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<td>Session 5 STLE-CTI Joint Session on Industrial Tribology</td>
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<td>Session 6 China-UK Summer School on Tribology and Surface Engineering</td>
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</table>
Information of the Conference

Welcome to join us on the great event, 6th China International Symposium on Tribology, August 19-22, 2011, Lanzhou, China, to share your expertise and perspective on tribology. This conference is organized by State Key Laboratory of Solid Lubrication (Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences), State Key Laboratory of Tribology (Tsinghua University) and Tribology Institution of Chinese Mechanical Engineering Society. Organizing Committee extends the warmest welcome to you, and wishes you would enjoy the time in Lanzhou.

1. The meeting will be held at the Xibei Hotel, the accommodation places are Xibei Hotel and Legend Hotel. The organizing committee has negotiated a preferential rate for the rooms and also booked partial rooms. **Telephone of the Xibei Hotel: 0931- 8413456**

2. The responsibility for the confidential contents in the reports is remained by representatives themselves. The electronic PowerPoint can be delivered to the committee at registration.

3. For the sake of the safety, reminding you of the follows:

   ① *From Lanzhou railway station to Xibei Hotel, bus fares: ¥ 1, taxi fares: ¥ 10;*

   ② *From airport to Xibei Hotel, bus fares: ¥ 30, taxi fares: ¥ 180;*

   ③ *Take care of your personal safety, property and important documents;*

   ④ *Take the representative card when meeting, dining and visiting;*

   ⑤ *Back to the Hotel before 23:00.*

4. **Tour Route:** From Lanzhou to Xiahe and Sangke. **Departing Time and Venue:** 07:00 on 22nd August at Xibei hotel.
# Contact of Organizing Committee

<table>
<thead>
<tr>
<th>Name</th>
<th>Phone number</th>
<th>E-mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liping Wang</td>
<td>13919423145</td>
<td><a href="mailto:lpwang@lzb.ac.cn">lpwang@lzb.ac.cn</a></td>
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<td>Jun Liang</td>
<td>13993107838</td>
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<td>Xingbing Yan</td>
<td>13919105982</td>
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<td>Jinqing Wang</td>
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</tr>
<tr>
<td>Fengyuan Yan</td>
<td>13893210858</td>
<td><a href="mailto:fyyan@licp.cas.cn">fyyan@licp.cas.cn</a></td>
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<td>Junyan Zhang</td>
<td>13519622388</td>
<td><a href="mailto:zhangjunyan@lzb.ac.cn">zhangjunyan@lzb.ac.cn</a></td>
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<td>Feng Zhou</td>
<td>18919198811</td>
<td><a href="mailto:zhouf@lzb.ac.cn">zhouf@lzb.ac.cn</a></td>
</tr>
<tr>
<td>Zhiguang Guo</td>
<td>13986190577</td>
<td><a href="mailto:zguo@licp.cas.cn">zguo@licp.cas.cn</a></td>
</tr>
</tbody>
</table>
Documents & Materials for Conference

1. Representative Card
2. Program Brochure
3. Proceeding of the Conference
4. Lunch & Dinner Coupons
5. Souvenir
6. Notebook
7. Pen
Hotel Location Map
### Schedule Overview of 6th CIST 2011 (August 19-21)

<table>
<thead>
<tr>
<th>Time</th>
<th>Friday</th>
<th>Saturday</th>
<th>Sunday</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15-08:55</td>
<td><strong>Opening Remarks</strong></td>
<td></td>
<td><strong>Keynote/Invited Lecture</strong></td>
</tr>
<tr>
<td></td>
<td>Weimin Liu</td>
<td></td>
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<tr>
<td></td>
<td>Jianbin Luo</td>
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<td></td>
<td>Edward Salek</td>
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<td></td>
<td>Robert JK Wood</td>
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<tr>
<td>08:55-10:15</td>
<td><strong>Plenary Lecture</strong></td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td></td>
<td>Qunji Xue</td>
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<td>Robert JK Wood</td>
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<tr>
<td>10:15-10:40</td>
<td><strong>Coffee Break &amp; Group Photo</strong></td>
<td></td>
<td><strong>Oral Session(1-6)</strong></td>
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<td>Surface and Interface(1)</td>
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<tr>
<td>10:40-12:00</td>
<td><strong>Plenary Lecture</strong></td>
<td><strong>Oral Session(1-6)</strong></td>
<td>Lubrication and Tribochemistry(2)</td>
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<td>Jacob Klein</td>
<td>Wear of Materials(3)</td>
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<td>Stephen M. Hsu</td>
<td>Nano and Biotribology(4)</td>
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<td>STLE-CTI Joint Session</td>
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<td>on Industrial Tribology(5)</td>
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<td>China-UK Summer School</td>
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<td>on Tribology and Surface Engineering(6)</td>
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<tr>
<td>12:30</td>
<td><strong>Lunch</strong></td>
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<td><strong>Keynote/Invited Lecture</strong></td>
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<tr>
<td>14:10-18:00</td>
<td><strong>Coffee Break</strong></td>
<td><strong>Oral Session(1-6)</strong></td>
<td>Wear of Materials(3)</td>
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<td><strong>Oral Session(1-6)</strong></td>
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<tr>
<td>18:00</td>
<td><strong>Dinner</strong></td>
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# Program Schedule

## Friday, August 19

**Guest Building ◆ Xibei Hotel**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08:00-22:00</td>
<td>Conference Registration</td>
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</table>

## Saturday Morning, August 20

**Second Floor Meeting Room**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>08:15-08:55</td>
<td>Opening Remarks</td>
</tr>
</tbody>
</table>

