44th LEEDS LYON SYMPOSIUM ON TRIBOLOGY

SEPTEMBER
4-6, 2017
LYON
FRANCE

ORGANIZED BY LAMCOS

TRIBOMOTION: WHERE PERFORMANCE AND MOTION MEET FRICTION

http://leeds-lyon.sciencesconf.org/

UNIVERSITÉ DE LYON

cnrs

LaMCoS UMR 5259

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

• PROGRAMME AT A GLANCE

	Sunday 3rd September	Monday 4th September
8:00		Welcome / Registration
9:00		Opening Welcome adress
		9:45 10:30 Multiscale Contact Mechanics For Rough Surfaces With Applications To Rubber Friction, Adhesion And The Leakage Of Seals
10:00		Coffee break
11:00		11:00 11:45 Capillary Effects On Friction: From Nano-confined Ionic Liquids To Ski Friction
		Group picture
12:00		Lunch
13:00		13:40 15:00 P4-1 Roughness & Adhesion P6-1 Friction and wear Lubricated contacts P5-1 Running-in & Tribosystems
14:00		
15:00		Coffee break
		15:20 16:40 P4-2 Roughness & Sealing P6-2 Dry friction and wear P5-2 Multi-facets of EHL
16:00	On-site registration opening	Coffee break
17:00		17:00 18:00 P4-3 Contact Mechanics P1-1 Bio-interface and biotribology I P5-3 Hydodynamics and thin films
18:00	Buffet	
19:00		Poster session
20:00		
21:00		
22:00		

	Tuesday 5th September	Wednesday 6th September
8:30 9:00	P1 M Carré (Invited) P3 T Kato (invited) P2 M Spuria (invited)	P6 J Seabra (invited) P5 A Martini (invited) P4 JM Vacherand (invited)
	Break	Break
9:10 10:30	P1-2 Bio-interface and biotribology II P3-1 Diamond-like carbon films in boundary lubrication P2-1 Automotive applications	P6-4 Hydrodynamic and elastohydrodynamic lubrication P5-4 MD simulation of liquid interfaces P4-6 Rubber blends
	Coffee break	Coffee break
11:00 12:20	P1-3 From cells to well-being P3-2 Lubricant additives for boundary lubrication I P2-2 Measurement technics for both tribology and rheology	P6-5 Fretting and surface topography P3-4 Lubricant additives for boundary lubrication II P4-7 Roughness and averaging
	Lunch	Lunch
14:00 15:40	P2-3 Modelling P4-4 Texturing I P3-3 Solid lubrication processes of carbon-based material	P5-5 Wear and fretting modelling P3-5 Tribofilms in severe contacts P4-8 Polymers and contact
	Coffee break	Awards and Closure
16:10 17:50	P2-4 Elastohydrodynamic lubrication P4-5 Texturing II P6-3 DLC/Coatings	
	Banquet	

Welcome

to Valpré, venue for the

44TH LEEDS LYON SYMPOSIUM ON TRIBOLOGY

'TRIBOMOTION: WHERE PERFORMANCE AND MOTION MEET FRICTION'.

Tribology is the study of the science and engineering of interacting surfaces in relative motion. While many tribology conferences have addressed various aspects of surfaces, this Leeds-Lyon Symposium will focus on the relationship between motion and friction - Tribology enables motion - and how to improve the system's performance through tribological considerations. The velocity in tribological contacts can vary from barely perceptible (as in some tectonic flows, for example) to supersonic (as in some high-speed foil bearings). The motion of surfaces can vary in kinematic complexity, from simple steady sliding to movements that are highly variable in time and direction. Examples of areas of interest include, but are not limited to:

- Sports and leisure activities, areas in which motion is a major parameter,
- Mechanical transmissions, where complex geometry or kinematics superpose,
- Biomechanical applications, such as the human joints or the eyelid.

Indeed, the performance of any item suggested above is directly related to friction. Depending on the desired outcome, the optimal friction may be either maximum or minimum. These topics are exceedingly broad in terms of the application as well as the tribological mechanisms taking place (mechanics, physics, chemistry, materials science, etc.).

During conference, close to 200 presentations (oral and poster) among the unprecedented number submitted will be given, related to the following conference topics:

- **Energy and friction in sport and leisure activities**
- **Motion and performance of everyday life objects**
- **Smart interfaces and adaptive tribo-systems**
- **Performance of viscoelastic interfaces**
- **Friction and energy saving in machine elements**
- **Tribological performance evaluation and rating**
- **Dissipative processes in dynamic biotribology**

• PARTNERS & SPONSORS

MANUTECH-SISE
Science et Ingénierie des Surfaces et Interfaces
UNIVERSITE DE LYON

ATM
Association de TriboMécanique
Society of TriboMechanics: Organizer of the Leeds-Lyon Symposium on Tribology

SKF

TOTAL

RATP

MICHELIN
Une meilleure façon d'avancer

SAFRAN

INSTITUT CARNOT
Ingénierie@Lyon

SCIENTEC

• PRACTICAL INFORMATION

CONTACT

If you need assistance, please contact **Sophie De Oliveira or Emmanuel Montero** (Leeds-Lyon Symposium Secretariat) who will be happy to assist you.

VENUE / DIRECTIONS

Valpré Lyon - BP 165, 1 chemin de Chalin, 69131 ECULLY Cedex
Tel : +33 4 72 18 05 05 - E-mail : reception@valpre.com - www.valpre.com

VALPRÉ DEPARTURE

- **Free shuttles will be available after the Symposium closure on Wednesday afternoon (16:30)**
  - from Valpré to Part-Dieu railway station
  - from Valpré to Saint Exupery Airport.

  Booking on-site, on a first arrived first served basis.

- **By car**: Valpré is located at 3 minutes from the highway intersection Valvert (A6 to Paris/Marseille, Peripherique TEO to Geneva/Grenoble)

- **Taxi to St Exupery Airport**: This should take about 40 minutes and cost approximately 60 euros (85 euros after 19:00).

- **Taxi to Part Dieu Train Station**: This should take about 30 minutes and cost approximately 30 euros.

- **Bus/Metro/Rhônexpress**

  > **To the Part Dieu Train station (45 minutes):**
  Take the bus n°19 (see access map) direction Hotel de Ville, stop Gorge de Loup.
  Then take Metro D direction Gare de Vénissieux, stop Saxe Gambetta.
  Then take Metro B direction Charpennes, stop Part Dieu.

  otherwise:
  Take the bus n°19 (see access map) direction "Hotel de Ville", stop "Hotel de Ville".
  Then take Metro A direction "Vaux-enVelin-La Soie", stop "Charpennes".
  Then take Metro B direction "Oullins", stop "Part Dieu".

  > **To the St Exupery Airport:** follow the instructions to go to Part Dieu train station then take Rhônexpress direction Airport (30 minutes).

TECHNICAL PROGRAMME

There may be some amendments to the Provisional Technical Programme displayed on the Leeds-Lyon website, please check the programme displayed at each front door session room.

SYMPOSIUM BANQUET

The Symposium banquet will take place on the evening of Tuesday 5 September at the "Palais de la Bourse" (address : Place de la Bourse, 69002 Lyon).

For security reason, Symposium Banquet can be accessed only upon presentation of the entry ticket (provided with delegate bags).

Coaches will leave Valpré at 18:30 to the dinner place. A guided tour of the surrounding area will be possible for the first 2 coaches leaving at 18:00 prompt.

