

# 2017 HYDROGENIUS & I2CNER Tribology Symposium

Time & Date: 9:50~18:00, February 3 (Fri.), 2017

Venue: Shiiki Hall, Kyushu University Ito Campus

## Program

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9:50-10:00 Opening Remarks: Joichi Sugimura, Kyushu University

**Oral Session 1** Chairman: Yoshinori Sawae (Kyushu University, Japan)

10:00-10:25 **Invited Talk:**

**Effect of lubricant additives on friction and wear of DLC films**

Shinya Sasaki, Hikaru Okubo  
Tokyo University of Science, Japan

10:25-10:50 **Invited Talk:**

**Nanostripe Surface Structures: Combination of Micro- and Nano-sized Surface Texturing for Improving Tribological Properties**

Koji Miyake<sup>1</sup>, Atsushi Korenaga<sup>1</sup>, Hiroki Mano<sup>1</sup>, Tsuguyori Ohana<sup>1</sup>,  
and Yasuhisa Ando<sup>2</sup>  
1. National Institute of Advanced Industrial Science and Technology, Japan,  
2. Tokyo University of Agriculture and Technology, Japan

10:50-11:15 **Invited Talk:**

**Friction and Wear of Polymer Composites in Hydrogen Environment at low temperature**

Naotoshi Shimizu<sup>1</sup>, Yasuhiro Shimazu<sup>1</sup>, Junichi Yoshihisa<sup>1</sup>, Yoshinori Sawae<sup>2</sup>,  
Takehiro Morita<sup>2</sup>, Shugo Onitsuka<sup>2</sup>, Hideki Watanabe<sup>2</sup>, Joichi Sugimura<sup>2</sup>  
1. IHI Co., Ltd., Japan, 2. Kyushu University, Japan

11:15-11:40 **Invited Talk:**

**Mechanism Analysis Technique for Future Fuel: Corrosive Wear of Stainless Steel in Methanol Blended Gasoline**

Kazuhito Yoshida, Ryoichi Hombo, Sosuke Tachikawa, Keiji Sasaki,  
Naruhiko Inayoshi  
DENSO Co. Ltd., Japan

11:40-12:00 **Invited Talk:**

**Effect of Thicker Types and Additives on Grease Decomposition and Hydrogen Generation by Nascent Steel Surfaces**

Toru Izumi<sup>1</sup>, Yasuha Tokumo<sup>1</sup>, Yusuke Ayame<sup>1</sup>, Hironori Takeuchi<sup>1</sup>,  
Yuji Shitara<sup>1</sup>, Toshiaki Wakabayashi<sup>2</sup>  
1. JX Nippon Oil & Energy Corporation, Japan, 2. Kagawa University, Japan

**Oral Session 2** Chairman: Hiroyoshi Tanaka (Kyushu University, Japan)

13:00-13:40 **Keynote Lecture 1:**

**Superlubricity of hydrogenated DLC films under high temperatures**

Qunfeng Zeng<sup>1</sup>, Ali Erdemir<sup>2</sup>, Osman Eryilmaz<sup>2</sup>  
1. Xi'an Jiaotong University, China, 2. Argonne National Laboratory,  
USA

13:40-14:20 **Keynote Lecture 2:**

**Lubricant Environments and Rolling Contact Fatigue Performance**

Monica Ratoi<sup>1</sup>, Joshua Seetanah<sup>1</sup>, Brian Mellor<sup>1</sup>, Hiroyoshi Tanaka<sup>2</sup>, Joichi Sugimura<sup>2</sup>  
1. University of Southampton, United Kingdom, 2. Kyushu University, Japan

14:20-14:45 **Invited Talk:**  
**Influences of atmospheric humidity on adhesion of solid bodies in contact**  
Kanao Fukuda, Zaid Ali Subhi  
Universiti Teknologi Malaysia, Malaysia

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**Joint Symposium of Hydrogen Tribology Team and Hydrogen Polymers Team**

**Oral Session** Chairman: Shin Nishimura (Kyushu University)

15:00-15:40 **Keynote Lecture:**  
**TBD**

Kevin Simmons, Pacific Northwest National Laboratory, USA

15:40-16:10 **Invited Talk:**  
**Polymer Tribology in Hydrogen**  
Yoshinori Sawae  
Kyushu University, Japan

