

SLOVENIAN SOCIETY FOR TRIBOLOGY

3rd International Conference on
POLYMER TRIBOLOGY



FINAL PROGRAMME

24th – 25th September 2018

Grand Hotel Bernardin, Portorož, Slovenia



*Tribo*logy
and interface
nanotechnoLogy



DAY 1, 24th September 2018

08:00–09:40 REGISTRATION

09:40–12:00 SESSION I

Chair: K. Friedrich

09:40–09:50 CONFERENCE OPENING

09:50–10:40 V. L. Popov; Technical University of Berlin, Germany –
Keynote lecture

Elastomer friction beyond Amonton's law: generalized law of friction accounting for velocity, temperature and normal force

10:40–11:00 R. Poledník, P. Sperka, I. Krupka, M. Hartl; Brno University of Technology, Czech Republic

Film formation in elliptical point contacts between PMMA and steel

11:00–11:20 B. C. Jim, A. Gebhard, B. Wetzel; The Institute for Composite Materials (IVW), Technical University of Kaiserslautern, Germany

In-situ measurement of transfer films by a novel optical method using the example of polymer-metal sliding contacts

11:20–11:40 D. Savio¹, M. Moseler^{1,2}; ¹Fraunhofer IWM, MicroTribology Center µTC, Germany, ²Albert-Ludwigs University of Freiburg, Germany

Atomistic insights on polymer-polymer tribointerfaces

11:40–12:00 G. Hlebanja¹, S. Kulovec²; ¹University of Novo mesto, Slovenia, ²Podkrižnik d.o.o., Slovenia

Thermal behaviour of plastic S-shaped gears in comparison with involute gears

12:00–13:30 CONFERENCE LUNCH

DAY 1, 24th September 2018

13:30–15:30

SESSION II: WORKSHOP ON POLYMER GEARS

Chair: B. Wetzel

13:30–14:10

U. Kissling, A. Pogačnik; KISSsoft, Switzerland –
Keynote lecture

Tooth form modifications for the optimization of plastic gears

14:10–14:30

A. Bormuth, J. Zuleeg, C. Schmitz, R. Schmitz, M. Pfadt, H. Meven; Klüber Lubrication München SE & Co. KG, Germany
Lubrication of plastic worm gears

14:30–14:50

P. Kilian, F. Lorenz, K. Kuhmann; Evonik Resource Efficiency GmbH, Germany
High Performance Polymers for challenging gear and bearing applications

14:50–15:10

P. Jan¹, N. Oya², Y. Munesawa², M. Kalin¹; ¹University of Ljubljana, Slovenia, ²Kuraray Co., Japan

The effect of temperature on polymer gear wear behaviour

15:10–15:30

J. Tavčar¹, J. Škofic², J. Jerina²; ¹University of Ljubljana, Slovenia, ²Iskra Mehanizmi, Slovenia
Life span testing of reinforced and unreinforced polymer gears

15:30–16:00 COFFEE BREAK



DAY 1, 24th September 2018

16:00–17:40 SESSION III

Chair: M. Kalin

- 16:00–16:40 **R. Larsson, Y. Shi, M. Grahn; Luleå University of Technology, Sweden – Keynote lecture**
A novel, fossil free, water miscible lubricant
- 16:40–17:00 **S. Abdel-Wahed, C. Koplin, R. Jaeger, M. Scherge; Fraunhofer IWM MikroTribologie Centrum, Germany**
A macroscopic oscillatory tribometry study on static and dynamic friction of lubricated thermoplasts - steel contacts ranging from spreading to adhesive behaviour
- 17:00–17:20 **B. Wetzel, E. Padenco; The Institute for Composite Materials (IVW), Technical University of Kaiserslautern, Germany**
Polybenzimidazole coatings for tribological applications
- 17:20–17:40 **¹C. Wang, ¹T. Stiller, ¹A. Hausberger, ²F. Grün, ³G. Pinter, ⁴T. Schwarz; ¹Polymer Competence Center Leoben GmbH, Austria, ²Chair of Mechanical Engineering, Montanuniversität Leoben, Austria, ³Chair of Materials Science and Testing of Polymers, Montanuniversität Leoben, Austria, ⁴SKF Sealing Solutions Austria GmbH, Austria**
Relationship between fatigue and tribological performance of Thermoplastic polyurethane (TPU)

