an energy-autonomous, temperature-based condition monitoring system</b>	<b>Thao</b>	<b>Baszenski</b>	Thao Baszenski, Georg Jacobs, Tobias Gemmeke	RWTH Aachen University, Institute for Machine Elements and Systems Engineering, Aachen, Germany	RWTH Aachen University, Chair of Integrated Digital Systems and Circuit Design, Aachen, Germany, RWTH Aachen University, Institute for Machine Elements and Systems Engineering, Aachen, Germany

12:05 Discussion

**12:40 CLOSING REMARKS AND END OF CONFERENCE – ROOM A**

**WEAR, FRICTION, AND CORROSION - ROOM C - 10:00 - 11:15**  
**CHAIR: YAGI KAZUYUKI**

**KEYNOTE LECTURE**

H	TITLE	PRESENTER			AUTHORS	AFFILIATION 1	AFFILIATION 2
10:00	Mechanical and tribological behavior of HiPIMS plasma nitrided CrCoMo alloy for biomedical application	Zin	Valentina		Zin Valentina, Montagner Francesco, Deambrosio Silvia Maria, Mortaló Cecilia, Miorin Enrico	National Research Council, Institute of Condensed Matter Chemistry and Technologies for Energy, Padova, Italy	National Research Council, Institute of Condensed Matter Chemistry and Technologies for Energy, Padova, Italy

**PRESENTATIONS**

H	TITLE	PRESENTER		AUTHORS	AFFILIATION 1	AFFILIATION 2
10:20	Traction, Stribeck and scuffing characteristics of lubricants in rolling-sliding contacts using twin disc.	Veeregowda	Deepak H.	Veeregowda Deepak H., Patro Debdtut, Josyula Sravan, Prasanna Harish, Alemanno Fabio	Ducom Instruments (EUROPE) B.V., Global Applications Lab, Groningen, Netherlands	Ducom Instruments (EUROPE) B.V., Global Applications Lab, Groningen, Netherlands, Ducom Instruments, Global Applications Lab, Bangalore, India, Ducom Instruments, Global Applications Lab, Groningen, Netherlands
10:35	In-situ Observation of Improvement of Running-in Process by Textured Surface	Yagi	Kazuyuki	Yagi Kazuyuki, Ikezawa Koki	Kyushu University, Department of Mechanical Engineering, Fukuoka, Japan	Kyushu University, Department of Mechanical Engineering, Fukuoka, Japan
10:50	Research of the tribological properties of a new generation of multi-layer nanostructured PVD coatings for increasing the technological lifetime of moulds	Brezinova	Janette	J. Brezinova *1, M. Dzupon 2, L. Sobotova 3, V. Puchy 4, J.Brezina 5 and M.Badida 6	Department of Technology, Materials and Computer Aided Production, Technical University of Košice, Faculty of Mechanical Engineering, Slovakia	1,4,5 Department of Technology, Materials and Computer Aided Production, Technical University of Košice, Faculty of Mechanical Engineering, Slovakia 2 Slovak Academy of Sciences, Institute of Materials Research of SAS, Kosice, Slovakia 3,5 Department of Business Management and Environmental Engineering, Technical University of Košice, Faculty of mechanical engineering, Slovakia

11:05 Discussion

**12:40 CLOSING REMARKS AND END OF CONFERENCE – ROOM A**

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