

10th ICFD (2013) Time Table

Monday, November 25, 2013

| ROOM | SAKURA 2 | TACHIBANA | ROOM4 | ROOM5 | SHIRAKASHI 1 | SHIRAKASHI 2 | ROOM | |
|-------|--|--|--|--|-----------------|--|-------|-------|
| Floor | 2nd Floor | | | | 3rd Floor | | Floor | |
| 8:00 | | | | | | | 8:00 | |
| 9:00 | 9:00-9:20 Opening Address @ TACHIBANA | | | | | | 9:00 | |
| 9:20 | 9:20-10:10 Plenary Lecture @ TACHIBANA "Fluid Flow in Micron Spaces: Fluid dynamics in Microfluidic Devices" David A. Weitz (Harvard University, USA) | | | | | | 9:20 | |
| 10:15 | BREAK | | | | | | 10:15 | |
| 11:10 | 10:15-11:05 Plenary Lecture @ TACHIBANA "Porous Media Combustion - Its Potential Applications in Wide Range of Liquid and Gas Fuelled Cooking Stoves" Subhash C. Mishra (Indian Institute of Technology Guwahati, India) | | | | | | 11:10 | |
| 11:10 | BREAK | | | | | | 11:10 | |
| 12:00 | 11:10-12:00 Plenary Lecture @ TACHIBANA "Progress of Panasonic's R&D on Advanced Photovoltaic Technologies" Shigeo Yata (Panasonic Corporation, Japan) | | | | | | 12:00 | |
| 13:00 | OS13: Session 1 13:00-(14:20) OS13-1 - OS13-24 <i>Short Oral Presentation</i> (14:20-15:40) OS13-1 - OS13-24 <i>Poster Presentation</i> | OS9: Session 1-1 Combustion I 13:00-13:10 Opening Kaoru Maruta 13:10-13:35 OS9-1 Sergey Minaev (Invited) 13:35-14:00 OS9-2 Vladimir Gubernov (Invited) 14:00-14:25 OS9-3 Nichiki Okada (Invited) | OS11: 13:00-13:10 Opening Toshio Nakayama 13:10-13:50 OS11-1 Bastien Chopard (Invited) 13:50-14:10 OS11-2 Canceled 14:10-14:30 OS11-3 Shin-ichiro Sugiyama | GS1: GS-MA 13:00-13:20 GS1-1 Nannan Wu 13:20-13:40 GS1-2 Koji Fukudome 13:40-14:00 GS1-3 Hiroshi Koizumi 14:00-14:20 GS1-4 Keyo Matsuzaki | OS5:Poster room | OS5: 13:00-13:10 Opening Akira Miyamoto and Philippe Kapsa 13:10-13:50 OS5-1 Mark C. Williams 13:50-14:30 OS5-2 Keiji Aoki 14:30-15:10 OS5-3 Kimihiro Nakano | 13:00 | |
| 14:30 | | | | | | | 14:30 | |
| 14:40 | | OS9: Session 1-2 Combustion II 14:40-15:05 OS9-4 Alexander Kiriyashkin (Invited) 15:05-15:30 OS9-5 Aiwu Fan (Invited) 15:30-15:55 OS9-6 Sudarshan Kumar (Invited) | OS11: 14:40-15:20 OS11-4 Takanobu Yagi (Invited) 15:20-15:40 OS11-5 Kenichi Kono 15:40-16:00 OS11-6 Tomo Kinoshita | GS1: GS-MB 14:40-15:00 GS1-5 Masayuki Anyoji 15:00-15:20 GS1-6 Takaaki Tsuchiya 15:20-15:40 GS1-7 Takahiro Makizono 15:40-16:00 GS1-8 Ryota Nakajima | | 15:10-15:30 BREAK | | 14:40 |
| 16:10 | | | | | | OS5:Poster room | 16:10 | |
| 16:20 | | OS9: Session 2-1 Innovative Energy Research I 16:20-16:40 OS9-7 Prashant Nehe 16:40-17:05 OS9-8 Jun Ishimoto (Invited) | OS11: 16:20-17:00 OS11-7 Guy Courbebaïsse 17:00-17:15 OS11-8 Sho Matsumoto 17:15-17:35 OS11-9 Kim Hyoung June | GS1: GS-MC 16:20-16:40 GS1-9 Noritaka Yusa 16:40-17:00 GS1-10 Thien Xuan Dinh 17:00-17:20 GS1-11 Kei Fujisawa 17:20-17:40 GS1-12 Sakiko Kitashima | | OS5: 15:30-16:10 OS5-4 Katsuhiko Hirose 16:10-16:50 OS5-5 Alexandre Torday 16:50-17:30 OS5-6 Gerd Dobmann 17:30-18:00 OS5-7 Kiyoshi Hasegawa | 16:20 | |
| 17:50 | | | | | | | 17:50 | |
| 18:00 | 18:00-20:00 <i>Students / Young Birds Friendship Night</i> | | | | | | 18:00 | |
| 20:00 | | | | | | | 20:00 | |