GROUP PICTURE

The group picture will be taken on Monday at 11:45.

SYMPOSIUM MEAL TIMES

Sunday 3 September
18:00 – 21:00 Buffet

Monday 4 September
07:30 – 8:30 Breakfast
12:00 – 13:40 Lunch
18:30 – 21:00 Buffet (in parallel with Poster Party)

Tuesday 5 September
07:30 – 08:30 Breakfast
12:20 – 14:00 Lunch
18:30 – 23:00 Symposium Dinner at the « Palais de la Bourse »

Wednesday 6 September
07:30 – 08:30 Breakfast
12:20 – 14:00 Lunch

INTERNET ACCESS

Free WiFi access is available in Valpré.

SMOKING POLICY

Valpré is a designated no-smoking building. If you wish to smoke, please do so outside the buildings.

SPECIAL EVENT - PLAY TO THE "CAROM BILLIARDS"

A special event is organized. Play to the «Carom Billiards» and thus practice tribology in a casual frame. The event is located close to the reception.

POSTER SESSION AND AWARDS

Posters may be fixed from Sunday 16:00 (in Room 4), and should be removed before 14:00 on Wednesday.
A poster party including a poster session will take place on Monday from 18:30 to 21:00. Authors who are willing to present their poster work are encouraged to stand close to it during the main poster session.
Approximately 65 posters are going to be exposed during the conference, and all of them will compete for the poster prizes. During the poster party, all the attendees will be invited to vote for the three best posters. The most rated posters will be announced at the beginning of Tuesday morning sessions, and their authors will be invited to present their work to an international jury during the coffee breaks. Afterwards, the jury will elect the best and the second best posters. The results will be announced during the closing ceremony, and the first author of these two posters will be awarded 300 and 200 euros respectively

MAURICE GODET AWARD

To honour the memory of Professor Maurice Godet, a prize of 1000 euros will be given to the best paper and oral presentation by a young researcher. To be eligible the following criteria are applied:
- the applicant has submitted a full-length paper in the special issue of Tribology International or to Journal of Engineering Tribology, before the 28th of July.
- the applicant is a registered PhD student or within 3 years of graduation of a research degree or has defended his PhD in 2017.
- the applicant must present the work at the symposium.

A panel of four experts is constituted to consider the work of each applicant.

• SPEAKERS AND SESSION CHAIRS GUIDELINES

The schedule for the sessions is important and so please respect your allotted presentation time:
- **Keynotes speakers: 35-40 minutes presentation plus 5-10 minutes for discussion/ questions**
- **Invited speakers: 20-25 minutes presentation plus 5-10 minutes for discussion/ questions**
- **Parallel Session speakers: 15 minutes presentation plus 5 minutes for discussion/ questions.**

Each room is equipped with a podium, screen, microphone, laptop computer and data projector. Presenters may bring their own laptop computer. All computers for a particular session will be active during the session with a port video switch used to allow a quick transition from one presenter to the next.
Hopefully, **speakers and session chairs** will arrive at the meeting rooms at the beginning of the break to set up and test their equipment and presentation. Technical support will be available to assist.

Thank you and enjoy the conference!

Session chairs

A session folder for your session will be located on the table. The folder will contain your schedule, the addendum to show last minute changes to the program (changes and cancellations).

Ensure you have a full complement of speakers and some bibliographical details to introduce each speaker. Only the nominated presenter appears in the program.

Double-check with your speakers on required visual aids and remind your Chair Assistant to work with the Audio Visual Technician to be sure the equipment is in good working order prior to the session start time.

Begin on time and stay on schedule. Keep your opening remarks brief. Consider reminding the speaker that he has between two and three minutes remaining time. If there is a no-show, do not move the later speakers up into the no-show slot. Presentations are scheduled in the program guide and changing times could result in attendees missing a presentation they were looking for. Rather, take a short "stretch break" until the next speaker.

Members and member representatives should conduct themselves and their activities in a professional manner marked by integrity and a spirit of fair play so as to not disrupt meeting activity.

Thanks to all the speakers for their participation.

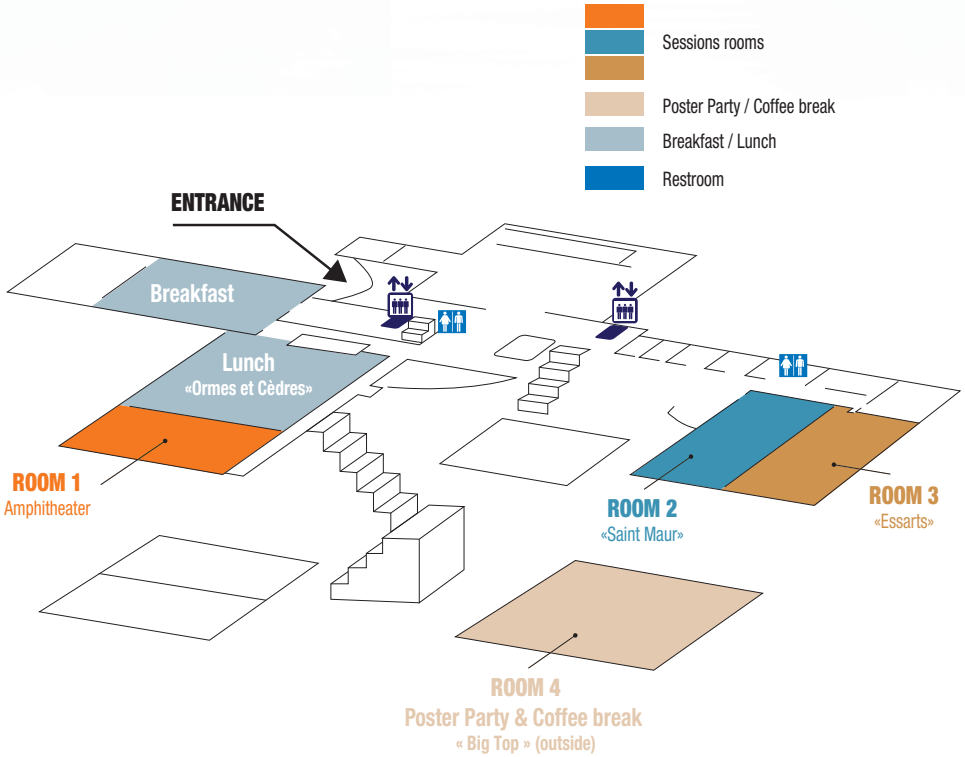
• SYMPOSIUM DINNER

Palais de la Bourse, (address : Place de la Bourse, 69002 Lyon)

An outstanding city of Lyon building listed as a Historical Monument in 1994, the Palais de la Bourse is the perfect setting for all your major events. Architect René Dardel designed this three-story palace at the heart of the Lyon Presqu'île (peninsula). A typical late nineteenth-century construction in a classical style, it was inspired by the Lyon City Hall and the Palais des Beaux-Arts. Imposing, majestic and overlooking Rue de la République, the venue was designed to house the Chamber of Commerce, the Commercial Court, the Labor Court, the Companies of Stockbrokers, Silk Traders and Merchants, an Art and Industry Museum and stores. It was built in 1853 and inaugurated by Napoleon III and Empress Eugénie on August 25, 1860.

