

**OS11: The Eighth International Students/Young Birds
Seminar on Multi-Scale Flow**

AKEBONO (WEST)

September 19, 2012

- 13:00-13:05 **Opening**
- Session 1 **-Award Session -**
13:05-(14:08) **Short Oral Presentation**
3 min for Short Oral Presentation without PC preparation
- OS11-1 **Effect of Bubble Wake on Mass Transfer from a Bubble to Liquid Phase**
Masahiko Toriu, Takayuki Saito (Shizuoka University, Japan)
- OS11-2 **Effects of Thermal and Mass Diffusions on Combustion Characteristics of Methane/Air Premixed Flame with Equivalence Ratio using Micro-Flow Reactor with Controlled Temperature Profile**
Takuro Nishida, Takuhiro Matsumoto, Toshihisa Ueda, Takeshi Yokomori (Keio University, Japan) and Kaoru Maruta (Tohoku University, Japan)
- OS11-3 **Development of Micro-Tube Gas Separator Utilizing the Soret Effect**
Takahiro Wako, Masae Shimizu and Naoki Ono (Shibaura Institute of Technology, Japan)
- OS11-4 **A Study on Controlling Bubble Size by Magnetically Driving Metallic Powder in Liquid Phase**
Keiichi Igari, Kazushi Kunimatsu, and Naoki Ono (Shibaura Institute of Technology, Japan)
- OS11-5 **Estimation of Thermal Conductivity of Biological Tissue by Inverse Analysis**
Takahiro Okabe, Junnosuke Okajima, Atsuki Komiya (Tohoku University, Japan), Yun Luo (Shanghai Jiao Tong University, China), Ichiro Takahashi (Yamagata University, Japan) and Shigenao Maruyama (Tohoku University, Japan)
- OS11-6 **Experimental Study on Shock Wave and Bubble Evolution Induced by Underwater Electric Discharge**
Kentaro Hayashi, Taketoshi Koita and Mingyu Sun (Tohoku university, Japan)
- OS11-7 **Numerical Study on Receptivity of Flat-Plate Boundary Layer to Outer Freestream Disturbances**
Shuta Noro (Japan Aerospace Exploration Agency, Japan), Masaya Shigeta, Seiichiro Izawa and Yu Fukunishi (Tohoku University, Japan)
- OS11-8 **Conceptual Design Method for a Mars Airplane: Formulation of Aerodynamic Characteristics at Low Reynolds Numbers**
Koji Fujita, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)

- OS11-9 **Prototype Experiment and Numerical Simulation on Processing of Noncontact Thin Plate Utilizing Alloy with Low Melting Temperature**
Yoshiyuki Mitsuhasi, Kazuki Matsumura, Mitsutaka Umeta, Takashi Yamada and Naoki Ono (Shibaura Institute of Technology University)
- OS11-10 **Design of Interferometer System with Phase-shifting Koester Prism**
Eita Shoji, Atsuki Komiiya, Junnosuke Okajima and Shigenao Maruyama (Tohoku University, Japan)
- OS11-11 **Dryout of Boiling with Impinging Flow in T-shaped Mini Channel with High-Carbon Alcohol Aqueous Solutions**
Minoru Ootsuka, Yuki Kumagai, Haruki Taguchi and Naoki Ono (Shibaura Institute of Technology, Japan)
- OS11-12 **Leading Edge Receptivity to Freestream with Velocity Profile Sinusoidal in the Spanwise Direction**
Yu Nishio, Masaya Shigeta, Seiichiro Izawa and Yu Fukunishi (Tohoku University, Japan)
- OS11-13 **Effect of Bio-nano Fibres on Centrifugal- and Curvature-induced Hydrodynamic Stability**
Mathias Kvik, Fredrik Lundell, Lisa Prah Wittberg (Royal Institute of Technology, Sweden) and L. Daniel Soderberg (Royal Institute of Technology / Innventia AB, Sweden)
- OS11-14 **Water Purification by Spraying Solution into DBD Plasma Reactor**
Tomohiro Shibata, Hideya Nishiyama (Tohoku University, Japan)
- OS11-15 **Synthesis of Functional Nano-Powder through Solution Precursor Plasma Spraying in a DC-RF Hybrid Plasma Flow System**
Juyong Jang, Hidemasa Takana, Yasutaka Ando (Ashikaga Institute of Technology, Japan), Oleg P. Solonenko (Khristianovich Institute of Theoretical and Applied Mechanics, Russia) and Hideya Nishiyama (Tohoku University, Japan)
- OS11-16 **Conditional Spatial Correlation of Velocity Fluctuation in Supersonic Flow with Transverse Injection**
Shohei Uramoto, Toshinori Kouchi and Goro Masuya (Tohoku University, Japan)
- OS11-17 **Effect of Supersonic Micro Nozzle Shape on the Heat Transfer in a Surface Wall**
Yuya Takahashi, Junnosuke Okajima, Atsuki Komiiya and Shigenao Maruyama (Tohoku University, Japan)
- OS11-18 **Wheel Design for Planetary Rovers Traveling over Loose Soil**
Masataku Sutoh, Keiji Nagatani and Kazuya Yoshida (Tohoku University, Japan)
- OS11-19 **The Numerical Setup of Conditions for Point Energy Release in Water**
Daiki Ishikawa, Mingyu Sun (Tohoku University, Japan)