Tuesday, November 26, 2013

| ROOM | ROOM1 | ROOM2 | SAKURA 2 | TACHIBANA | HAGI | ROOM |
|-------|--|---|---|---|--|-------|
| Floor | 1st Floor | | | 2nd Floor | | Floor |
| 8:00 | | | | | | 9:00 |
| 9:00 | <p>OS1: 9:00-9:05 Opening Fuel and Combustion 9:05-9:45 OS1-1 Anif Karabeyoglu (Invited)</p> <p>9:45-10:05 OS1-2 Mario Kobald</p> <p>10:05-10:25 OS1-3 Ken Terakawa</p> | <p>OS6: 9:00-9:30 OS6-1 Daniel Guyomar (Invited)</p> <p>9:30-10:00 OS6-2 Jean-Yves Cavaille (Invited)</p> <p>10:00-10:30 OS6-3 Miklós Zrínyi (Invited)</p> | <p>OS13: Session 2 9:00 - (10:10) OS13-25 - OS13-47 <i>Short Oral Presentation</i></p> <p>(10:10-11:30) OS13-25 - OS13-47 <i>Poster Presentation</i></p> | <p>OS9: Session 2-2 Innovative Energy Research II 9:00-9:25 OS9-9 Tomohiro Kubota (Invited)</p> <p>9:25-9:50 OS9-10 Yoshinori Mizuno</p> <p>9:50-10:15 OS9-11 Cheng-Hsun Lin</p> | <p>PS1: 9:00-10:30 CRF-1 - CRF-35 <i>Short Oral Presentation</i></p> | 9:00 |
| 10:30 | | | | | | 10:30 |
| 10:40 | <p>OS1: Numerical Simulation 10:40-11:00 OS1-4 Guan-Rong Lai</p> <p>11:00-11:20 OS1-5 Mikiro Motoe</p> <p>11:20-11:40 OS1-6 Nobuyuki Tsuboi</p> <p>11:40-12:00 OS1-7 Wei-Hsiang Chao</p> | <p>OS6: 10:40-11:10 OS6-4 Rongjia Tao (Invited)</p> <p>11:10-11:40 OS6-5 Katsufumi Tanaka (Invited)</p> <p>11:40-12:00 OS6-6 Masafumi Taniguchi</p> | | <p>OS9: Session 3 Energy Nano-Devices (Solar cell, secondary battery, fuel cell, and optimum energy system) 10:40-10:50 Session Opening Seiji Samukawa</p> <p>Energy Nano-Devices 1 - Fuel Cell 10:50-11:20 OS9-12 Shin-ichi Orimo (Invited)</p> <p>11:20-11:50 OS9-13 Takashi Tokumasu (Invited)</p> | <p>PS1: 10:40-12:10 CRF-36 - CRF-B1 <i>Short Oral Presentation</i></p> | 10:40 |
| 12:10 | | | | | <p>PS1: 12:10-13:10 <i>Lunch and Poster Session</i></p> | 12:10 |
| 13:10 | <p>OS1: Conceptual Design 13:10-13:30 OS1-8 Pietro Tadini</p> <p>13:30-13:50 OS1-9 Yen-Sen Chen</p> <p>13:50-14:10 OS1-10 Kazuhiisa Chiba</p> <p>14:10-14:30 OS1-11 Fumio Kanamori</p> | <p>OS6: 13:10-13:40 OS6-7 Weihsua Li (Invited)</p> <p>13:40-14:00 OS6-8 Hiroya Abe</p> <p>14:00-14:20 OS6-9 Ching-Yao Chen</p> <p>14:20-14:40 OS6-10 Kazuya Takahashi</p> | <p>OS13: Session 3 13:10 - (14:20) OS13-48 - OS13-69 <i>Short Oral Presentation</i></p> <p>(14:20-15:40) OS13-48 - OS13-69 <i>Poster Presentation</i></p> | <p>OS9: Energy Device 2 - Analysis and Secondary Battery 13:10-13:40 OS9-14 Koji Amezawa (Invited)</p> <p>13:40-14:10 OS9-15 Taro Hitosugi (Invited)</p> <p>14:10-14:40 OS9-16 Itaru HONMA (Invited)</p> | <p>PS3: 13:10-14:40 <i>Fluids Science Research Award Lecture</i> Yasushi Takeda (Swiss Federal Institute of Technology Zurich, Switzerland) Kozo Fujii (Aerospace Exploration Agency, Japan)</p> | 13:10 |
| 14:40 | | | | | | 14:40 |
| 14:50 | <p>OS1: Engine Technology 14:50-15:10 OS1-12 Shigeru Aso</p> <p>15:10-15:30 OS1-13 Yutaka Wada</p> <p>15:30-15:50 OS1-14 Koki Kitagawa</p> <p>15:50-16:10 OS1-15 Ando Hideyuki</p> | <p>OS6: 14:50-15:20 OS6-11 Masami Nakano (Invited)</p> <p>15:20-15:40 OS6-12 Weihsua Li</p> <p>15:40-16:00 OS6-13 Alexander Vasiliev</p> <p>16:00-16:20 OS6-14 Olga Volkova</p> | | <p>OS9: Energy Device 3 - Solar Cell and Optimization Method 14:50-15:20 OS9-17 Seiji Samukawa (Invited)</p> <p>15:20-15:50 OS9-18 Noritaka Usami (Invited)</p> <p>15:50-16:20 OS9-19 Shigeru Obayashi (Invited)</p> | <p>PS2: 14:50-15:38 YRF-1 - YRF-6 <i>Oral Presentation</i></p> <p>PS1: 15:40-16:20 CRF-68 - CRF-83 <i>Short Oral Presentation</i></p> | 14:50 |
| 16:20 | | | | | | 16:20 |
| 16:30 | <p>OS1: HRW Activity 16:30-16:50 OS1-16 Toru Shimada</p> <p>16:50-17:30 <i>WRAP-UP</i></p> | | | <p>OS8 & OS9 Joint Session 16:30-17:00 OS8-1 Manfred Kofl (Invited)</p> <p>17:00-17:30 OS8-2 Gerd Dobmann</p> <p>17:30-18:00 OS8-3 Tomonaga Okabe</p> | <p>PS1: 16:30 - 16:50 CRF-84 - CRF-R3 <i>Short Oral Presentation</i></p> <p>16:50-18:00 <i>Poster Session</i></p> | 16:30 |
| 18:00 | | | | | | 18:00 |
| 20:00 | <p>18:00-20:00 Banquet @ SAKURA</p> | | | | | 20:00 |