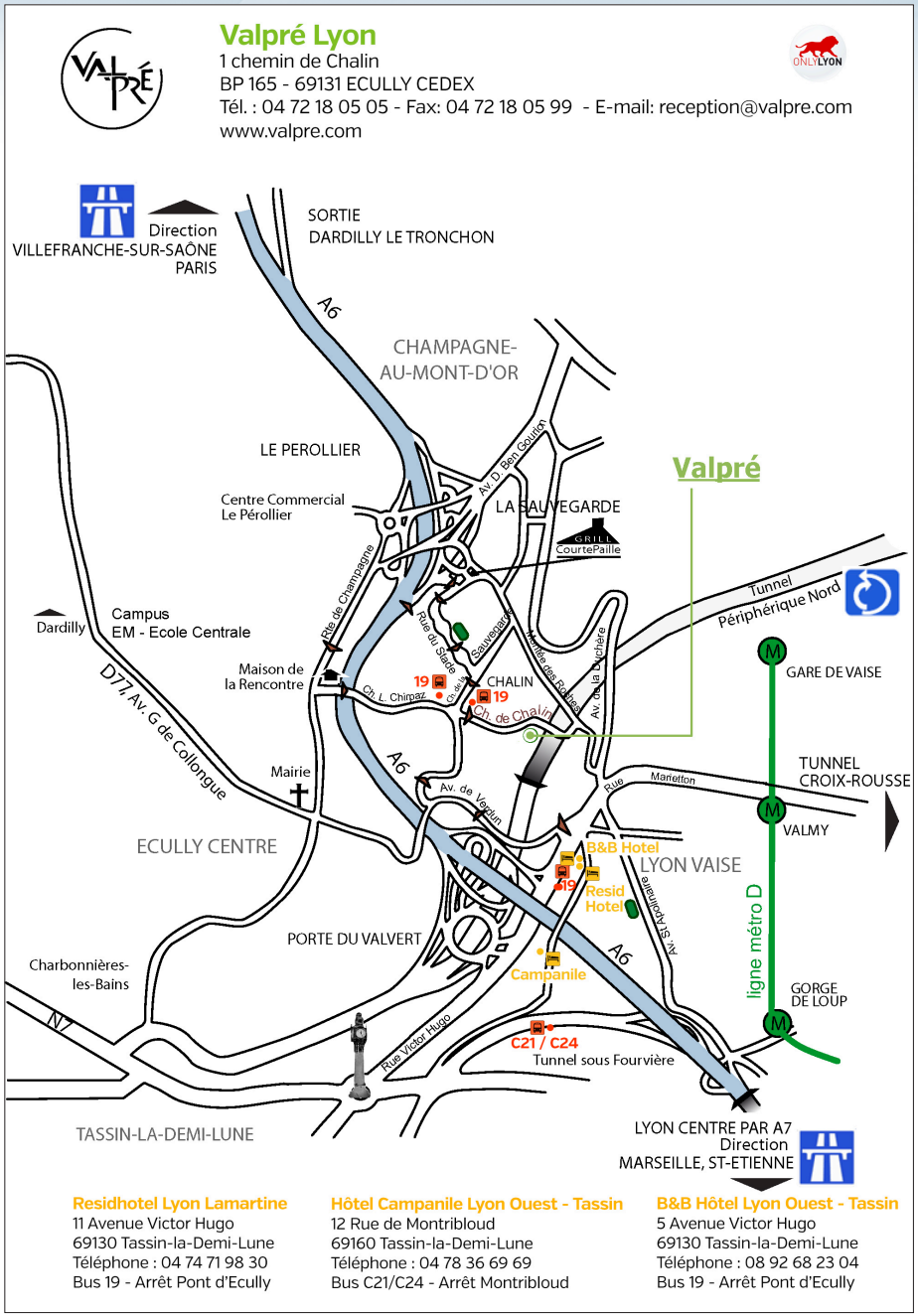
A jewel of the Lyon architectural heritage, the Corbeille room is captivating by the paintings on the ceiling, which constitute one of the most remarkable decorative elements in the palace. The central painting, which is located 25 meters above the floor, represents The Apotheosis of the City of Lyon, represented with its customary attributes and symbolic figures personifying Work, Trade, the Rhône, the Saône, etc.

• VALPRE MAP

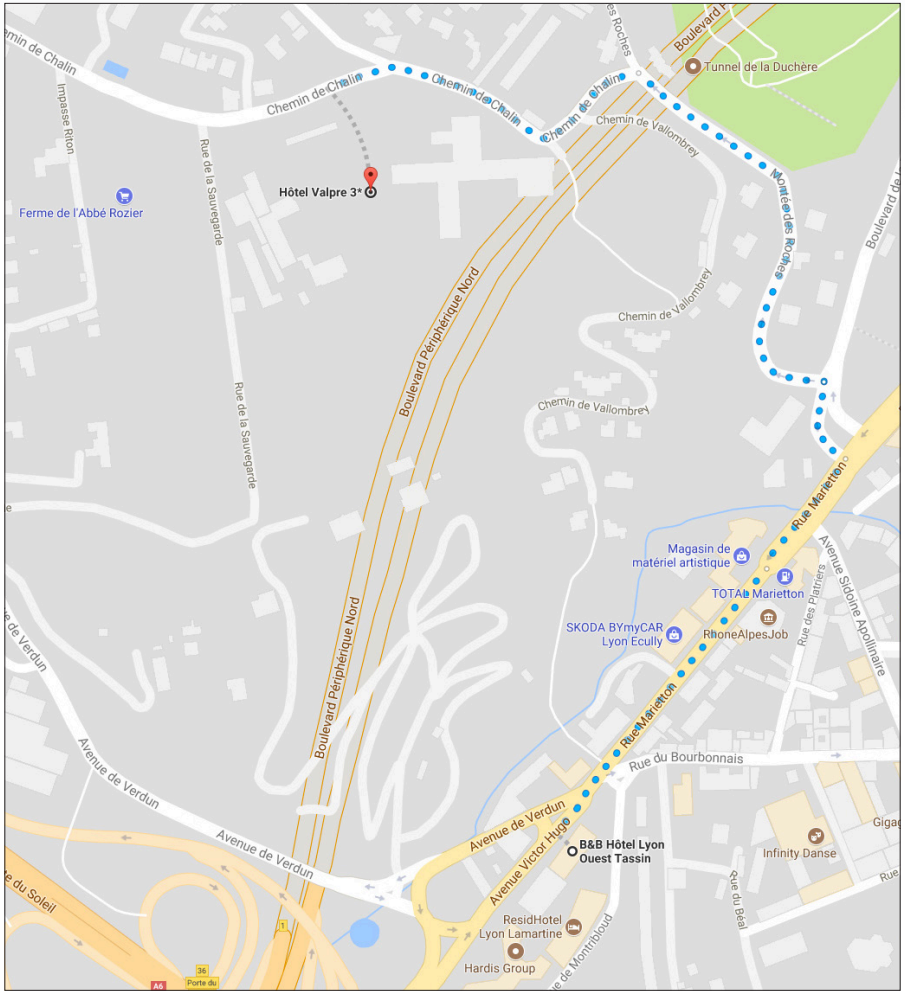


Presentations will be held in the **Room 1 (Theater)**, **Room 2 ("Saint Maur")** or **Room 3 ("Essarts")** sign-posted from reception. Poster session and coffee break will be held in **Room 4** located outside, under the big top, on the lawn. Please see the full programme for the appropriate room.