16:10-16:20 Closing Remarks of Oral Session: Joichi Sugimura, Kyushu University

**Poster Session**

16:30-18:00

**PT01 The Effect of Lubricants Environments on Hydrogen Embrittlement**

Joshua Seetanah<sup>1</sup>, Monica Ratoi<sup>1</sup>, Brian Mellor<sup>1</sup>, Hiroyoshi Tanaka<sup>2</sup>, Joichi Sugimura<sup>2</sup>  
1. University of Southampton, United Kingdom, 2. Kyushu University, Japan

**PT02 A Study on an Axlai Seal System of High Pressure Liquid Hydrogen for Rocket Engine**

Hiroshi Shiomi, Hiromitsu Kakudo, Masaki Sato, Tomoyuki Hashimoto, Makoto Yoshida, Satoshi Takada  
Japan Aerospace Exploration Agency, Japan

**PT03 Effects of Environmental Gas and Trace Water on Friction of DLC Slid with Metals**

Yoshihiro Kurahashi, Hiroyoshi Tanaka, Masaya Terayama, Joichi Sugimura  
Kyushu University, Japan

**PT04 Formation of surface film and hydrogen permeation under rolling/sliding contact**

Hiroki Fukuoka<sup>1</sup>, Hiroyoshi Tanaka<sup>1</sup>, Monica Ratoi<sup>2</sup>, Joichi Sugimura<sup>1</sup>  
1. Kyushu University, Japan, 2. University of Southampton, United Kingdom

**PT05 Effect of environmental gas on friction and wear of stainless steels**

Keisuke Manabe, Hiroyoshi Tanaka, Joichi Sugimura  
Kyushu University, Japan

**PT06 Preventing hydrogen permeation into bearing steel by using lubricant additives**

Vlad Bogdan Niste<sup>1</sup>, Hiroyoshi Tanaka<sup>1</sup>, Monica Ratoi<sup>2</sup>, Joichi Sugimura<sup>1</sup>  
1. Kyushu University, Japan, 2. University of Southampton, United Kingdom

**PT07 Tribology of (PEI/GO)n Multilayer Coatings in Various Environments**

Prabakaran Saravanan, Roman Selyanchyn, Hiroyoshi Tanaka, Shigenori Fujikawa and Joichi Sugimura  
Kyushu University, Japan

**PT08 Observation of DLC/metal Tribointerface in Various Gas Environments with Photo Emission Electron Microscopy**

Hiroyoshi Tanaka, Shinji Ito, Joichi Sugimura  
Kyushu University, Japan

**PT09 Analysis of surface roughness and sealing capability of polymer composites for hydrogen gas seals**

Ryo Kamiya, Takehiro Morita, Yoshinori Sawae, Joichi Sugimura  
Kyushu University, Japan

**PT10 Friction and Surface Damages of Rubbers under Reciprocal Tangential Loading in Hydrogen**

Joichi Sugimura, Hiroyoshi Tanaka, Kazumi Okada, Tetsuo Yamaguchi  
Kyushu University, Japan

**PT11 Self-forming carbon film lubrication for carbon fibre filled PTFE in high purity hydrogen gas environment**

Yoshinori Sawae<sup>1</sup>, Hiroshi Kojima<sup>1</sup>, Takehiro Morita<sup>1</sup>, Kyota Takeda<sup>2</sup>, Hiroyoshi Uejima<sup>2</sup>, Jyo Kaneuti<sup>2</sup>, Joichi Sugimura<sup>1</sup>  
1. Kyushu University, Japan, 2. STARLITE Co., Ltd., Japan,

**PT12 Effects of trace moisture content on friction and wear of carbon fiber filled PTFE in Hydrogen**

Yuta Abe, Hiroshi Kojima, Takehiro Morita, Shugo Onitsuka, Yoshinori Sawae, Joichi Sugimura  
Kyushu University, Japan

**PT13 The influence of the contact surface geometry on hydrogen gas sealing ability of PEEK-based polymer seal**

Takehiro Morita, Tomoki Noumi, Hideki Watanabe, Yoshinori Sawae, Joichi Sugimura  
Kyushu University, Japan

**PT14 Carbon film formation on the surface of carbon fiber filled PTFE during sliding in High-purity Hydrogen**

Yuta Abe, Yoshinori Sawae, Takehiro, Morita, Hideki Watanabe, Shugo Onitsuka, Tetsuo Yamaguchi, Joichi Sugimura  
Kyushu University, Japan

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