OS11-20 **Applications of LCS to the Study of Transport Trajectories in Space Mission**
Kenta Oshima, Shintaro Wada and Tomohiro Yanao (Waseda University, Japan)

OS11-21 **Effects of Redox Cycling on the Mechanical Properties of Ni-YSZ Cermets for SOFC Anodes as a Function of Porosity**
Taihei Miyasaka, Shinji Sukinou, Satoshi Watanabe, Kazuhisa Sato, Tatsuya Kawada and Toshiyuki Hashida (Tohoku University, Japan)

(14:10-16:10) **Poster Presentation**

AKEBONO (WEST)
September 20, 2012

Session 2
9:00-(10:00)

Short Oral Presentation
3min for Short Oral Presentation without PC preparation

OS11-22 **Estimation of Heat Conduction and Thermal Radiation in Porous Insulation Materials Using Diffuse Approximation**
Tatsuya Kobari, Junnosuke Okajima, Atsuki Komiya and Shigenao Maruyama (Tohoku University, Japan)

OS11-23 **Low Friction Mechanism of Hydrogen and Fluorine Terminated Diamond Like Carbon Film Using Tight-Binding Quantum Chemical and First-Principles Molecular Dynamics Methods**
Shandan Bai, Seiichiro Sato, Takeshi Ishikawa, Yuji Higuchi, Nobuki Ozawa, Tomomi Shimazaki, Koshi Adachi (Tohoku University, Japan), Jean-Michel Martin (Ecole Centrale de Lyon, France) and Momoji Kubo (Tohoku University, Japan)

OS11-24 **Molecular Dynamics Study on Recycling Mechanism of Used CeO₂ Abrasive Grain for CMP of Glass Surface**
Kang Zhou, Takeshi Ishikawa, Yuji Higuchi, Nobuki Ozawa, Tomomi Shimazaki and Momoji Kubo (Tohoku University, Japan)

OS11-25 **Configurations of CH₄/O₂/Xe Counterflow Premixed Flames at Small Stretch Rates under Microgravity**
Koichi Takase (Tohoku University, Japan), Xing Li (Beijing Jiaotong University, China), Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa (Tohoku University, Japan), Masato Katsuta, Masao Kikuchi (Japan Aerospace Exploration Agency, Japan) and Kaoru Maruta (Tohoku University, Japan)

OS11-26 **Cetane Number and Weak Flames of Diesel Surrogates in a Micro Flow Reactor with a Controlled Temperature Profile**
Satoshi Suzuki, Mikito Hori, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa and Kaoru Maruta (Tohoku University, Japan)