**Chair: Prof. Shirong Ge**

**Weimin Liu** State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

**Jianbin Luo** State Key Laboratory of Tribology, Tsinghua University, China

**Edward Salek** Society of Tribologists and Lubrication Engineers, 40 Busse Highway, Park Ridge, Illinois (USA)

**Robert JK Wood** University of Southampton, UK

## Plenary Speeches

**Chairs: Prof. Jianbin Luo / Prof. Michael D. Bryant**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>08:55-09:35</td>
<td>Qunji Xue</td>
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</table>

**State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China**

<table>
<thead>
<tr>
<th>Time</th>
<th>Speaker</th>
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<tr>
<td>09:35-10:15</td>
<td>Robert JK Wood</td>
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**University of Southampton, UK**

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<th>Time</th>
<th>Activity</th>
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<tr>
<td>10:15-10:40</td>
<td>Coffee Break &amp; Group Photo</td>
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**Chairs: Prof. Weimin Liu / Prof. Roland Larsson**

<table>
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<tr>
<th>Time</th>
<th>Speaker</th>
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<tr>
<td>10:40-11:20</td>
<td>Jacob Klein</td>
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**Weizmann Institute of Science, Israel**

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<th>Time</th>
<th>Speaker</th>
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<tr>
<td>11:20-12:00</td>
<td>Stephen M. Hsu</td>
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**George Washington University, USA**

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<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>12:30</td>
<td>Lunch</td>
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</tbody>
</table>
Saturday Afternoon, August 20

Session 1  Surface and Interface

Meeting Room 1

Chairs: Prof. Jianmin Chen / Prof. Kenneth Holmberg

14:00-14:30 (Invited) Y. Iwai  
University of Fukui, Japan

Effects of nano diamond (ND) particles on mechanical and tribological properties of electroless Ni-P-ND composite plating

14:30-15:00 (Invited) Dae Eun Kim  
Dept. of Mechanical Engineering Director, Center for Nano-Wear Yonsei University Seoul, Korea

Characteristics and Applications of Wear at the Nano-scale

15:00-15:20 Kazuma Yamaguchi, Shinya Sasaki, Ryo Tsuboi  
Department of Mechanical Engineering, Tokyo University of Science, Japan

Effect of geometrical product specification on tribological properties of steel under boundary lubrication

15:20-15:40 Yong Wan, Zhongqian Wang, Yifang Liu  
Qingdao Technological University, China

Tribological performance of micro/ nano-engineered hydrophobic zinc surface

15:40-16:00 Coffee Break

16:00-16:20 Wenqian Zhang, Hua Zhu, Yuankai Zhou  
School of Mechanical and Electrical Engineering, China University of Mining & Technology, China

Comparative research on tribology properties of surface texture

16:20-16:40 Yating Huang, Xinchun Lu, Guoshun Pan, Jianbin Luo, Bill Lee, Yan Zhao  
State Key Laboratory of Tribology, Tsinghua University, China

Optimal design of post-CMP cleaning detergent of Ni-P substrate based on the understanding of particle removal mechanisms

16:40-17:00 Zhixin Kang, Gang Fang, Qin Liu  
South China University of Technology, China
Micro-tribological property of hydrophobic composite films on surface of Ti-6Al-4V titanium alloy

17:00-17:20 Wenliang Li, Liqin Wang, Yantao Zhong, Xiaoli Zhao  
School of Mechatronics Engineering  
Harbin Institute of Technology, China

The effect of helical gear parameters on the meshing noise

18:00 Dinner

Sunday Morning, August 21

Session 1  Surface and Interface

Meeting Room 1

Chairs: Prof. Zhendong Dai / Prof. Izhak Etsion

08:15-08:50 (Keynote) Kenneth Holmberg  
VTT Industrial Systems, Finland

Computer modelling of wear resistance of thick composite coated surfaces

08:50-09:20 (Invited) Tianmin Shao  
Tsinghua University, China

Reduction of residual stress of TiAlN coating by masked deposition

09:20-09:50 (Invited) Norio Tagawa  
Department of Mechanical Engineering, Kansai University, Japan

Study of head-disk interface in thermally assisted magnetic recording: local temperature increase and lubricant depletion induced by laser heating

09:50-10:10 Coffee Break

10:10-10:30 Z. Fu, P.L. Wong, F. Guo  
Department of Manufacturing Engineering and Engineering Management,  
City University of Hong Kong, China

Effect of interfacial properties on EHL traction

10:30-10:50 Tomoyuki Kawashima, Ryo Tsuboi, Shinya Sasaki  
Department of Mechanical Engineering,  
Tokyo University of Science, Japan
Study on evaluation of cavitation erosion property of DLC films by using ultrasonic vibration

10:50-11:10 Xiaoxi Qiao, Xiangjun Zhang  
State Key Laboratory of Tribology, Tsinghua University, China

The near-surface rheological behavior of CNT-doped 5CB liquid crystals

11:10-11:30 Jin Yang, Zhaozhu Zhang, Xuehu Men, Xianghui Xu, Xiaotao Zhu, Xiaoyan Zhou  
State Key Laboratory of Solid lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Fabrication of switchable oleophobicity on aluminum surfaces

11:30-11:50 Wenzhong Wang, Dian Shen, Jibin Hu  
School of Mechanical and Vehicular Engineering, Beijing Institute of Technology, China

Effect of surface textures on the point-contact lubrication considering starvation conditions

12:30 Lunch

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Sunday Afternoon, August 21

Session 1  Surface and Interface

Meeting Room 1

Chairs: Prof. Tianmin Shao / Prof. Norio Tagawa

14:00-14:30 (invited) Izhak Etsion  
Department of Mechanical Engineering, Technion, Israel

The impact of surface texturing on tribology

14:30-15:00 (invited) Zhendong Dai  
Institute of Bio-inspired Structure and Surface Engineering, Nanjing University of Aeronautics and Astronautics, China

Biomimetics on gecko locomotion: how friction force acts on toe and contribute to reliable locomotion

