

Lubricated Contact, Cadiz, 2015

12-17 April 2015, Cadiz, Spain
Program and abstracts



There will be a small welcome party for participants on Sunday 12 April at 7 pm at the Parador de Cádiz. Accompanying persons are welcome to attend.

Monday 13 April

9:00-9:15 *Introduction*

9:15-10:00 **Nicholas D. Spencer** (ETH Zürich, Switzerland)

Tailoring surfaces for tribology

10:00-10:30 coffee

10:30-10:55 *Influence of Surface Textures on the Viscous Friction of Elastomeric Seals*

Martin Zimmermann, Leibniz Universität Hannover

10:55-11:20 *Relating stochastic roughness to friction in lubricated contacts*

Julien Bonaventure, Ecole Centrale de Lyon

11:20-11:45 *Vibration analysis of rotating shaft on textured hydrodynamic journal bearings*

Jocelyn Rebufa, Ecole Centrale de Lyon

11:45- 12:10 *Understanding the lubrication mechanism of ionic liquids in steel-steel and $Si(100)$ – silica contacts: a surface-analytical approach*

Antonella Rossi, Università di Cagliari and ETH Zürich

12:10-14:00 Lunch break, participants responsible for own lunch

14:15-15:00 **Mark Rutland** (KTH, Sweden)

Interfacial ordering and nanotribological properties of ionic liquids

15:00-15:30 coffee

15:30-15:55 *Electrical charging effects on sliding lubrication properties of a model confined ionic liquid*

Rosario Capozza, International School for Advanced Studies (SISSA)

15:55-16:20 *MD simulation of ionic liquids nanoconfined between oxide surfaces*

Nicolas Voeltzel, Université de Lyon

Tuesday 14 April

9:00-9:45 **Noritsugu Umehara** (Nagoya University, Japan)

In-situ observation of sliding surface of carboneous hard coatings with reflectance spectroscopy

9:45-10:10 *Detection of adsorption layers on DLC coatings*

Rok Simič, University of Ljubljana

10:10-10:40 coffee

10:40-11:05 *Understanding the humidity-related reversible friction behavior of silicon-oxide doped diamond-like carbon films*

Komlavi Koshigan, Ecole Centrale de Lyon

11:05-11:30 *The influence of coating properties on the evolution of surface topography during running-in*

Elio Piras, SKF Engineering and Research Centre

11:30-11:55 *Surface passivation and boundary lubrication of self-mated tetrahedral amorphous carbon asperities under extreme tribological conditions*

Pedro A. Romero, Fraunhofer Institute for Mechanics of Materials IWM

12:00-13:30 Lunch at conference location

13:30-15:30 **Poster Session**

15:30-16:15 **Douglas Jayne** (Lubrizol, USA)

Developing bench tests with real engine hardware

16:15-16:40 *Gemini interfaces and thermal fluctuation lubrication*

W. Gregory Sawyer, University of Florida

16:40-17:05 *Microscopic observation of friction characteristic of ZnDTP-derived tribofilms*

Masabumi Masuko, Tokyo Institute of Technology

17:05-17:30 *Development and applications of Stribeck concept*

Deepak Halenahally Veeregowda, Ducom Instruments Europe B.V and University of Groningen

17:30-17:55 *The effect of dopants on the tribochemical performance of DLC in the presence of ZDDP*

Louise Austin, Imperial College London

Wednesday 15 April

9:00-9:45 **Philippa Cann** (Imperial College London, UK)

Synovial fluid lubrication of artificial joints

9:45-10:10 *Tactile Perception of Topical Formulations*

Lisa Skedung, SP Technical Research Institute of Sweden AB

10:10-10:40 coffee

10:40-11:25 **Denis Mazuyer** (Ecole Centrale de Lyon, France)

Surface phenomena and friction in thin film lubrication

11:25-11:50 *Multi-scale study of confined lubricants in presence of surface grains with different slip properties*

Daniele Savio, Karlsruhe Institute of Technology (KIT)

11:50-12:15 *Quick-and-easy lubricant limiting shear stress measurement from the dynamic oscillating tribometer*

Emmanuel Rigaud, Ecole Centrale de Lyon

12:15-12:10 Nanotribological responses of a molecularly thin lubricant confined between rough surfaces

Ramin Aghababaei, EPFL

12:10 **Afternoon Free**

The conference banquet will take place in the evening of Wednesday 15 April.

Thursday 16 April

9:00-9:45 **Robert Carpick** (University of Pennsylvania, USA)

Atomic-scale mechanisms in friction and wear

9:45-10:10 *Morphological quantitative approach of boundary lubrication limits*

Lukasz Wojciechowski, Poznan University of Technology

10:10-10:30 coffee

10:30-10:55 *Thermally-induced evolution of silicon oxide-doped hydrogenated amorphous carbon: effect on nanoscale tribo-mechanical properties, surface structure, and chemistry*

Filippo Mangolini, Ecole Centrale de Lyon

10:55-11:20 *Adhesion and friction in mesoscale graphite contacts*

Elad Koren, IBM Research

11:20-11:45 *Confinement-induced lubrication of polymer-brush coatings*

Christian H. Mathis, ETH Zürich

11:45-13:15 Lunch at conference location

13:15-14:00 **Roland Bennewitz**, Leibniz-Institut für Neue Materialien, Germany

Molecular control of nano-scale friction

14:00-14:25 *Nanoscale engineering of transition-metal dichalcogenides for tribological applications*

Antonio Cammarata, Czech Technical University

14:25-14:50 Control of friction and wear on the nanoscale by ultrasonic vibrations

Reinhold Wannemacher, Madrid Institute of Advanced Studies, IMDEA Nanociencia

14:50-15:20 Coffee break

15:20-15:45 *Nanoscale friction of uniaxially stretched polymer films*

Marina Ruths, University of Massachusetts Lowell

15:45-16:10 *Role of microstructure on corrosion initiation of an experimental tool alloy: a Quantitative Nanomechanical Property Mapping study*

Rubén Álvarez-Asencio, Fundación Imdea Nanociencia

Friday 17 April

9:00-9:45 **Gustavo Luengo**, L'Oreal, *Biotribology of the Cosmetic Substrate. Stratum Corneum structure and response* L'Oréal

9:45-10:10 *Kinetic friction in lubricated nanotribological systems*

Andras Vernes, Austrian Center of Competence for Tribology

10:10-10:40 coffee

10:40-11:05 *Friction and wear of MoS₂/WS₂ fullerene-like nanoparticles*

Lev Rapoport, Holon Institute of Technology

11:05-11:30 *Dynamic lateral force spectroscopy of confined lubricant layers*

Marc-Dominik Krass, Leibniz-Institut für Neue Materialien gGmbH

11:30-11:55 *Production of automotive grease from fish pond mixed culture algae oil*

Ofoegbu Obinna, University of Agriculture, Makurdi

11:55-12:15 Closing remarks

12:15 End of meeting