- OS11-27 **Chemical Stability of the Cubic Phase of $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_{3-\delta}$ (BSCF)**
Wang Fang, Keiji Yashiro, Koji Amezawa and Junichiro Mizusaki (Tohoku University, Japan)
- OS11-28 **Transient Analysis of Loop Heat Pipes with Secondary Wick**
Kouhei Magome, Masahiko Taketani and Hiroki Nagai (Tohoku University, Japan)
- OS11-29 **Numerical Simulation for Catalytic Reaction over Pt in $\text{CH}_4/\text{O}_2/\text{CO}_2$ Mixture**
Kenji Yamada, Kazuya Iwata, Toshihisa Ueda and Takeshi Yokomori (Keio University, Japan)
- OS11-30 **Effect of Surface Reactions on Gas Phase Reactions of $\text{H}_2/\text{O}_2/\text{N}_2$ and CH_4/Air Mixtures in a Micro Flow Reactor with a Controlled Temperature Profile**
Yuta Kizaki, Kenichiro Saruwatari, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa and Kaoru Maruta (Tohoku University, Japan)
- OS11-31 **Nongray Radiative Transfer and Convective Heat Transfer Modeling in a Trapezoidal Cavity Receiver for the CLFR**
Atsushi Sakurai, Shumpei Yoshimura (Niigata University, Japan), Masud Behnia (The University of Sydney, Australia) and Koji Matsubara (Niigata University, Japan)
- OS11-32 **In-situ Measurements of Mechanical Properties of High Temperature Ionics Materials**
Yuta Kimura, Yoshikazu Shirai, Tatsuya Kawada, Shin-ichi Hashimoto and Koji Amezawa (Tohoku University, Japan)
- OS11-33 **Optical and Thermal Characteristic of Solar Concentrator with Compound Parabolic and Involute Reflector**
Abid Ustaoglu, Junnosuke Okajima (Tohoku University, Japan), Xin-Rong (Ron.) Zhang (Peking University, Beijing) and Shigenao Maruyama (Tohoku University, Japan)
- OS11-34 **Non-Condensable Gas Effect in Oscillating Heat Pipe**
Takuro Daimaru, Hiroki Nagai (Tohoku University, Japan)
- OS11-35 **Friction and Thermal Properties in Drilling of Bone Biomodels**
Kei Ozawa (Tohoku University, Japan), Yuji Katakura, Yukihiro Shibata (TECNO CAST, Japan), Philippe Kapsa, Vincent Fridrici, Gaëtan Bouvard (Ecole Centrale de Lyon, France) and Makoto Ohta (Tohoku University, Japan)
- OS11-36 **A Molecular Dynamics Study on the Thermodynamic Analysis of Cryogenic Hydrogen**
Hiroki Nagashima, Takashi Tokumasu (Tohoku University, Japan), Shin-ichi Tsuda (Shinshu University, Japan), Nobuyuki Tsuboi (Kyushu Institute of Technology, Japan), Mitsuo Koshi (University of Tokyo, Japan) and A. Koichi Hayashi (Aoyama Gakuin University, Japan)
- OS11-37 **SPH Simulation of Gas Flow Accompanying Thermal Expansion**
Masumi Ito, Seiichiro Izawa, Yu Fukunishi and Masaya Shigeta (Tohoku University, Japan)