15:00-15:30 (invited) Shinya Sasaki  
Tokyo University of Science, Japan

Optimization of laser surface texturing pattern to improve tribological properties of DLC coating under water lubrication
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
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<tbody>
<tr>
<td>15:30-15:50</td>
<td>Coffee Break</td>
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<tr>
<td>15:50-16:10</td>
<td>Yonghong Fu, Zhongling Wang, Xijun Hua, Hua Xu, Yu-feng Shi</td>
<td>School of Mechanical Engineering, Jiangsu University, China</td>
</tr>
<tr>
<td></td>
<td>Numerical simulation study on the influence of the surface of laser texturing die on the blank springback</td>
<td></td>
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<tr>
<td>16:10-16:20</td>
<td>Dejun Kong, Chaozheng Zhou, Dan Long, Yongzhong Wu, Yufeng Yan</td>
<td>College of Mechanical Engineering, Changzhou University, China</td>
</tr>
<tr>
<td></td>
<td>Token of interfacial bonding strength for VC coating prepared by TD process with scratching test</td>
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</tr>
<tr>
<td>16:20-16:40</td>
<td>Pinqiang Dai, Lvbo Lin, Lanfang Lin</td>
<td>Department of Materials Science and Engineering, Fujian University of Technology, China</td>
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<tr>
<td></td>
<td>Microstructure and properties of nanocrystalline Ni-Co-Fe-P alloy coatings synthesized by pulsed electrodeposition</td>
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<tr>
<td>16:40-17:00</td>
<td>Fangli Duan, Jiming Yang, Hebing Qiu</td>
<td>State Key Laboratory of Mechanical Transmission, Chongqing University, China</td>
</tr>
<tr>
<td></td>
<td>Repulsive and adhesive force on the interface of nanoscale contact</td>
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</tr>
<tr>
<td>17:00-17:20</td>
<td>Yonghong Fu, Jinghu Ji, Qinsheng Bi</td>
<td>School of Mechanical Engineering, Jiangsu University, China</td>
</tr>
<tr>
<td></td>
<td>Hydrodynamic lubrication of surface contact with elliptical dimples</td>
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<tr>
<td>17:20-17:40</td>
<td>Youfa Zhang, Hao Wu, Yu Zhou, Xinquan Yu</td>
<td>Jiangsu Key Laboratory of Advanced Metallic Materials, School of Materials Science and Engineering, Southeast University, China</td>
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<tr>
<td></td>
<td>Condensation on superhydrophobic aluminum foil</td>
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<tr>
<td>18:00</td>
<td>Banquet</td>
<td>Ningwo Zhuang Hotel</td>
</tr>
</tbody>
</table>
Saturday Afternoon, August 20

Session 2  Lubrication and Tribochemistry

Meeting Room 2

Chairs: Prof. Wilfred T. Tysoe / Prof. Yonggang Meng

14:00-14:35 (keynote) Michael D. Bryant  
*University of Texas at Austin, USA*

Deriving friction and wear from entropy of interfacial processes

14:35-15:05 (Invited) S. Plaza  
*University of Lodz, Poland*

Tribological properties of low-phosphorous zinc dialkyl(alkylaryl)alkoxy-dithiophosphates

15:05-15:35 (invited) Koshi Adachi  
*Laboratory of Nanointerface Engineering, Division of Mechanical Engineering, Tohoku University, Japan*

Tribologically-based design of precise positioning stage driven by friction drive actuator: ultrasonic motor and surface acoustic wave motor

15:35-15:55 Coffee Break

15:55-16:15 Xingliang Li, Wen Yue, Chengbiao Wang, Xiaocheng Gao, Song Wang, Jiajun Liu  
*School of Engineering and Technology, China University of Geosciences (Beijing), Mechanical Engineering Department, Tsinghua University, China*

Comparing tribological behaviors of plasma nitrided and untreated bearing steel under lubrication with phosphor and sulfur-free organotungsten additive

16:15-16:35 Heyan Li, Biao Ma, Jinle Zhang  
*School of Mechanical Engineering, Beijing Institute of Technology, China*

Lubrication effects on the temperature field of a wet shift clutch during engagements

16:35-16:55 Xinfa Shi, Dongfeng Liu  
*Qing Dao Oil Analysis Center, Naval University of Engineering, China*

Research on the correlative degree among the information of diesel lubricating oil disintegration monitoring

16:55-17:15 Yuankai Zhou, Hua Zhu, Wenqian Zhang, Cuicui Ji  
*School of Mechanical and Electrical Engineering, China University of Mining & Technology, China*
Numerical analysis on hydrodynamic lubrication properties of surface dimple texture on cylinder liner-piston ring

17:15-17:35 Meirong Cai, Feng Zhou, Weimin Liu  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences China, China

Task specific ionic liquid lubricants

18:00 Dinner

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Sunday Morning, August 21

Session 2  Lubrication and Tribochemistry

Meeting Room 2

Chairs: Prof. Stephen M. Hsu / Prof. Shigeyuki Mori

08:15-08:50 (keynote) Wilfred T. Tysoe  
Department of Chemistry and Laboratory for Surface Studies, University of Wisconsin-Milwaukee, USA

Surface chemistry at the tribological interface

08:50-09:20 (Invited) Gwidon Stachowiak  
University of Western Australia, Australia

Tribology: past, present and the future

09:20-09:40 Tianxing Chen, Xiangjun Zhang  
State Key Lab of Tribology, Tsinghua University, China

Velocity effect on the viscoelasticity of confined hexadecane layer studied by AFM

09:40-10:00 Coffee Break

10:00-10:20 J.C. Yan, J.M. Bu, X.F. Bai, T.H. Ren  
School of Chemistry and Chemical Technology, Shanghai Jiao Tong University, China

The tribological study of novel phosphorous-nitrogen (P-N) type phosphoramidate additives in rapeseed oil

