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Special Issue
Selected papers from those presented at the 3rd International Tribology Symposium of IFToMM
(ITS 2013)
Luleå, March 19-21, 2013

Guest Editors
Jens Hardell, Andreas Almqvist and Braham Prakash

Editorial

The International Federation for the Promotion of Mechanism and Machine Science (IFToMM) is an organisation aimed at promoting research and development in the field of Machines and Mechanisms by theoretical and experimental methods, along with their practical application. IFToMM has several technical committees in different fields and one is dedicated to Tribology. The technical committee for tribology requests prominent research groups in tribology to host and organise an international symposium on tribology. The 1st International Conference on Tribology of IFToMM was held in Beijing, China, in 2008 and the 2nd symposium was organized in Rio de Janeiro, Brazil, in 2010. The 3rd International Tribology Symposium of IFToMM was organised by the Division of Machine Elements of Luleå University of Technology in Sweden from March 19-21, 2013.

The symposium was held on the Luleå University of Technology campus during three fantastic winter days providing a perfect forum for the tribologists for presenting their latest research and exchange of ideas. The participants were also given the opportunity to experience the snowy landscape during a memorable outdoor dinner.

The symposium attracted 146 participants from 26 countries. In all, 92 papers spread over 32 sessions (including 6 plenary sessions) were presented. These papers covered both the fundamental as well as applied aspects of wide ranging topics such as friction, wear, lubrication, lubricants, tribology in hostile environment, tribomaterials, solid lubricants, surface engineering, tribotesting, tribological design and optimisation of machine components, modelling in tribology, biotribology, micro/nanotribology, Tribotronics, tribology in power generating systems, metal working tribology, tribology in rail and road transport.

Two additional events were also organised in conjunction with the conference, a young researcher forum and the 2nd international high temperature tribology workshop.

The local organising committee of ITS 2013 selected papers suitable for publication in special issues of the journals Tribology: Materials, Surfaces & Interfaces, Lubrication Science and Friction. The special issue of Tribology: Materials, Surfaces & Interfaces will be published in two parts and contains papers that were reviewed and accepted from those presented at the 3rd International Tribology Symposium of IFToMM (ITS 2013) and recommended by the organising committee of ITS 2013.

In part 1 of the special issue the first papers deals with biotribology. **Suñer Moreno et al.** investigated graphene oxide as reinforcement for orthopaedic applications and **Emami et al.** studied two ball milling manufacturing methods for producing nanodiamond reinforced UHMWP. The next two papers focussed on surface analysis and surface engineering. **Heinrichs et al.** characterised tribofilms created by a tribochemical burnishing process and **Rodriguez Ripoll et al.** investigated a machine hammer peening technique to improve the wear resistance of surfaces. Two papers dealt with copper and brass alloys. **Jisa et al.** investigated the tribological properties of MIM manufactured copper alloys and **Laumann et al.** studied brass materials and their suitability as material for rolling element bearing cages. The last two papers focussed on modelling where **Rodriguez Ripoll et al.** had developed a mechanical model of the doctor blade-press roll system with a view to optimise the cleaning performance. **Kivikytö-Reponen et al.** studied high strain rate elastomer impact deformation through modelling and testing.

In part 2, the first three papers are in the area of high temperature tribology. **Huttunen-Saarivirta et al.** investigated aluminium-based coatings and ferritic-martensitic steel at elevated temperatures. **Mozgovoy et al.** studied the effect of temperature on friction and wear of a tool steel-boron steel tribopair under reciprocating conditions and **Hernandez et al.** had developed at high temperature wear mechanisms map for tool steel-boron steel pair. The remaining five papers are focussed on abrasive and erosive wear. **Heino et al.** investigated the effect of quartzite and granite in the wear surfaces. **Hardell et al.** studied the two-body abrasive wear behaviour of hardened high strength

boron steel. A parametric study on large particle erosion was done by **Ojala et al.** and **Vite-Torres et al.** investigated the solid particle erosion on AISI D2 steel. Finally, **Forsström et al.** had developed a model using SPH-FEM to predict the abrasive wear in a dumper truck body. The organising committee would like to thank all the authors and delegates who made ITS 2013 a very successful and much memorable event. Finally, the guest editors of this special issue of Tribology: Materials, Surfaces & Interfaces would also like to sincerely thank all the reviewers for devoting their time and providing their valuable inputs during the reviewing process of these papers.

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