- OS11-38 **Thermal Analysis on a Remountable High Temperature Superconducting Magnet Around Jointing Region**
Yusuke Tanno, Satoshi Ito and Hidetoshi Hashizume (Tohoku University, Japan)
- OS11-39 **Effects of Incident Shock Wave and Cavity on Flameholding in Supersonic Flow**
Yu Kitahara, Yumi Ishimoto, Yoshitaka Iwamura, Taku Kudo, and Hideaki Kobayashi (Tohoku University, Japan)
- OS11-40 **Combustion Characteristics of Propanol/Air Turbulent Premixed Flames at High Pressure**
Shungo Souyoshi, Takuro Suzuki, Taku Kudo and Hideaki Kobayashi (Tohoku University, Japan)
- OS11-41 **Measurement of the Ion Specific Heat Ratio in Fast-flowing Plasma using a Mach Probe**
Yuko Hashima, Kohei Okawa, Hiroshi Watanabe, Yuki Izawa, Kazuya Yashima, Nozomi Tanaka and Akira Ando (Tohoku University, Japan)
- OS11-42 **Response Time Evaluation of Temperature-Sensitive Paint**
Takehito Horagiri, Hiroki Nagai (Tohoku University, Japan)
- (10:00-12:00) **Poster Presentation**
- Session 3
13:00-(13:30) **Short Oral Presentation**
3 min for Short Oral Presentation without PC preparation
- OS11-43 **Delay Time Compensation of a Hardware in the Loop Simulation Based on Contact Dynamics Model**
Fumihito Sugai, Satoko Abiko, Xin Jiang (Tohoku University, Japan), Atsushi Konno (Hokkaido University, Japan) and Masaru Uchiyama (Tohoku University, Japan)
- OS11-44 **Optical Microscope to Understand Motility**
Takeshi Obara (Tohoku University, Japan), Yasunobu Igarashi (Olympus Software Technology Corp., Japan) and Koichi Hashimoto (Tohoku University, Japan)
- OS11-45 **Characterization of Young's Modulus of MWCNT-Carbon Cantilevered Microstructures**
Liang HE, Masaya Toda, Yusuke Kawai, Mamoru Omori, Toshiyuki Hashida and Takahito Ono (Tohoku University, Japan)
- OS11-46 **Thickness Evaluation of Thermal Spraying on Boiler Tubes by Eddy Current Testing**
Yohei Takahashi, Ryoichi Urayama, Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan), Hiroshi Naganuma, Kazufumi Sugawara and Tomoaki Sasaki (Tohoku Electric Power Engineering & Construction Co. Inc, Japan)

- OS11-47 **Deposition of Micro-Crystalline Diamond Films on Curved Steel Surface with Ti Interlayer**
Kyohei Naito, Hiroyuki Miki, Takanori Takeno and Toshiyuki Takagi (Tohoku University, Japan)
- OS11-48 **Evaluation of Fatigue Properties of Mo-DLC Coatings Under Cyclic Bending.**
Mami Takahashi, Hiroyuki Miki, Takanori Takeno and Toshiyuki Takagi (Tohoku University, Japan)
- OS11-49 **Quantitative Evaluation of Residual Strain in Austenitic Stainless Steels using Electromagnetic Nondestructive Evaluation**
Seiya Sato, Ryoichi Urayama, Takeshi Sato, Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University), Zhenmao Chen (Xi'an Jiaotong University, China) and Yasuhiko Yoshida (The Kansai Electric Power Company)
- OS11-50 **Relationship Between Fluid Shear Stress and the Phenotype Change of Smooth Muscle Cells in a Co-Culture Model**
Xiaobo Han (Tohoku University, Japan), Naoya Sakamoto (Kawasaki University of Medical Welfare, Japan), Noriko Tomita (Tohoku University, Japan), Meng Hui (State University of New York, USA), Masaaki Sato and Makoto Ohta (Tohoku University, Japan)
- OS11-51 **Comparison Between Agarose Gel and PVA-H Biomodels for Evaluation of Ablation Catheter**
Kaihong Yu (Tohoku University, Japan), Tetsuya Yamashita (JMS Co. Led., Japan) and Makoto Ohta (Tohoku University, Japan)
- OS11-52 **Experimental Studying of Metallic Splats Formation in the Condition of Substrate Submelting in a Contact Spot**
Andrey V. Perfil'yev, Oleg P. Solonenko, and Andrey V. Smirnov (Khristianovich Institute of Theoretical and Applied Mechanics, Russia)
- OS11-53 **Size Validation of an Adrenal Vein Model for Development of an In Vitro Model with Realistic Geometrical Structure**
Yusuke Hoshino, Kei Takase, Kazumasa Seiji and Makoto Ohta (Tohoku University, Japan)