• ACCESS MAP



• WALKING ACCESS (FROM B&B HOTEL)



Monday 4th September 2017

MORNING

8:00 - 9:30	Registration	
9:30 - 9:45	**Welcome address (Room 2+3)**	
9:45 - 10:30	**Plenary Keynote (Room 2+3)** ***Bo Persson***	Multiscale Contact Mechanics For Rough Surfaces With Applications To Rubber Friction, Adhesion And The Leakage Of Seals

10:30 - 11:00	**COFFEE BREAK**

11:00 -11:45	**Plenary - Keynote (Room 2+3)** ***Lydéric Bocquet***	Capillary Effects On Friction: From Nanoconfined Ionic Liquids To Ski Friction
11:45 - 12:00	**Group picture**	

AFTERNOON

	ROOM 1	ROOM 2	ROOM 3
13:40 - 15:00	**P4-1 Roughness & Adhesion** ***Chair: B Persson***	**P6-1 Friction and wear Lubricated contacts** ***Chair: K Tanaka***	**P5-1 Running-in & Tribosystems** ***Chair: A Clarke***
13:40 14:00	The effect of roughness on traction between contacting bodies ***Junki Joe,*** *University of Michigan*	Study of the effects of gasoline contamination in engine oil on friction and wear ***Mahdiyar Nejadhamzeeigilani,*** *IFS, School of Mechanical Engineering, University of Leeds*	Analysis of the running-in behavior of a thermally sprayed coating ***Dominic Linsler,*** *Karlsruhe Institute of Technology*
14:00 14:20	How roughness affects adhesion or, why does food wrap cling again? ***Martin Müser,*** *Universität des Saarlandes*	The influence of micropitting on the friction coefficient of two lubricated surfaces - an experimental investigation ***Thomas Touret,*** *Safran Transmission Systems, Ecole Catholique d'Arts et Métiers de Lyon, Laboratoire de Mécanique des Contacts et des Structures*	Effect of thrust washer bearing surface characteristics on wear in a planetary gear train ***Ellen Bergseth,*** *KTH Royal Institute of Technology, Royal Institute of Technology*
14:20 14:40	Effects of viscoelasticity and surface roughness on rubber adhesion ***Leonid Dorogin,*** *Forschungszentrum Jülich GmbH*	Friction modifiers for motorcycle wet clutch applications: is compromise necessary ***David Gillespie,*** *Croda Europe Ltd*	Investigating Application of Honeycomb Abradable Lining in Aero-engine Turbine Stage ***Zhang Boxiu,*** *Department of Mechanical Engineering, University of Sheffield*
14:40 15:00	On the dependency of friction on load: theory and experiment ***Oleg Braun,*** *Institute of Physics NASU*	Evaluation and improvement of cavitation erosion behaviour of different steels in saltwater using electrochemical methods ***Tobias Amann,*** *Fraunhofer Institute for Mechanics of Materials IWM, Fraunhofer Institute for Mechanics of Materials*	The Tribological Performance of Gas Turbine Lubricants ***Jake Airey,*** *Department of Chemical Engineering*

15:00 - 15:20	**COFFEE BREAK**

Monday 4th September 2017

AFTERNOON

	ROOM 1	ROOM 2	ROOM 3
15:20 - 16:40	**P4-2 Roughness & Sealing** ***Chair: M Müser***	**P6-2 Dry friction and wear** ***Chair: V Yastrebov***	**P5-2 Multi-facets of EHL** ***Chair: C Hooke***
15:20 15:40	Viscoelastic reciprocating motion between rough interfaces ***Putignano Carmine,*** *Politecnico di Bari*	Effect of tungsten carbide addition on the tribological behavior of Astaloy 85Mo powder consolidated via spark plasma sintering ***Michell Cano,*** *Surface Phenomena Laboratory, Polytechnic School of the University of São Paulo*	The effect of molecular structure on flow in an elastohydrodynamic contact ***Stephen Jeffreys,*** *Imperial College London*
15:40 16:00	A simple evaluation of static sealing performance of rough surface using watershed concept ***Satoshi Momozono,*** *Tokyo Institute of Technology*	Effect of abrasive particle size on friction and wear behaviour of various microstructures with the same chemical composition and similar hardness levels - ***Céline Trevisiol,*** *Sorbonne Universités, Université de technologie de Compiègne, CNRS, UMR 7337 Roberval, Centre de recherche Royallieu*	Elastohydrodynamic lubrication and surface fatigue modelling of spur gears over the meshing cycle ***Alastair Clarke,*** *Cardiff University*
16:00 16:20	The contact between rough surfaces in presence of a fluid flow in the interface: a strong coupling scheme ***Andrei Shvarts,*** *Centre des Matériaux, MINES ParisTech, CNRS UMR 7633*	Subsurface dynamic recrystallization doninated wear mechanism of nanostructured copper in low-amplitude oscillating ***Han Zhong,*** *Institute of Metal Research, CAS*	Friction on a border of mixed EHL contact ***Petr Sperka,*** *Brno University of Technology*
16:20 16:40	Effects of surface roughness on local friction and temperature distributions in fretting contacts ***Wenjie Qin,*** *Faculty of Engineering, University of Nottingham, School of Mechanical Engineering, Beijing Institute of Technology*	Multi-scale morphological characterization of automobile worn brake pads ***Laurent Coustenoble,*** *Laboratoire d'automatique et de mécanique industrielles et humaines*	Thermomecanical study of high speed rolling element bearing: a simplified approach ***Dimitri Niel,*** *Laboratoire de Mécanique des Contacts et des Structures, ECAM Lyon, Centre Technique des Industries Mécaniques*
16:40 - 17:00	**COFFEE BREAK**		
17:00 - 18:00	**P4-3 Contact Mechanics** ***Chair: G Carbone***	**P1-1 Bio-interface and biotribology I** ***Chair: M Bryant***	**P5-3 Hydodynamics and thin films** ***Chair: P Sperka***
17:00 17:20	Hydrogel Contact Mechanics ***Robert Carpick,*** *Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania*	Assessment of the performance of agents used to increase grip in rock climbing ***Matt Carre,*** *The University of Sheffield*	Slipping zones in microsystems for improved load support ***Daniele Savio,*** *Fraunhofer IWM, MicroTribology Center µTC*
17:20 17:40	Adhesive contact near full contact: generalized tabor parameter, loading and unloading full solution ***Michele Ciavarella,*** *Politecnico di Bari*	Effect of combinaion of proteins on frictional property for joint prosthesis materials ***Kazuhiro Nakashima,*** *Kyushu University*	Thermo-hydrodynamic FE-analysis of journal bearings: efficient coupling of the Reynolds and Navier-Stokes equations ***Marcel Bauer,*** *Technical University Darmstadt, Department of Mechanical Engineering, Institute of Applied Dynamics*
17:40 18:00	The role of Nayak's parameter in elastic contact of rough surfaces ***Vladislav Yastrebov,*** *Centre des Matériaux, MINES ParisTech, CNRS UMR 7633*	Wear performance and mechanical characterization of newly designed UHMWPE/hydrogel composites for application in artificial joints ***Juan-Carlos Baena,*** *School of Mechanical and Manufacturing Engineering, UNSW*	Numerical and experimental study of water lubricated spiral groove face seals ***Noël Brunetiere,*** *Institut P' CNRS Université de Poitiers - ENSMA UPR 3346 SP2MI*
18:30 - 21:00	**BUFFET - POSTER PARTY (ROOM 4)** *- See details at the end of the programme*		

