



INTERNATIONAL INSTITUTE FOR CARBON-NEUTRAL ENERGY RESEARCH

-HYDROGEN IN TRIBOLOGICAL PROCESSES-
2019 HYDROGENIUS & I²CNER TRIBOLOGY SYMPOSIUM
(I²CNER HYDROGEN MATERIALS COMPATIBILITY DIVISION
& HYDROGENIUS TRIBOLOGY DIVISION)

DATE: WEDNESDAY, JANUARY 30, 2019

TIME: 13:00-18:00

VENUE: LECTURE THEATER 303, SHIKI HALL

Time	Program and Speaker
13:00-14:30	Session 1 Chairperson: Yoshinori Sawae, Kyushu University
13:00-13:40	Keynote Lecture 1 Influence of cryogenic hydrogen environment on the tribological properties of materials Thomas Gradt, Bundesanstalt für Materialforschung und -prüfung (BAM), Germany
13:40-14:05	Invited Talk Friction and wear of DLC and stainless steel in various environmental gas Yuya Hayashi ¹ , Keiji Sasaki ¹ , Taichi Araki ² , Hiroyoshi Tanaka ² , Joichi Sugimura ² ¹ DENSO Corporation, ² Kyushu University, Japan
14:05-14:30	Invited Talk Approaching for low friction with high permittivity material under oil lubrication Motoyuki Murashima, Nagoya University, Japan
14:30-14:40	Break
14:40-15:55	Session 2 Chairperson: Joichi Sugimura, Kyushu University
14:40-15:05	Invited Talk Molecular simulations for boundary lubrication under specific conditions Hitoshi Washizu, University of Hyogo, Japan
15:05-15:30	Invited Talk Effect of molecular structures of oils on amounts of hydrogen evolution through decomposition of oils by action of discharge plasma Satoshi Nouyama ¹ , Keiji Nakayama ² ¹ Kyodoyushi Co., Ltd., ² Institute of Mesotechnology, Japan
15:30-15:55	Invited Talk Generation and permeation of hydrogen at metal surfaces Hiroyoshi Tanaka, Kyushu University, Japan
15:55-16:00	Break

16:00-16:40	Joint Session with Hydrogen Polymers Team Invited Talk TBD
16:40-16:45	Break
16:45-18:00	Poster Session PT01. Performance of bearings and shaft-seals for reusable rocket engine turbopump Hiromitsu Kakudo, Takashi Yokoyama, Satoshi Takada, Makoto Yoshida Japan Aerospace Exploration Agency (JAXA), Japan PT02. Correlation of PV value with wear of DLC in hydrogen Hirofumi Hashiba ¹ , Takehiro Morita ² , Yoshinori Sawae ² , Joichi Sugimura ² ¹ Aisan Industry Co., Ltd., ² Kyushu University, Japan PT03. Effect of doped metals on low friction of DLC coatings Kohei Shirahama, Hiroyoshi Tanaka, Joichi Sugimura, Kyushu University, Japan PT04. The effect of oxygen on the tribology of (PEI/GO) ₁₅ multilayer solid lubricant coatings on steel substrates Prabakaran Saravanan, Hiroyoshi Tanaka, Joichi Sugimura Kyushu University, Japan PT05. Low friction of carbon fiber filled PTFE in high-purity hydrogen Rui Taninokuchi, Keito Sakaki, Takehiro Morita, Yoshinori Sawae, Joichi Sugimura Kyushu University, Japan PT06. Effect of environmental gas on friction and wear of rubbers in reciprocal and uni-directional sliding Joichi Sugimura, Kazumi Okada, Hiroyoshi Tanaka, Kyushu University, Japan PT07. Fatigue cracking of rubbers in reciprocating sliding contact in hydrogen Joichi Sugimura, Kazumi Okada, Hiroyoshi Tanaka, Kyushu University, Japan PT08. Controlling hydrogen permeation: Effect of base oil polarity on ZDDP film growth Vlad Bogdan Niste ¹ , Hiroyoshi Tanaka ¹ , Monica Ratoi ² , Joichi Sugimura ¹ ¹ Kyushu University, Japan, ² University of Southampton, UK PT09. Effects of molecular structures on decomposition of lubricating oils at nascent metal surface Shun Honda ¹ , Hiroyoshi Tanaka ¹ , Yoji Sunagawa ² , Joichi Sugimura ¹ ¹ Kyushu University, ² Idemitsu Kosan Co., Ltd., Japan PT10. Study on hydrogen generation and permeation under rolling contact of steel with phenyl ether lubricants Shotaro Koizumi, Hiroyoshi Tanaka, Joichi Sugimura, Kyushu University, Japan