(13:30-14:40) **Poster Presentation**

AKEBONO (WEST)
September 21, 2012

Session 4 **Short Oral Presentation**
9:00-(9:45) 3 min for Short Oral Presentation without PC preparation

- OS11-54 **Effect of Liquid Properties on Velocity Field over a High Speed Rotary Bell Cup Atomizer**
Tatsuya Soma, Tomoyuki Katayama, Yasuhiro Saito, Hideyuki Aoki (Tohoku University, Japan), Toshiki Haneda, Yosuke Hatayama, Minori Shirota, Takao Inamura (Hirosaki University, Japan), Daichi Nakai, Genki Kitamura, Masanari Miura, Masatohi Daikoku (Hachinohe Institute of Technology, Japan)
- OS11-55 **Numerical Analysis of Cryogenic Slush Flow in a Triangular Pipe (SLUSH-3D)**
Takumi Hosono, Daisuke Naka and Katsuhide Ohira (Tohoku University, Japan)
- OS11-56 **Flow and Heat Transfer Characteristics of Cryogenic Solid-Liquid Slush Nitrogen in a Square pipe**
Jun Okuyama, Kei Nakagomi, Koichi Takahashi and Katsuhide Ohira (Tohoku University, Japan)
- OS11-57 **A Numerical Study of Cavitating Flows over a Hydrofoil**
Daichi Matsubara, Mingyu Sun (Tohoku University, Japan)
- OS11-58 **The Numerical Analysis of Inverse Problems for Mass Transfer Model**
Olga Soboleva, Ilya Vakhitov (Institute of Applied Mathematics FEB RAS, Russia)
- OS11-59 **Development of Safety and Quick-response Actuator Using MR Fluid Clutch for Walk Rehabilitation Device**
Hiroshi Nakano, Kohki Tsuchiya and Masami Nakano (Tohoku University, Japan)
- OS11-60 **Implementation of Surface Chemistry Models in SMILE++ Software System**
Alexandra Shumakova, Alexander Kashkovsky, Mikhail Ivanov and Yevgeniy Bondar (Khristianovich Institute of Theoretical and Applied Mechanics, Russia)
- OS11-61 **Atomistic Simulation of Proton and Water Transport in Hydrated Nafion Membrane**
Takuya Mabuchi, Takashi Tokumasu (Tohoku University, Japan)
- OS11-62 **A Study of the Effect of Surface Tension on Gas-Liquid Free Interface in the Application of Micromixing**
Takashi Yamada, Naoki Ono (Shibaura institute of technology, Japan)
- OS11-63 **Numerical Study of the Effect of Cavitation Models on the Cavitating Flow Induced by Underwater Explosion in a Rectangular Tube**
Taketoshi Koita, Mingyu Sun (Tohoku University, Japan)
- OS11-64 **Scalability Study of Water Treatment System with Multiple Plasmas in Gas-Bubbles**
Hayato Obo, Takeuchi Nozomi and Koichi Yasuoka (Tokyo Institute of Technology, Japan)