Tuesday 5th September 2017

MORNING

	ROOM 1	ROOM 2	ROOM 3
8:30 - 9:00	**P1 -*Invited speaker*** ***Matt Carré (Chair: B. Bou-Said)*** Frictional interactions between hands and sports equipment - *Department of Mechanical Engineering, The University of Sheffield*	**P3 -*Invited speaker - Takashi Kato (Chair: J Fontaine)*** Possibility of elasto-hydrostatic evolved-gas bearing as one of the mechanisms of superlubricity - *Surface Science and Tribology Lab Department of Mechanical Engineering, School of Engineering, The University of Tokyo*	**P2 -*Invited speaker*** ***Marco Spuria (Chair: A Saulot)*** Friction in high performance engine - *Internal Combustion Engine Engineer*
9:00 - 9:10	BREAK		
9:10 - 10:30	**P1-2 Bio-interface and biotribology II** ***Chair: M Carré***	**P3-1 Diamond-like carbon films in boundary lubrication** ***Chair: T Kato***	**P2-1 Automotive applications** ***Chair: M Spuria***
09:10 09:30	Frictional coefficients of living vascular cell monolayers ***Emily Clark,*** *University of Leeds*	Influence of tribofilm formation in DLC–steel line contacts on friction - ***Jakob Moder,*** *Chair of Mechanical Engineering, Montanuniversität Leoben*	Local and global friction phenomena in rolling and slipping tires - ***Gert Heinrich,*** *Leibniz-Institut für Polymerforschung Dresden e. V*
09:30 09:50	The self-repair behavior of cell overlay induced by the surface texture on Co-Cr-Mo alloy ***Liguo Qin,*** *Xi'an Jiaotong University*	Effect of mating material on friction and wear properties of a-c:H DLC in boundary base oil lubrication - ***Kouami Auxence Melardot Aboua,*** *Department of Mechanical Science and Engineering, Graduate School of Engineering, Nagoya University*	Improved calculation of load-dependent gear losses by consideration of so far disregarded influences ***Thomas Jurkschat,*** *FZG - Gear Research Centre, Technical University of Munich (TUM)*
09:50 10:10	Tribology of Surfaces: A Study in Cartilaginous Tissue from Synovial Joints - ***Ahmad Jabbarzadeh,*** *The University of Sydney*	Sliding wear behavior of DLC under lubricated conditions at elevated temperatures - ***Ashokraj Jayachandran,*** *BAM Federal Institute for Materials Research and Testing*	Study of rubber/road dry friction in rolling sliding and linear sliding conditions **- *Jonas Bousmat,*** *Laboratoire de Tribologie et Dynamique des Systèmes*
10:10 10:30	Bio-inspired surfaces for functional aqueous lubrication ***Sufia Fatima,*** *University of Leeds*	The impact of antiwear additive on surface-fatigue performance of DLC coatings in rolling/sliding contacts ***Siavash Soltanahmadi,*** *Institute of Functional Surfaces, School of Mechanical Engineering, University of Leeds*	Influencing factors on the decoupling of induced rotational oscillation by wet-running multi-plate packages in controlled slip mode - ***Michael Basiewicz,*** *IPEK – Institute of Product Engineering, Karlsruhe Institute of Technology*
10:30 - 11:00	COFFEE BREAK		
11:00 - 12:20	**P1-3 From cells to well-being** ***Chair: J Tichy***	**P3-2 Lubricant additives for boundary lubrication I** ***Chair: S Mori***	**P2-2 Measurement technics for both tribology and rheology - *Chair: P Stempfle***
11:00 11:20	Wear characteristics of UHMW polyethylene by twist method ***Georgiana Chisiu,*** *University Politehnica of Bucharest*	Local occupancy of viscoelastic interfaces: a new rheological perspective on antiwear tribofilms ***Abdel Dorgham***, *Institute of Functional Surfaces*	Identification of Micro Tribological Phenomena on Metal Surfaces by SPM-AE In Situ Measurement ***Alan Hase,*** *Saitama Institute of Technology*
11:20 11:40	Mechanical response induced by change in shear strength at the sliding contact between a finger and a molecular layer-coated solid surface ***Saiko Aoki***, *Tokyo Institute of Technology*	A comparative study of the tribofilms derived from zddp and thiadiazole with focus on the tribofilm-microstructure relationship and its impact on roughness - ***Jakub Jelita Rydel,*** *SKF University Technology Centre, Department of Materials Science and Metallurgy, University of Cambridge*	
11:40 12:00	Effects of dynamic friction on oblique impact behavior of golf balls ***Kazuo Arakawa***, *Kyushu University*	ZDDP degradation and tribochemistry revealed by mass spectrometry ***Nicole Dörr,*** *AC2T research GmbH*	Adhesion and friction of a metal-polymer matrix composite pillar ***Bilsay Sümer,*** *Istanbul Technical University*
12:00 12:20	Biotribological and mechanical analysis of total hip arthroplasty failure ***Patrick Chaboche***, *Former Head Department of Orthopaedic Surgery, Centre hospitalier de Cornouaille*	Synergistic effects of ionic liquids and zinc dialkyldithiophosphate (zddp) on tribological properties under boundary lubrication - ***Kaisei Sato,*** *Department of Mechanical Engineering Graduate School of Tokyo University of Science*	Research on magnetic memory testing techology in evaluating wear phenomena and wear mechanism ***Bowen Shi,*** *College of Mechanical and Transportation Engineering, China University of Petroleum*
12:20 - 14:00	LUNCH		