20:00–23:00 CONFERENCE DINNER





DAY 2, 25th September 2018

08:30-10:20 SESSION IV

Chair: R. Larsson

- 08:30–09:20 **Y. Sawae, T. Yamaguchi; Kyushu University, Japan – Keynote lecture**
Polymer biotribology
- 09:20–09:40 **K. Friedrich, E. I. Akpan, B. Wetzel; Institute for Composite Materials, Technical University of Kaiserslautern, Germany**
Friction and wear of short wood fiber reinforced, water soluble acrylic resin composites
- 09:40–10:00 **C. Kappl¹, C. Schmied¹, T. Stller², A. Hausberger², G. Pinter³;**
¹Tribotec GmbH, Austria, ²Polymer Competence Center Leoben GmbH, Austria, ³Chair of Material testing and science of Polymers, Montanuniversitaet Leoben, Austria
Tribological investigation of new synthetic metal sulfides in PEEK, PPS and PPS-compounds
- 10:00–10:20 **H. Ronkainen, J. Pelto, M. Karttunen, J. Metsäjoki, V. Heino; VTT Technical Research Centre of Finland, Finland**
Friction and wear performance of high density polyethylene (HDPE) composites

10:20–10:50 COFFEE BREAK



DAY 2, 25th September 2018

10:50–12:50	SESSION V: INTERNATIONAL WORKSHOP ON POLYMER TRIBOLOGY	Chair: N. Emami
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- 10:50–11:20 **K. Yokoyama; NSK Ltd, Japan**
NSK's plastic products and future issues
- 11:20–11:50 **T. Yamaguchi, Y. Sawae; Kyushu University, Japan**
Shape design and friction of polymer gels
- 11:50–12:20 **N. Emami; Luleå University of Technology, Sweden**
Tribological characterisation of newly developed PPS composites
- 12:20–12:50 **A. Vidergar, M. Kalin, A. Kupec, L. Čoga; University of Ljubljana, Slovenia**
The influence of the structural morphology of POM on its tribological properties

12:50–14:20 CONFERENCE LUNCH



DAY 2, 25th September 2018

14:20–16:00 SESSION VI

Chair: H. Ronkainen

- 14:20–14:40 B. Jakab¹, M. Jakab², N. Gamsjäger³; ¹AC2T research GmbH, Austria, ²University of Pannonia, Institute of Materials Engineering, Hungary, ³Aerospace & Advanced Composites GmbH, Austria
Tribological Modelling And Surface Characterisation Of Composite Calender Rolls
- 14:40–15:00 V. Heino¹, H. Ronkainen¹, M. Karttunen², J. Pelto²; ¹VTT Technical Research Centre of Finland, Materials Performance, Finland, ²VTT Technical Research Centre of Finland, Materials processing and circular solutions, Finland
The load bearing capacity of HDPE polymers
- 15:00–15:20 S. Kim, K. Sugiyama; Ebara Corporation, Materials Technology Section, Japan
Effect of groove on polymer based composite sliding bearings
- 15:20–15:40 M. Bek¹, J. Gonzalez-Gutierrez², C. Kukla², L. Slemenik Perše¹; ¹University of Ljubljana, Slovenia, ²Industrial Liaison Department, Montanuniversitaet Leoben, Austria
Flow characteristics of highly filled polymers for powder injection modelling
- 15:40–16:00 E. S. Gur, M. Bagci; University of Selcuk, Faculty of Engineering, Turkey
Slurry erosion wear of B2O3 filled GF/EP composites
- 16:00–16:10 CONFERENCE CLOSURE

DAY I 18:00–19:00
DAY II 13:30–14:20

POSTER SESSION*

- I J. Lind, P. Söderbäck, Å. Kassman Rudolphi; Uppsala University,
Department of Engineering Sciences, Sweden
Fretting behavior of lubricated and unlubricated PPS composites
- II D. Vdovin¹, Y. Levenkov¹, D. Krasnov², I. Kirichenko²; ¹Bauman
Moscow state technical university, Russia, ²LCC STC Drive
technique, Russia
Composite plastic gear research program overview

* Poster authors should be present by the posters during the official poster session hours. The posters will be displayed from 10:00 a.m. on, on 24th of September 2018.



NOTES

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