- OS11-65 **Effect of Injection Interval on Flow Characteristics of High Pressure Pulse Sprays**
Ryuichi Sagawa, Satoki Yokoi, Yoshinori Kojima, Yasuhiro Saito and Hideyuki Aoki (Tohoku University, Japan)
- OS11-66 **Study of Deep-Throttleable Rocket Injector**
Mitsuhiro Soejima, (Tohoku University, Japan), Sadatake Tomioka (Japan Aerospace Exploration Agency, Japan) and Goro Masuya (Tohoku University, Japan)
- (9:45-11:45) **Poster Presentation**
- Session 5
13:00-(13:45) **Short Oral Presentation**
3 min for Short Oral Presentation without PC preparation
- OS11-67 **Development of Back Surface TSP Measurement Technique for Shock Interaction Aerodynamic Heating in High Enthalpy Flow**
Kazuki Nishigata, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)
- OS11-68 **Molecular Dynamics Study of Oxygen Permeation in the Ionomer on Pt Catalyst of PEFC**
Yuta Sugaya, Takashi Tokumasu (Tohoku University, Japan)
- OS11-69 **Experiment Verification of Acoustic Feedback Loop around NACA0012 Airfoil at Low Reynolds Number**
Nobuaki Sakai, Hiroki Nagai, Keisuke Asai (Tohoku University, Japan), Tomoaki Ikeda and Takashi Atohe (Japan Aerospace Exploration Agency, Japan)
- OS11-70 **Compressibility Effects on Aerodynamic Characteristics of Low Reynolds Number Airfoils**
Tetsuya Suwa, Daiju Numata, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)
- OS11-71 **Flow Analysis in Cerebral Aneurysm Model with Transparent Coils Placement**
Masanori Kuze, Makoto Ohta (Tohoku University, Japan)
- OS11-72 **Measurement of Pressure Drop for Modeling Intracranial Flow Diverter Stent Using Porous Medium**
Yukihisa Miura, Hitomi Anzai, Toshio Nakayama, Toshiyuki Hayase and Makoto Ohta (Tohoku university, Japan)
- OS11-73 **Assessment of Supersonic Free-flight Experiment using a Plate Shaped Sabot Aimed at the Biplane Model**
Yuta Saito (Tohoku University, Japan), Kakuei Suzuki (Nagoya University, Japan), Takahiro Ukai (Tohoku University, Japan), Takahiro Imaizumi, Atsushi Toyoda (Nagoya University, Japan), Takaya Uchida (Tohoku University, Japan), Akihiro Sasoh (Nagoya University, Japan) and Shigeru Obayashi (Tohoku University, Japan)

- OS11-74 **A Study for Transport Phenomena of Nanoscale Gas Flow in Porous Media**
Tomoya Oshima, Shigeru Yonemura and Takashi Tokumasu (Tohoku University, Japan)
- OS11-75 **Characterization of Fluid Flow in Fractured Geothermal Reservoirs based on Fractional Derivative Mathematical Model**
Hiroshi Makita, Anna Suzuki, Saki Kondoh, Yuichi Niibori and Toshiyuki Hashida (Tohoku University, Japan)
- OS11-76 **Development of Micro-satellite for International Scientific Missions**
Yoshihiro Tomioka, Kazufumi Fukuda, Nobuo Sugimura, Yuji Sakamoto, Toshinori Kuwahara and Kazuya Yoshida (Tohoku University, Japan)
- OS11-77 **Design and Hovering Control of an Asterisk Type Quad Rotor Tail-Sitter Unmanned Aerial Vehicle**
Atsushi Oosedo (Tohoku University, Japan), Atsushi Konno (Hokkaido University, Japan), Satoko Abiko and Masaru Uchiyama (Tohoku University, Japan)
- OS11-78 **Development and Evaluation of Autonomous Mobile Manipulator for Sensing Device Deployment**
Takeshi Ohki, Keiji Nagatani and Kazuya Yoshida (Tohoku University, Japan)
- OS11-79 **Robust Mobile Robot Design for Fukushima Nuclear Plant Exploration**
Seiga Kiribayashi, Keiji Nagatani and Yoshito Okada (Tohoku University, Japan)
- OS11-80 **Hybrid Simulation of Capturing a Massive Payload by Space Manipulators**
Ippei Takahashi, Satoko Abiko, Xin Jiang (Tohoku University, Japan), Atsushi Konno (Hokkaido University, Japan) and Masaru Uchiyama (Tohoku University, Japan)
- (13:45-15:45) **Poster Presentation**