Tuesday 5th September 2017

AFTERNOON

	ROOM 1	ROOM 2	ROOM 3
14:00 - 15:40	**P2-3 Modelling** *Chair: L Bocquet*	**P4-4 Texturing I** *Chair: N Brunetière*	**P3-3 Solid lubrication processes of carbon-based materials** - *Chair: R Carpick*
14:00 14:20	Elastodynamic sliding of a layer on a flat under Coulomb's friction: velocity dependence, opening waves and supersonic slip pulses ***Vladislav Yastrebov,*** *Centre des Matériaux, MINES ParisTech*	Effect of waviness and roughness on cylinder liner friction ***Eduardo Tomanik,*** *Surface Phenomena Laboratory of Polytechnic School of the University of São Paulo*	Tribo-chemistry of diamond (111) in contact with water ***Takuya Kuwahara,*** *Fraunhofer IWM, MicroTribology Centrum µTC*
14:20 14:40	Micromechanics of adhesive wear: Did Archard get it right? ***Ramin Aghababaei,*** *École polytechnique fédérale de Lausanne*	Study on EHL oil film behavior of textured surface by three-wavelength interferometry method ***Junji Murata,*** *JTEKT Corporation*	The electrostatic origin of polar hydrophobicity: wetting and friction of fluorine-terminated carbon surfaces ***Gianpietro Moras,*** *Fraunhofer IWM, MicroTribology Center µTC*
14:40 15:00	Numerical investigation of the interaction of an ultrasonic wave with a discountinuous contact interface ***Vijigiri Vipul,*** *Laboratoire de Tribologie et Dynamique des Systèmes*	Effect of surface texture on friction anisotropy under boundary lubrication ***Shota Ito,*** *Graduate School of Tokyo University of Science*	Low friction mechanism of chlorine-containing amorphous carbon films against aluminium alloy ***Yuuki Tokuta,*** *Tokyo Metropolitan Industrial Technology Research Institute Joto Branch*
15:00 15:20	Suppression of friction-induced vibrations by damping from in-plane angular misalignment ***Naohiro Kado,*** *Nagaoka University of Technology*	Numerical and experimental investigation of surface textures ***Andrea Codrignani,*** *Karlsruhe Institute of Technology*	Tribochemistry for self-formation of carbonaceous tribo-layer in sliding of carbon nitride coatings ***Naohiro Yamada,*** *Tohoku University*
15:20 15:40	A new asperity-scale mechanistic model of tribocorrosive wear: synergistic effects of mechanical and corrosive wear ***Ali Ghanbarzadeh,*** *University of Leeds*	Theoretical and experimental investigation of laser surface texturing for piston-ring friction reduction ***Xuan Ma,*** *Northwestern University, Harbin Engineering University*	Effect of chemical composition of tribofilm for tribological properties of soft-metal/DLC nanocomposite coatings ***Minoru Goto,*** *National Institute of Technology, Ube College*
15:40 - 16:10	COFFEE BREAK		
16:10 - 17:50	**P2-4 Elastohydrodynamic lubrication** - *Chair: G Heinrich*	**P4-5 Texturing II** - *Chair: E Tomanik*	**P6-3 DLC/Coatings** - *Chair: A Neuville*
16:10 16:30	Electrical impedance method for measuring oil film thickness and metallic contact ratio in EHD contacts ***Taisuke Maruyama,*** *NSK Ltd.*	Virtual textured hybrid bearings ***Stefan Lampaert****, Delft University of Technology, Faculty 3mE, Department PME*	Temperature rise of nitrogenated diamond-like carbon during sliding: consideration of real contact area ***Shuji Yamamoto,*** *Kanto Gakuin University Materials & Surface Engineering Research Institute*
16:30 16:50	Generation of acoustic emission from the running-in and subsequent wear of a mixed-elastohydrodynamic contact ***Simon Hutt,*** *Cardiff University*	Frictional property with 3D capillary structured surface by selective laser melting ***Hiroaki Maeda,*** *Tokyo University of Science*	Tribological study of a multilayer coating of Ta/ZrN produced by dc magnetron sputtering on AISI-361L stainless steel - ***Carolina Hernandez-Navarro,*** *Instituto Tecnológico de Celaya*
16:50 17:10	Experimental observation on the deformation of dimpled surface in soft-EHL conformal contacts ***Binbin Su,*** *Nanjing University of Aeronautics and Astronautics*	Cylinder bore honing pattern optimization for improved engine friction and wear ***Ozgen Akalin,*** *Istanbul Technical University*	Wear acceleration mechanism of DLC films under boundary lubrication in the presence of molybdenum-containing lubricant additives ***Hikaru Okubo,*** *Tokyo University of Science*
17:10 17:30	Collapse behaviour of solidified film in elastohydrodynamic lubrication conditions ***Kazuyuki Yagi,*** *Kyushu University*	Impact of surface texture on friction performance of crankshaft bearings - ***Sabeur Mezghani,*** *Mechanics surfaces and materials processing*	Achieving superlubricity with fully-formulated engine lubricants ***Dean Clarke,*** *Infineum USA*
17:30 17:50	ToF-SIMS analysis of deuterium dissolved into bearing steel during lubrication test -effect of additive ***Yoshinori Fukushima,*** *DENSO CORPORATION*		Application of DLCs to engine valve train systems: Effects of coating both the cam and follower ***MacDonald Ofune,*** *University of Leeds*
18:30 - 23:00	BANQUET		

Wednesday 6th September 2017

MORNING

	ROOM 1	ROOM 2	ROOM 3
8:30 - 9:00	**P6 -*Invited speaker*** ***Jorge Seabra - (Chair: D. Philippon)*** Grease formulation, film thickness and friction - influence on rolling bearing torque loss - *DEMec, Faculdade de Engenharia, Universidade do Porto*	**P3 -*Invited speaker*** ***Ashlie Martini - (Chair: P. Vergne)*** Mechanistic insights into the function and performance of polymeric viscosity modifiers - *University of California, Merced*	**P2 -*Invited speaker*** ***Jean-Michel Vacherand - (Chair: T Lubrecht)*** From vehicles to molecules tire tribological performance balance - *Michelin Technology center*
9:00 - 9:10	BREAK		
9:10 - 10:30	**P6-4 Hydrodynamic and elastohydrodynamic lubrication - *Chair: J Seabra***	**P5-4 MD simulation of liquid interfaces** ***Chair: A Martini***	**P4-6 Rubber blends** ***Chair: JM Vacherand***
09:10 09:30	Extended lubrication theory for compressible flow ***John Tichy,*** *Rensselaer Polytechnic Institute*	Adsorbed film structure of aqueous copolymer lubricants confined between hydrated and unhydrated TiO2 surfaces ***Hongtao Zhu,*** *University of Wollongong*	Study of adhesion and aging behavior of rubber blends analyzed under the Multiscale-Contact-Mechanics (MCM) and a theoretical kinetics framework of aging: Implications for their functionality ***Leonid Dorogin,*** *Becton Dickinson and Co*
09:30 09:50	Numerical simulation of hydrodynamic lubrication by smoothed particle hydrodynamics method ***Kentaro Tanaka,*** *Tokyo University of Marine Science and Technology*	Molecular dynamics of hydrocarbon lubricants under extreme pressures: atomistic insights into the free volume ansatz ***Kerstin Falk,*** *Fraunhofer IWM, MicroTribology Center µTC*	Rate- and state-dependent friction model for rubber-metal contact based on the elastoplastic formulation ***Takeru Matsuura,*** *Yokohama National University*
09:50 10:10	Elastohydrodynamic lubricaton of isothermal point contacts at zero entrainment velocity ***Yang Zhao,*** *City University of Hong Kong, Xi'an Jiaotong University*	Ionic Liquids under Confinement: The Role of Anisotropy on Friction Performance ***Konstantinos Gkagkas,*** *Toyota Motor Europe*	Effects of normal load and temperature on the frictional characteristics of hydrogenated nitrile butadiene rubber composites with varied filler concentration - ***Avinash Tiwari,*** *Department of Mechanical and Industrial Engineering, Norwegian University of Science and Technology*
10:10 10:30	Thermal Effects in Rough EHL Contacts ***Chris Hooke,*** *Univ Bermingham*	Understanding action mechanisms of amine-based friction modifiers through molecular simulations ***Rafael Pereira de Matos,*** *Laboratoire de Tribologie et Dynamique des Systèmes, TOTAL S.A.*	Effect of Specimen Thickness on Growth of Real Contact Area of Rubber with Two-Dimensional Regular Wavy Surface ***Kenji Matsuda,*** *Kyushu Institute of Technology*
10:30 - 11:00	COFFEE BREAK		
11:00 - 12:20	**P6-5 Fretting and surface topography** ***Chair: S Fouvry***	**P3-4 Lubricant additives for boundary lubrication II** ***Chair: T Amann***	**P4-7 Roughness and averaging** ***Chair: I Krupka***
11:00 11:20	Microstructure sensitivity of fretting crack nucleation for ferritic-pearlitic steel ***Patrick Ashton,*** *National University of Ireland Galway*	Tribochemical reaction of sodium polyphosphate on iron oxide surface in metal forming ***Hongtao Zhu,*** *Univ. Wollongong*	Theoretical and experimental investigation of laser surface texturing for piston-ring friction reduction - ***Xuan Ma,*** *Northwestern University, Harbin Engineering University*
11:20 11:40	A new method to evaluate the energy dissipation response of surfaces under fretting condition ***Julien Fortes Da Cruz,*** *Laboratoire Quartz*	Effect of temperature on tribological performance of MoDTC ***Masanori Komaba,*** *KYODOYUSHI CO.,LTD.*	Tribological effects of the combustion chamber pressure along an extended Elrod-Adams model - ***Alfredo Jaramillo,*** *Instituto de Ciências Matemáticas e de Computação*
11:40 12:00	An Investigation into the effect of lambda ratio on ZDDP topography utilising the AFM as a Post-Test Tribometer ***Rachel Bingley,*** *University of Leeds*	Tribological behaviour of steel against ceramic oxide Atmospheric Plasma Spray (APS) coating under boundary lubrication conditions ***Pushkar Deshpande,*** *ECL*	Stroke-averaged load carrying capacity and friction of a rotated parabolic-flat piston ring ***Wan Ma,*** *Jiangsu Normal University, School of Mechatronic Engineering*
12:00 12:20	An extended Rp-Rf friction energy approach formalizing the normal force fluctuation effects on fretting wear rate. ***Estelle Marc,*** *Laboratoire de Tribologie et Dynamique des Systèmes*	The effect of corrosion inhibitors on friction ***Asad Jamal,*** *Imperial College London, Department of Mechanical Engineering*	Numerical implementation of roughness effects on friction-induced vibrations - ***Giovanna Lacerra,*** *Laboratoire de Mécanique des Contacts et des Structures, Dipartimento d' Ingegneria Meccanica e Aerospaziale, University of Rome La Sapienza*
12:20 - 14:00	LUNCH		

