

# 2016 HYDROGENIUS & I2CNER Tribology Symposium

Time & Date: 10:00~17:45, February 4 (Thu.), 2016

Venue: Shiiki Hall, Kyushu University Ito Campus

## Program

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

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

10:10-10:50      **Keynote Lecture 1 :**

**Tribology of Polymer Materials in Hydrogen**

Géraldine Theiler

Federal Institute for Materials Research and Testing, Germany

10:50-11:30      **Keynote Lecture 2 :**

**Tribochemical Wear of Polytetrafluoroethylene: Effect of Environmental Condition on Transfer Film Formation**

Tasuku Onodera<sup>1</sup>, Jun Nunoshige<sup>1</sup>, Kenji Kawasaki<sup>1</sup>, Hiroshi Nakano<sup>1</sup>,  
Kazue Kurihara<sup>2</sup>, Momoji Kubo<sup>2</sup>

1. Hitachi, Ltd., Japan, 2. Tohoku University, Japan

11:30-11:55      **Invited Talk:**

**Friction and Wear of Polymer Composites in Hydrogen Environment at -40°C**

Yasuhiro Shimazu, Junichi Yoshihisa, IHI Corporation, Japan

11:55-12:20      **Invited Talk:**

**Tribological Behavior of PTFE Composites in Hydrogen Atmosphere**

Kyota Takeda<sup>1</sup>, Jyo Kaneuti<sup>1</sup>, Yoshinori Sawae<sup>2</sup>, Takehiro Morita<sup>2</sup>, Joichi Sugimura<sup>2</sup>

1. STARLITE Co., Ltd., Japan, 2. Kyushu University, Japan

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**Poster session** 13:30-14:30

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

Yuji Shitara<sup>1</sup>, Yasuha Tokumo<sup>1</sup>, Yusuke Ayame<sup>1</sup>, Toshiaki Wakabayashi<sup>2</sup>

1. JX Nippon Oil & Energy Corporation, 2. Kagawa University

**Protonation Induced Conductance Change of Redox-Active Ruthenium (II) Complexes**

Koji Miyake<sup>1</sup>, Takao Ishida<sup>1</sup>, and Masa-aki Haga<sup>2</sup>

1 National Institute of Advanced Industrial Science and Technology, Japan,

2. Chuo University, Japan

**Effect of hydrogen concentration of DLC films on tribo-chemical activity of sliding surface for environmentally friendly based oils**

Hikaru Okubo, Chiharu Tadokoro, Shinya Sasaki

Tokyo University of Science, Japan

**High-temperature tribological properties of C/C composite material**

Satoshi Hishino<sup>1</sup>, Rolf Waeche<sup>2</sup>, Shinya Sasaki<sup>1</sup>

1, Tokyo University of Science, Japan

2, Federal Institute for Materials Research and Testing, Germany

**Friction and wear properties of various polymers rubbed to aluminum alloy under hydrogen environment**

Tomoaki Iwai, Takafumi Yasugi, Takaya Ueda, Yotaka Shoukaku

Kanazawa University, Japan

**Evaluation of Bearing for Electric Control Valve for Large Rocket Engines**

Satoshi Takada<sup>1</sup>, Hiroyoshi Tanaka<sup>2</sup>, Nobuyuki Azuma<sup>1</sup>, Makoto Yoshida<sup>1</sup>, Joichi Sugimura<sup>2</sup>

1. Japan Aerospace Exploration Agency, Japan, 2. Kyushu University, Japan

**Effects of counter surface metals on friction and wear process of DLC in hydrogen**

Yoshihiro Kurahashi, Mitsuhiro Matsuda, Hiroyoshi Tanaka, Joichi Sugimura  
Kyushu University, Japan

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

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

**Effects of lubricant additives on hydrogen permeation under rolling contact**

Hiroyoshi Tanaka<sup>1</sup>, Yuta Abe<sup>1</sup>, Vlad Bogdan Niste<sup>1</sup>, Hiroki Fukuoka<sup>1</sup>, Monica Ratoi<sup>2</sup>, Joichi Sugimura<sup>1</sup>

1. Kyushu University, Japan, 2. University of Southampton, UK

**Observation of friction and surface damage of rubber at start of sliding and reciprocal motion in hydrogen**

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

**Effect of trace moisture content on friction and wear of carbon fiber filled PTFE in hydrogen and nitrogen**

Hiroshi Kojima, Yoshinori Sawae, Takehiro Morita, Tetsuo Yamaguchi, Joichi Sugimura  
Kyushu University, Japan

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**Oral Session 2** Chairman: Makoto Yoshida (Japan Aerospace Exploration Agency, Japan)

14:30-15:10 **Keynote Lecture 3 :**

**Investigation into mechanisms leading to 'White-Etching Crack' bearing failure**

Aaron Greco  
Argonne National Laboratory, USA

15:10-15:50 **Keynote Lecture 4 :**

**Emission of hydrogen from sliding surface under lubrication with ionic liquids**

Shinya Sasaki  
Tokyo University of Science, Japan

15:50-16:15 **Invited Talk:**

**Hydrogen Permeation into Bearing Steels under Sliding**

Hiroyoshi Tanaka, Taiki Komatsu, Joichi Sugimura  
Kyushu University, Japan

**Oral Session 3** Chairman: Shinya Sasaki (Tokyo University of Science, Japan)

16:25-16:50 **Invited Talk:**

**In situ analysis of friction-induced structural changes of DLC by using newly developed observation system**

Keiji Sasaki, Denso Co. Ltd., Japan

16:50-17:15 **Invited Talk:**

**Control of Trace Impurities in an Experimental Gaseous Environment**

Kanao Fukuda  
Malaysia-Japan International Institute of Technology, Malaysia

17:15-17:40 **Invited Talk:**

**Tribology of (PEI/GO)<sub>n</sub> multilayer coatings in Various Environments**

Prabakaran Saravanan, Roman Selyanchyn, Stephen Lyth, Hiroyoshi  
Tanaka, Aleksander Staykov, Shigenori Fujikawa, Joichi Sugimura  
Kyushu University, Japan

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17:40-17:45

Closing Remarks: Joichi Sugimura, Kyushu University

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