School of Chemistry and Chemical Engineering,
Tribological behaviors of three novel thiadiazole derivatives as multifunctional lubricant additives in biodegradable lithium grease and investigation of their tribochemistry using XANES

10:40-11:00 Xinlei Gao, Jian Li, Li Wu, Hua Meng  
*School of Chemical and Environmental Engineering, Wuhan Polytechnic University, China*

Preparation and tribological properties of lubricants from microbial oil with schiff base copper complex

11:00-11:20 Jie Chen, Guoliang Hou, Guang Liu, Yulong An, Huidi Zhou, Jianmin Chen  
*State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, China*

Effect of Nd$_2$O$_3$ on mechanical, microstructure and tribological properties of plasma sprayed NiCr-Cr$_2$O$_3$ composite coatings

11:20-11:40 Xiaoling Liu, Ping Yang, Shuyi Li, Peiran Yang  
*School of Mechanical Engineering, Qingdao Technological University, China*

The lubricating behavior of a roller pair under offsetting loads

12:30 Lunch

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Sunday Afternoon, August 21

Session 2  Lubrication and Tribochemistry

Meeting Room 2

Chairs: Prof. Koshi Adachi / Prof. Gwidon Stachowiak

14:00-14:30 (Invited) Shigeyuki Mori  
*Iwate University, Japan*

Nascent surfaces as an active source for tribochemistry

14:30-15:00 (Invited) Yonggang Meng  
*Tsinghua University, China*

Influence factors and mechanism of potential-controlled friction in propylene carbonate solutions

15:00-15:30 (Invited) Wolfgang P. Weinhold  
*Innowep GmbHMeasuring & Testing, Germany*
Surface analysis and wear volume modeling

15:30-15:50 Coffee Break

15:50-16:20 (Invited) Youxi Lin, Chenghui Gao  
College of Mechanical Engineering & Automation, Fuzhou University, China

Effects of CaCO₃ whisker on the tribological behavior of CaCO₃/PEEK composites

16:20-16:40 Enzhu Hu, Xiangyang Wang, Yufu Xu, Xianguo Hu, Karl Dearn, Hongming Xu  
Institute of Tribology, Hefei University of Technology, China

Study of lubrication performance of 2,5-dimethylfuran as synthetic engine fuel

16:40-17:00 Eryong Liu, Yimin Gao, Junhong Jia  
State Key Laboratory of Solid lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Effect of double metal oxide compounds on tribological properties of nickel-base self-lubricating composition at elevate temperature

17:00-17:20 Yan Wang, Chenhui Zhang, Jianbin Luo, Yuhong Liu  
State Key Lab of Tribology, Tsinghua University, China

The lubricating properties of a new water soluble aluminum cold rolling lubricant

17:20-17:40 Jinjin Li, Chenhui Zhang, Jianbin Luo  
State Key Lab of Tribology, Tsinghua University, China

Superlubricity behavior with phosphoric acid-water network

18:00 Banquet  ◆ Ningwo Zhuang Hotel
Saturday Afternoon, August 20

Session 3  Wear of Materials

Meeting Room 3

Chairs: Prof. Roland Larsson / Prof. Erjia Liu

14:00-14:35 (Keynote) K. Friedrich  Institute for Composite Materials (IVW GmbH), Technical University Kaiserslautern, Germany

Rolling wear behavior of selected engineering polymer and composites

14:35-15:05 (Invited) Liangchi Zhang  School of Mechanical and Manufacturing Engineering, The University of New South Wales, Australia

Contact between rough surfaces:modelling and applications to polishing

15:05-15:35 (Invited) Shu Li  Institute of Metals, Chinese academy of Sciences, China

Finite element modeling simulation on tribological test of TiN film/substrate system

15:35-15:55 Coffee Break

15:55-16:15 C. Wang, P.L. Wong, X. Zhou  Department of Manufacturing Engineering and Engineering, Management, City University of Hong Kong, China

Damage effect of hard particles on DLC coating in an EHL contact

16:15-16:35 Yuanqiang Tan, Hao Zhang, Dongmin Yang, Junhua Song, Yong Sheng  School of Mechanical Engineering, Xiangtan University, China

Some applications of discrete element method in tribology

16:35-16:55 Cuicui Ji, Hua Zhu, Wei Jiang  School of Mechanical and Electrical Engineering, China University of Mining and Technology, China

A study of self-organization behavior during the wear-in process

16:55-17:15 Zhenhuan Ye, Liqin Wang, Le Gu  Harbin Institute of Technology, China

Study on roller contact pressure on high-speed roller bearing with bending moment
17:15-17:35 Liwen Mu, Yijun Shi, Jian Wu, Xin Feng, Xiaohua Lu  
State Key Laboratory of Materials-oriented Chemical Engineering, Nanjing University of Technology, China

Tribological properties of PTFE composites filled with different fibers in ionic liquid medium

17:35-17:55 Qianzhi Wang, Fei Zhou, Zhifeng Zhou, Yang Yang, Ce Yan, Chundong Wang, Wenjun Zhang, Lawrence Kwok-Yan Li, Igor Bello, Shuit-Tong Lee  
Academy of Frontier Science, Nanjing University of Aeronautics and Astronautics, China

Sliding friction and wear properties of TiN(C) coatings against SiC balls in water

18:00 Dinner

Sunday Morning, August 21

Session 3  Wear of Materials

Meeting Room 3

Chairs: Prof. Karl-Heinz Zum Gahr / Prof. Braham Prakash

08:15-08:50 (Keynote) Roland Larsson  
Division of Machine Elements, Luleå University of Technology, Sweden

Simulations of tribological phenomena–What can we learn from them?