Wednesday 6th September 2017

AFTERNOON

	ROOM 1	ROOM 2	ROOM 3
14:00 - 15:40	**P5-5 Wear and fretting modelling** ***Chair: Y Desplanques***	**P3-5 Tribofilms in severe contacts** ***Chair: C Donnet***	**P4-8 Polymers and contact** ***Chair: S Kosarieh***
14:00 14:20	Modelling the wear process in composite liner bearings ***Alastair Clarke,*** *Cardiff University*	Bifunctional tribofilms derived from inorganic borate on heated rubbing interface ***Bach Tran,*** *Faculty of Engineering and Information Science, University of Wollongong*	Fundamental Tribological Properties of Thick CPB ***Keisuke Sato,*** *Tokyo University of Sciences*
14:20 14:40	Glaze layer protection modalities at high temperatures: from nanostructured wear debris to global dissipated energy ***Siegfried Fouvry,*** *Laboratoire de Tribologie et Dynamique des Systèmes*	On the glaze layer formation in zinc and manganese phosphate coatings ***Dennis Ernens,*** *University of Twente, Shell Global Solutions BV*	Effect of high performance polymer composites on contact temperature during rubbing ***Annelise Jean-Fulcrand,*** *Department of Mechanical Engineering - Imperial College London*
14:40 15:00	Combined experimental and numerical simulation of abrasive wear and its application to a tillage machine component ***Andreas Pauschitz,*** *AC2T research GmbH*	Efficacy of coatings and thermochemical treatments to improve wear resistance of axial piston pumps ***Schuhler Guillaume,*** *Sorbonne Universités, Université de technologie de Compiègne, Actuation & Propeller Systems*	On stickiness criteria for nominally flat rough contacts ***Michele Ciavarella,*** *Politecnico di Bari*
15:00 15:20	Predictive model of wear induced by low-loaded sliding impacts ***Thibaut Souilliart,*** *Den-Service d'études mécaniques et thermiques (SEMT), CEA, Université Paris-Saclay, Laboratoire de Tribologie et Dynamique des Systèmes*	Evolution of the third body layer: dynamic causes and consequences on squeal occurrence ***Narinder SINGLA,*** *Ecole Centrale de Lille, Laboratoire de mécanique de Lille*	Molecularly-assisted tuning of the friction laws in a Multi-asperity tribo-contact ***Philippe Stempfle,*** *Institut FEMTO-ST*
15:20 15:40	A finite element transposition of the third body concept to predict the maximum wear depth in fretting wear ***Pierre Arnaud,*** *Laboratoire de Tribologie et Dynamique des Systèmes*	Tribological properties of Ni-based composite coatings containing silver vanadate at elevated temperatures ***Jun Wang,*** *Nanjing University of Science and Technology*	Tribology of PTFE with unusually effective nanofillers, including the effect of sliding speed on wear and friction ***Thierry Blanchet,*** *Rensselaer Polytechnic Institute*
15:40 - 16:10	**AWARDS AND CLOSURE (ROOM 1)**		

• POSTERS

TRIBOLOGY IN INDUSTRY

1_01	Effects of using alternative extreme pressure (EP) and anti-wear (AW) additives with oxy-nitrided samples	*Khan Thawhid*	University of Leeds (United Kingdom)
1_02	Effects of refrigerants on tribological properties of polyol ester refrigiration oils	*Tada Akira*	JXTG Nippon Oil & Energy Corporation (Japan)
1_03	Effect of groove on behavior of point contact EHL film under vertical motion	*Mita Yuma*	Kyushu Institute of Technology (Japan)
1_04	A Comparison of Different Modeling Approaches for Simulating Dry Friction Energy Dissipation in Gas Foil Bearing Rotor Systems	*Leister Tim*	LaMCoS, INSA Lyon (France)
1_05	Tribological capacity for self-lubricating and high load bearing materials for landing gear pin joint	*Zhu Juanjuan*	The Leonardo Centre for Tribology, Sheffield (United Kingdom)
1_06	The influence of low velocities in the running-in period on the long-term performance of a lubricated steel contact	*Brink Angelika*	SINTEF Corrosion and Tribology (Norway)
1_07	Effects of cylinder liner surface topography on friction and wear of liner-ring system at low temperature	*Grabon Wieslaw*	Rzeszow University of Technology (Poland)

COATING, TEXTURING, AND SURFACE ENGINEERING

2_01	Friction reduction in tilting-pad thrust bearing by boundary slip with texturing	*Song Zhixiang*	State Key Laboratory of Tribology, Tsinghua University (China)
2_02	Effect of surface integrated roughness on contact temperatures in transient boundary lubrication regime	*Xu Dichu*	IFS, School of Mechanical Engineering, University of Leeds (United Kingdom)
2_03	Wear characteristics of PVD coatings deposited on general purpose stainless steel at high temperature	*Komiyama Shoko*	IHI Corporation (Japan)
2_04	Friction Properties of plasma spraying Nickel Based Self-Lubricating coatings at elevated temperatures	*Jianliang Li*	Nanjing University of Science and Technology (China)
2_05	Characterization of a hard bi-layer coating deposited on titanium	*Castillo Martín*	National Polytechnic Institute (Mexico)
2_06	New methods to characterize tribological behaviour of coatings under high contact pressure	*Rahoui Souphiane*	InS (France)
2_07	Tribological properties of Ta and Ta-MoS2 composite coatings at elevated temperatures	*Kumar Ameet*	Nanjing University of Science and Technology (China)
2_08	Wear of Co-based coatings: A composite wear law for the description of the transient regime of glaze layer formation	*Kind Nora*	Laboratoire de Tribologie et Dynamique des Systèmes (France)
2_09	Study the tribological effects of carbon nano tubes (CNT) in Cu/SiC/graphite hybrid composite brake material	*Raja Petchiappan*	Indian Institute of Technology Madras (India)
2_10	Contact mechanics on rough intermediate Gaussian - exponential surfaces	*Vernes Andras*	Vienna University of Technology (Austria)
2_11	Fluid-structure interaction analysis for investigation of increase in load capacity mechanism on the textured surface	*Takahashi Kenta*	Tokyo University of Sciences (Japan)
2_12	Tribolayer formation in heavily loaded sliding Cu-Fe contacts using large-scale molecular dynamics simulations	*Cihak-Bayr Ulrike*	AC2T research GmbH (Austria)
2_13	Surface engineering of additive manufactured components (SEAM), a feasibility study	*Espitalier Laurent*	Wallwork Cambridge Limited (United Kingdom)
2_14	Relating road surface texture to tire friction	*Do Minh-Tan*	IFSTTAR, AME-EASE (France)
2_15	Effect of texture parameters on the anti-fingerprint function	*Belhadjamor Meriem*	Laboratoire de Génie Mécanique (Tunisia)
2_16	Effect of fabric pattern on friction force under regulated preload	*Sümer Bilsay*	Hacettepe University (Turkey)
2_17	Features extraction for surface topography by morphological components analysis	*Wang Yuechang*	State Key Laboratory of Tribology, Tsinghua University (China)
2_18	Reaction kinetics of ZDDP using a new in-situ synchrotron XAS methodology	*Dorgham Abdel*	Institute of Functional Surfaces (United Kingdom)