08:50-09:20 (Invited) Joichi Sugimura  
Kyushu University, Japan

Tribology in high pressure hydrogen gas

09:20-09:50 (Invited) Wilfried J. Bartz  
Technical Academy of Esslingen, Germany

The green automobile definition and realization

09:50-10:10 Coffee Break

10:10-10:30 Xiaohong Yi, Chenhui Zhang  
State Key Laboratory of Tribology, Tsinghua University, China

Wear properties of Ni-P-nanoPTFE composite coating on hastelloy C22 deposited by electroless plating
10:30-10:50 Yuuki Tokuta, Shinya Sasaki, Masahiro Kawaguchi  
Department of Mechanical Engineering, Tokyo University of Science, Japan

Effect of pre-heat treatment on wear property of DLC films coated by PBII&D

10:50-11:10 Hua Zhu, Shirong Ge, Cuicui Ji, Wei Jiang  
School of Mechanical and Electrical Engineering, China University of Mining and Technology, China

Study on wear state recognition

11:10-11:30 Zefeng Zhang, Dekun Zhang, Dagang Wang  
School of Materials Science and Engineering, China University of Mining and Technology, China

Effect of contact loads on fretting fatigue behaviors of steel wires

11:30-11:50 Guang Liu, Yulong An, Guoliang Hou, Jie Chen, Jianmin Chen, Huidi Zhou  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Science, China

Structure and wear properties of FeCrMoWSiBC metallic glass coatings prepared by air plasma spraying

12:30 Lunch

Sunday Afternoon, August 21

Session 3  Wear of Materials

Meeting Room 3

Chairs: Prof. Joichi Sugimura / Prof. Liangchi Zhang

14:00-14:30 (Invited) Erjia Liu  
School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore

Thermal, mechanical and tribological properties of polymer matrix composites incorporated with microcapsules

14:30-15:00 (Invited) Karl-Heinz Zum Gahr  
Institute for Applied Materials, Karlsruhe Institute of Technology (KIT), Germany
### Friction control and efficient lubrication of ceramic sliding pairs by laser surface microtexturing

15:00-15:30 (Invited) Braham Prakash  
*Luleå University of Technology, Sweden*

### High temperature tribology in the context of hot sheet metal forming

15:30-15:50 Coffee Break

*Research Lab of Tribology, Harbin Institute of Technology, China*

### Surface failure behaviors of M50 bearing steel under two-disc sliding/rolling contact condition

16:20-16:40 Gai Zhao, Tingmei Wang, Qihua Wang  
*State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, China*

### Mechanical and tribological properties of the polyurethane composites reinforced with the selected fiber

16:40-17:00 Yaping Bai, Jian Wang, Li Cao, Jiandong Xing  
*State Key Laboratory for Mechanical Behavior of Materials, School of Materials Science and Engineering, Xi'an Jiaotong University, China*

### Friction and wear behavior of Fe<sub>3</sub>Al alloys prepared by mechanical alloying with subsequent plasma activated sintering and hot pressing

17:00-17:20 Guofeng Wang, Hengzhou Wo, Yafang Zhang, Yufu Xu, Xianguo Hu  
*I Institute of Tribology Hefei University of Technology, China*

### Study of cavitation flow performance in diesel injector nozzle

17:20-17:40 Sihan Shen, Yonggang Meng  
*State Key Laboratory of Tribology, Tsinghua University, China*

### Wear of silicon MEMS devices

17:40-18:00 Chenfei Song, Bingjun Yu, Linmao Qian  
*Tribology Research Institute, National Traction Power Laboratory, Southwest Jiaotong University, China*

### Friction-induced nanofabrication for protrusive nanostructures on quartz

18:00 Banquet  
◆ Ningwo Zhuang Hotel
### Saturday Afternoon, August 20

**Session 4  Nano and Biotribology**

**Meeting Room 4**

Chairs: Prof. Zhongmin Jin / Prof. Haiyang Yu

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<th>Institution</th>
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<tbody>
<tr>
<td>14:00-14:35</td>
<td>Shirong Ge</td>
<td>China University of Mining &amp; Technology, China</td>
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<tr>
<td>(Keynote)</td>
<td>The biotribological reliability of artificial hip joints</td>
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<td>14:35-15:05</td>
<td>Noritsugu Umehara</td>
<td>Nagoya University, Japan</td>
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<tr>
<td>(Invited)</td>
<td>Surface modification for future machines and instruments</td>
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<tr>
<td>15:05-15:35</td>
<td>Anne Neville, Hongyuan Zhao</td>
<td>School of Mechanical Engineering, University of Leeds, UK</td>
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<tr>
<td>(Invited)</td>
<td>Sustainable design of tribological interfaces for clean and energy-efficient automotive powertrains – review of an EU transportation project</td>
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<tr>
<td>15:35-15:55</td>
<td>Coffee Break</td>
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<td></td>
<td>Development of nano diamond particles composite plating and evaluation of their tribological property</td>
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<tr>
<td>16:15-16:35</td>
<td>Li Chang, Klaus Friedrich, Lin Ye</td>
<td>The University of Sydney, Australia</td>
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<td>Development of the wear resistant polymeric hybrid composites using nanoparticles</td>
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<td>16:35-16:55</td>
<td>Xiaoliang Zhang, Junhong Jia</td>
<td>Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China</td>
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<td></td>
<td>Adhesion and friction studies of micro-patterned surfaces using atomic force microscopy with colloidal probe</td>
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<tr>
<td>16:55-17:15</td>
<td>S. Plaza, L. Margielewski, R. Stanecka-Badura</td>
<td>University of Lodz, Poland</td>
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<tr>
<td></td>
<td>Tribological properties of low-phosphorous zinc n-dialkyl(n-nonylaryl and di-n-nonylaryl</td>
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</table>
Sunday Morning, August 21

Session 4  Nano and Biotribology

Meeting Room 4

Chairs: Prof. Shirong Ge / Prof. Noritsugu Umehara

08:15-08:50 (Keynote) Takahisa Kato  University of Tokyo, Japan
Molecular dynamic simulations for Si incorporated DLC films

08:50-09:20 (Invited) Kristian Tønder  Norwegian University of Science and Technology, Norway
Effects of texturing on bearing performance

09:20-09:50 (Invited) Linmao Qian  Tribology Research Institute, Southwest Jiaotong University, China
Friction-induced nanofabrication

09:50-10:10 Coffee Break

10:10-10:30 Sicheng Ye, Sasaki Shinya, Kunitsugu Shinsuke  Department of Mechanical Engineering, Tokyo University of Science, Japan
Determination of adhesion of CrN film through scratch testing

alkoxydithiophosphates

17:15-17:35 Tianbao Ma, Yuanzhong Hu, Hui Wang  State Key Laboratory of Tribology, Tsinghua University, China
Superlubricity of diamond-like carbon films by shear induced formation of graphene-like transfer layer

17:35-17:55 Jing Han, Liang Fang, Jiapeng Sun, Shirong Ge, Hua Zhu  China University of Mining & Technology, China
Atomistic simulations of the contact deformation and friction of Cu NDPSs

18:00 Dinner
10:30-10:50 Xiaosheng Zhang, Chunlin Wu, Zhaofeng Chen, Hong Xu, Jinxiang Dong  
*Taiyuan University of Technology, China*

Hydrothermal synthesis of layered $\alpha$-zirconium phosphate

10:50-11:10 Lei Chen, Linmao Qian  
*Southwest Jiaotong University, China*

Nanofretting behaviours of ultra thin DLC coating with 2nm and 5nm in thickness on Si(100) substrate

11:10-11:30 Liang Xu, Yuanzhong Hu, Hui Wang  
*State Key Laboratory of Tribology, Tsinghua University, China*

A three-parameter model for stick-slip friction in few-layer graphene

*State Key Lab of Tribology, Tsinghua University, China*

Effect of polyalkylene glycols (PAGs) on the copper chemical mechanical polishing (CMP)

12:30 Lunch

**Sunday Afternoon, August 21**

**Session 4  Nano and Biotribology**

**Meeting Room 4**

Chairs: Prof. Takahisa Kato / Prof. Kristian Tonder

14:00-14:30 (Invited) Zhongmin Jin  
*University of Leeds, UK*

Challenges in biotribological research of natural synovial joints and artificial replacements

14:30-15:00 (Invited) Haiyang Yu  
*State Key Laboratory of Oral Diseases, West China Hospital of Stomatolgy, Sichuan University, China*

The fretting damages of dental implant-bone interface

15:00-15:30 (Invited) Yi Li  
*HongKong Polytechnic University, China*

Evaluation method of fabric sticky property using KES-F parameters
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<td>15:30-15:50</td>
<td>Coffee Break</td>
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<tr>
<td>15:50-16:10</td>
<td>Y.F. Li, J.H. Ouyang, S. Sasaki <em>Tokyo University of Science, Japan</em></td>
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<tr>
<td>Tribological properties of spark-plasma-sintered $\text{ZrO}_2(\text{Y}_2\text{O}_3)-\text{Al}_2\text{O}<em>3-\text{Ba Sr}</em>{1-x}\text{SO}_4$ ($x=0.25$, 0.5, 0.75) nanocomposites at elevated temperature</td>
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<td>16:10-16:30</td>
<td>Chenhui Zhang, Yingchun Zhao, Marcus Björling, Jianbin Luo, Braham Prakash <em>Tsinghua University, China</em></td>
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<td>Film forming characteristics of polyalkylene glycols aqueous solutions in EHL contact</td>
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<td>16:30-16:50</td>
<td>Bingjun Yu, Hanshan Dong, Linmao Qian, Zhongrong Zhou <em>Southwest Jiaotong University, China</em></td>
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<tr>
<td>Experimental investigation on the friction-induced protrusive nanostructures on monocrystalline silicon</td>
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<td>16:50-17:10</td>
<td>Wen Yue, Xiaocheng Gao, Chenghao Wang, Zhiqiang Fu, Xiang Yu, Jiajun Liu <em>School of Engineering and Technology, China University of Geosciences (Beijing), China</em></td>
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<tr>
<td>Microstructure and friction-reducing performance of W doped diamond-like carbon film treated by low temperature ion sulfuration</td>
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<td>17:10-17:30</td>
<td>Linqing Bai, Shaoxian Bai, Xiangkai Meng, Xudong Peng <em>College of Mechanical Engineering, Zhejiang University of Technology, China</em></td>
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<td>Experimental study on friction performance of orientation multi-pored surfaces</td>
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<td>17:30-17:50</td>
<td>Yanhong Lv, Li Jia, Xiaohong Liu, Hongxuan Lia, Huidi Zhou, Jianmin Chen <em>State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China</em></td>
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<td>Friction and wear properties of Graded CrAlN coatings sliding against $\text{Al}_2\text{O}_3$ and $\text{Si}_3\text{N}_4$ balls in water and dry conditions</td>
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<td>18:00</td>
<td>Banquet ◆ Ningwo Zhuang Hotel</td>
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Saturday Afternoon, August 20

Session 5  STLE-CTI Joint Session on Industrial Tribology

Meeting Room 5

Chairs: Dr. Edward Becker / Prof. Xinping Yan

14:00-14:30 (Invited) Jianbin Luo  State Key Lab of Tribology, Tsinghua University, China

Manufacturing of atomic smooth surfaces by CMP

14:30-15:00 (Invited) Edward P. Salek  Society of Tribologists and Lubrication Engineers, 40 Busse Highway, Park Ridge, Illinois (USA)

Role of the technical society in the 21st century

15:00-15:30 (Invited) Yongzhen Zhang  School of Materials Science and Engineering, Henan University of Science and Technology, China