BIOTRIBOLOGY AND BIOENGINEERING

3_01	Friction properties of PVA/PAAM double network hydrogels for carticular cartilage repair	*Shi Yan*	Nanjing University of Science and Technology (China)
3_02	Performance evaluation of grasping force measurement system of a laparoscopic surgical tool	*özin Mithat*	Istanbul Technical University (Turkey)
3_03	Considering Surface Anisotropy in Tribological Characterization of Articular Cartilage	*Rummel Florian*	Anton Paar Germany GmbH (Germany)
3_04	Phospholipid vesicles in media for tribological studies against live cartilage	*Aldebert Gregoire*	University of Technology of Compiègne (France)

3_05	Bio-tribological investigation of wear in ceramic-on-ceramic hip replacements	*Ben Braham Marwa*	INSA-Lyon, LaMCoS (France)
3_06	A critical review of the assessment of medical gloves	*Preece Daniel*	University of Sheffield (United Kingdom)
3_07	Friction and wear evaluation of sandwiched Enamel layer for Chitosan/HA coating on UHMWPE	*Ortega Ricardo*	Instituto Tecnológico de Celaya (Mexico)
3_08	Topical treatments and their effects on volar forearm skin moisture and friction	*Morecroft Rachel*	Department of Mechanical Engineering, Sheffield (United Kingdom)
3_09	Zwitterionic surfaces for catheter applications	*Bryant M.G.*	University of Leeds (United Kingdom)
3_10	The use of multiscale decomposition of roughness for the analysis of the microwear of bones	*Marteau Julie*	Laboratoire Roberval (France)

DRY FRICTION AND CONTACT DYNAMICS

4_01	Dynamics of normal vibration of a rough body sliding on a rough track under its own weight	*Scheibert Julien*	CESI-Lyon (France)
4_02	Roughness-generated vertical dynamic excitation of sliding surfaces: experimental, numerical and analytical approaches	*Ponthus Nicolas*	Laboratoire de Tribologie et Dynamique des Systèmes (France)
4_03	Water-lubricated Rubber Bearing Stick-slip Phenomenon Based on High Speed Photography	*Huang Jian*	Wuhan University of Technology (China)
4_04	Development of a piezoelectrically-actuated fretting wear test rig for pressure armour layer nub-groove contact	*Leen Sean*	National University of Ireland, Galway (Ireland)
4_05	Friction and wear properties of soft fiber array in a frictional sliding contact	*Eray Turgay*	Istanbul Technical University (Turkey)
4_06	Energetic coefficient of friction applied to cylinder liners lab tests	*Pintaude Giuseppe*	Federal University of Technology - Paraná (Brazil)
4_07	On the induced-friction behavior by cutting coated tool kinematics when drilling natural fiber composites	*Chegdani Faissal*	Arts et Métiers ParisTech (France)
4_08	Effect of contact area reduction under shear on static friction	*Sahli Riad*	Laboratoire de Tribologie et Dynamique des Systèmes (France)

MATERIALS AND PROCESSES

5_01	Characteristics of aerodynamic foil thrust bearings manufactured using direct metal laser sintering technology	*Miyatake Masaaki*	Tokyo University of Science (Japan)
5_02	Improvement of friction and strength properties of sintered sulfide dispersed bronze	*Jingu Akihiro*	Kansai University Graduate School of Science and Engineering (Japan)
5_03	Metal-to-metal contact between rough elasto-plastic solids in loading and unloading with application to static seals	*Pérez-Ràfols Francesc*	Luleå University of Technology (Sweden)
5_04	Additive manufacturing and laser-optical measurement in the investigation of drag losses in wet multi-plate clutches	*Basiewicz Michael*	Karlsruhe Institute of Technology (Germany)
5_05	Wear resistant parts for friction vs. aluminum applications	*Noe Lucie*	Vespel(r) Application Engineer (Switzerland)
5_06	High-Performance Polymer Composites for Extreme Conditions	*Mclaren Heather*	University of Leeds (United Kingdom)
5_07	Hyperelastic model of a spacer fabric	*Soylemez Emrecan*	Marmara Universtiy (Turkey)
5_08	Mechanics of metal-polymer contacts in partial slip	*Sundaram Narayan*	Indian Institute of Science (India)
5_09	Poroelastic lubricity of micro-porous polydimethylsiloxane (PDMS)	*Collinson Chris*	Institute of Functional Surfaces (United Kingdom)
5_10	Tribological behavior of Ti-6Al-4V sliding against alumina in vacuum	*Jayachandran Ashokraj*	BAM Federal Institute for Materials Research and Testing (Germany)
5_11	Tribological behavior of different steels under dry sliding: effect of hardness	*Correa Pablo*	Surface Phenomena Laboratory (Brazil)
5_12	Particular behavior of the DLC/DLC contact in mixed lubrication regime	*Héau Christophe*	IREIS (France)
5_13	FIB and microscopic observations of failure mechanisms in DLC coatings andcounterface surfaces	*Elwafi Ali*	Algonquin College (Canada)
5_14	Tribological properties of porous structured surface manufactured by selective laser melting	*Sato Rui*	Graduate School of Tokyo University of Science (Japan)
5_15	Fretting wear mechanisms of solid lubricant molybdenum disulfide coated fan compressor blade root at low temperature	*Sarjo Nor*	University of Leeds (United Kingdom)
5_16	Tribological analysis of pearlitic steel using atomic force microscopy	*Kitamura Kazuyuki*	Nippon Steel & Sumitomo Metal Corporation (Japan)
5_17	Analysis of ultrafine-grains layer formation after multi-pass scratch tests on pearlitic steel	*Pereira Juan I.*	Universidade de São Paulo (Brazil)

• NOTES

http://leeds-lyon.sciencesconf.org/

MANUTECH-SISE
Science et Ingénierie des Surfaces et Interfaces
UNIVERSITE DE LYON

ATM
Association de TriboMécanique
Society of TriboMechanics: Organizer of the Leeds-Lyon Symposium on Tribology

SKF

TOTAL

RATP

MICHELIN
Une meilleure façon d'avancer

SAFRAN

INSTITUT CARNOT
Ingénierie@Lyon

SCIENTEC