Influence of material permeability on tribological behaviors under dry sliding with DC steady magnetic interference

15:30-15:50 Coffee Break

15:50-16:20 (Invited) Michael Dugger  Sandia National Laboratories, USA

Vapor phase lubrication of precision electromechanical mechanisms

16:20-16:50 (Invited) Feng Guo  School of Mechanical Engineering, Qingdao Technological University, China

Measurement of load-carrying capacity of a fixed-incline slider bearing by interferometry


The importance of coating durability on the performance of roller bearings

17:20-17:40 Wei Liu, Ying Liu, Yuming Wang  State Key Lab of Tribology, Tsinghua University, China

Effects of elastic deformation on the performance of wavy-tilt-dam mechanical seals
17:40-18:00 Jinlei Cui, Xiaoling Liu, Peiran Yang *School of Mechanical Engineering, Qingdao Technological University, China*

Size effect on thermal elastohydrodynamic lubrication in point contacts

18:00 Dinner

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**Sunday Morning, August 21**

**Session 5  STLE-CTI Joint Session on Industrial Tribology**

**Meeting Room 5**

Chairs: Prof. Jianbin Luo / Prof. Q. Jane Wang

08:15-08:45 (Invited) Edward Becker *Formal STLE President, General Motors, USA*

A worldwide engine oil specification for general motors vehicles

08:45-09:15 (Invited) Yuanzhong Hu *State Key Lab of Tribology, Tsinghua University, China*

Understanding roughness effects in lubricated contacts

09:15-09:45 (Invited) Hong Liang *Texas A&M University, USA*

Tribo-electrochemical-mechanical polishing of tantalum

09:45-10:05 Coffee Break

10:05-10:35 (Invited) Chengqing Yuan *Wuhan University of Technology, China*

Study on tribological problems of key parts in marine power system

10:35-11:05(Invited) Lavern (Vern) Wedeven *Wedeven Associates, USA*

Tribology material development and qualification through simulation testing

11:05-11:35 (Invited) Pingping Yao *State Laboratory of Powder Metallurgy, Central South University, China*

Tribological properties and applications of high-performance powder metallurgy aircraft brake
PROGRAM 6th CIST 2011

11:35-11:55 Xiaocheng Gao, Wen Yue, Chengbiao Wang, Xingliang Li, Song Wang, Jiajun Liu  School of Engineering and Technology, China University of Geosciences (Beijing), China

Influence of plasma nitriding for 52100 steel lubricated with molybdenum dithiocarbamates additive on its tribological behaviors under boundary lubrication

12:30 Lunch

Sunday Afternoon, August 21

Session 5  STLE-CTI Joint Session on Industrial Tribology

Meeting Room 5

Chairs: Dr. Edward P. Salek / Prof. Yuanzhong Hu

14:00-14:30 (Invited) Q. Jane Wang, Tom Zolper, Tobin Marks, Y.W. Chung  Northwestern university, USA

Modeling the rheological and tribological properties of lubricants

14:30-15:00 (Invited) Minhao Zhu  Southwest Jiaotong University, China

On the mechanisms of various fretting modes

15:00-15:30 (Invited) Dong Zhu  Tri-Tech, USA

An introduction to interfacial mechanics

15:30-15:50 Coffee Break

15:50-16:20 (Invited) Jian Li  Wuhu Research Institute of Materials Protection, China

Regeneration of used lubricating oil and effects of additives

16:20-16:50 (Invited) Junyan Zhang, Bin Zhang  State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Low friction carbon films and application to engine
16:50-17:10 Bai Hui, Xing Ye  Beijing Technology Co., Ltd, China

The reliability evaluation of the functional film

17:10-17:30 Liang Zhang, Jianbin Luo  State Key Lab of Tribology, Tsinghua University, China

Experimental investigations on jet electrochemical polishing

18:00 Banquet  ◆  Ningwo Zhuang Hotel
Saturday Afternoon, August 20

Session 6  China-UK Summer School on Tribology and Surface Engineering

Meeting Room 6

Chairs: Prof. Robert JK Wood / Prof. Xiaolei Wang

14:00-14:30 (Invited) Julian Wharton  University of Southampton, UK

Electrochemical sensing of aerobic marine bacterial biofilms and the influence of nitric oxide attachment control

14:30-15:00 (Invited) Jinjun Lu  State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Tribological behavior and consideration on carbon-derived carbon coating on carbides by chlorination

15:00-15:30 (Invited) Jianning Ding  Changzhou University, China

Quantum effect and surface effect in Tribology

15:30-15:50 Coffee Break

16:50-16:10 Limin Zhao  Limin Tribology Research Institute, China

On gear scuffing failure standard of wind power machines

16:10-16:30 Jianliang Li, Dangsheng Xiong, Yongkang Zhang, Yongkun Qin  School of Material Science and Engineering, Nanjing University of Science and Technology, China

Tribological behavior of electric-deposition nickel- BN composite coatings at high temperature

16:30-16:50 Jingling Zhou, Yujing Li, Weiming Zuo  School of Mechanical Engineering, Nantong University, China

Pure rolling contact fatigue test rig

16:50-17:10 Jianyun Zheng, Junying Hao, Xiaoqiang Liu, Weimin Liu  State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Influence of deposition time of TiN layer on the tribological properties of the Ti-TiN-TiCN coatings
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<td>Invited</td>
<td>Xiaolei Wang</td>
<td>Nanjing University of Aeronautics and Astronautics, China</td>
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<td>08:45-09:15</td>
<td>Invited</td>
<td>Shuncai Wang</td>
<td>University of Southampton, UK</td>
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<td>09:15-09:55</td>
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<td>Wenwen Liu, Xingbin Yan, Jiangtao Chen, Quanji Xue</td>
<td>State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, China</td>
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<td>09:55-10:15</td>
<td></td>
<td>Xiao Huang, Tianmin Shao</td>
<td>State Key Laboratory of Tribology, Tsinghua University, China</td>
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**Sunday Morning, August 21**

Session 6  China-UK Summer School on Tribology and Surface Engineering

Meeting Room 6

Chairs: Prof. Julian Wharton / Prof. Jianning Ding

17:10-17:30 S.Y. Yang, F. Guo, H.F. Wang  
*School of Mechanical Engineering, Qingdao Technological University, China*

Experimental investigation on the effects of grooved surface in hydrodynamic lubrication

17:30-17:50 Yuxing Peng, Zhencai Zhu, Minming Tong, Guoan Chen, Xingguo Shao, Wan Ma, Yilei Li  
*School of Mechanical and Electrical Engineering, China University of Mining and Technology, China*

Dynamic friction heat conduction and entransy of friction lining

18:00 Dinner
10:15-10:35 Rong An, Mingjie Wei, Longyun Qiu, Liwen Mu, Yijun Shi, Xiaohua Lu, Xin Feng  
State Key Laboratory of Materials-oriented Chemical Engineering, Nanjing University of Technology, China

1,2-propanediol/choline chloride ionic liquid nanotribological behavior on mesoporous TiO₂ film with atomic force microscopy (AFM)

10:35-10:45 Yonghong Fu, Hua Xu, Xijun Hua, Zhongling Wang, Dongcheng Sun  
School of Mechanical Engineering, Jiangsu University, China

Surface topography optimization and numerical simulations of frictional influences on the formability

10:45-11:05 Guisen Wu, Weijiu Huang  
College of Materials Science and Engineering, Chongqing University of Technology, China

The tribological properties of ultra fine alumina ceramics

12:30 Lunch

Sunday Afternoon, August 21

Session 6  China-UK Summer School on Tribology and Surface Engineering

Meeting Room 6

Chairs: Prof. Shuncai Wang / Prof. Chengqing Yuan

14:00-14:20 Yanxia Wu, Hongxuan Li, Xiaojun Sun, Li Ji, Yinping Ye, Jianmin Chen, Huidi Zhou  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Influence of source gas and tested atmosphere on tribological properties of a-C:H films in high vacuum

14:20-14:40 Yongjun Wang, Hongxuan Li, Li Ji, Xiaohong Liu, Huidi Zhou, Jianmin Chen  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, Lanzhou, China

Friction and wear properties of graphite-like carbon film deposited on different substrate with different interlayer under a high contact stress about 2.5 GPa

14:40-15:00 Shengguo Zhou, Liping Wang, Qunji Xue  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China
Design and tribological investigation of multi-component carbon-based nanocomposite coatings

15:00-15:20 Lichun Bai, Guangan Zhang, Zhibin Lu, Liping Wang  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

A new index to predict the tribological behavior of carbon films against different counterparts

15:20-15:40 Coffee Break

18:00 Banquet  ◆ Ningwo Zhuang Hotel
Microstructure and tribological properties of Ti-Cu intermetallic compound coating

Baixing Liu, Xianqiang Pei, Qihua Wang, Xiaojun Sun, Tingmei Wang  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Effects of proton irradiation on the structural and tribological properties of polyimide

Yanxin Song, Yanqiu Xia  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Influence of the alkyl chain length of hydroxyethyl alkylimidazolium hexafluorophosphate ionic liquids on physicochemical and tribological properties of steel-steel contacts

Aifang Wang, Wenzhen Wang, Junhong Jia, Dingjun Zhang, Youzhi Wu  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

Effects of MoS2 and graphite on mechanical and tribological properties of Ni-Cr based self-lubricating composites

Zeyun Wang, Yanxiu Xia, Zhilu Liu  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences

Synthesis a new lubricating grease using organo-attapulgite

Guangan Zhang, Liping Wang, Qunji Xue  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

High-tech applications of multi-scale carbon-based tribological coatings

Ying Wang, Liping Wang, Jianning Ding, Ningyi Yuan, Qunji Xue  
Center for low-dimensional materials, micro-nano devices and system, Changzhou University, China

Microfriction behaviors of metal surface with biomimic Microtexture

Yongjuan Mi, Junfei Ou, Zhaofeng Wang, Shengrong Yang, Jinqing Wang  
State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China

A simple in-situ reduction method for preparation of graphene based lubricant films
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<td>Junfei Ou, Yongjuan Mi, Shengrong Yang, Jinqing Wang</td>
<td>State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China</td>
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<td>Key Laboratory of Material Tribology, Henan University of Science and Technology, China</td>
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<td>Zhaofeng Chen, Xiaosheng Zhang, Chunlin Wu, Hong Xu, Jinxiang Dong</td>
<td>Research Institute of Special Chemicals, Taiyuan University of Technology, China</td>
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<td>School of Basic Science, East China Jiaotong University, China</td>
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<td>Tianchang Hu, Litian Hu</td>
<td>State Key Laboratory of Solid Lubrication, Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China</td>
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<td>Yuqi Li, Guangqin Pan, Tingmei Wang, Qihua Wang</td>
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Preparation and tribological properties of graphene oxide/nitrile rubber composites under water lubrication conditions

Lingqian Wang, Jiansong Zhou, Youjun Yu, Chun Guo, Jierong Zhao, Jianmin Chen, Huidi Zhou  
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Evolution of self-lubricating behaviours of Ni-based composite coatings produced by laser cladding with powders of different sizes

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Application of FL-C:H-films on motor parts with super protection

15:55-16:15 Shengyu Zhu, Qinling Bi, Jun Yang, Weimin Liu  
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Tribological property of Ni3Al-fluorides-Ag-W composite at a wide temperature range

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Tribological performance of branched alkyl phosphate ionic liquid for steel/steel contact