| ROOM | ROOM4 | ROOM5 | SHIRAKASHI 1 | SHIRAKASHI 2 | ROOM6 | ROOM8 | ROOM |
|-------|--|--|--|---|--|---|-------|
| Floor | 2nd Floor | | 3rd Floor | | | | Floor |
| 8:00 | | | | | | | |
| 9:00 | OS12: 9:00-9:45 OS12-1 Stephan Wilkens (Invited) 9:45-10:30 OS12-2 Keietsu Abe (Invited) | GS1: GS-TA 9:00-9:20 GS1-13 Manish K. Khandelwal 9:20-9:40 GS1-14 Mohd Hazwan bin Yusof 9:40-10:00 GS1-15 Makoto Hirota 10:00-10:20 GS1-16 Yosuke Hirata | OS5: Poster room | OS5: 9:00-12:00 Short Oral Presentations of Poster 3min for Each Academic Presentation (BREAK 10min) 3min for Each Industrial Presentation | OS7: Biological Heat Transfer 9:00-9:20 OS7-1 Koushik Das 9:20-9:40 OS7-2 Mikis Zrinyi 9:40-10:00 OS7-3 Arka Bhowmik 10:00-10:20 OS7-4 Takahiro Okabe | | 9:00 |
| 10:30 | | | | | | | |
| 10:40 | OS12: 10:40-11:25 OS12-3 Kazushi Kinbara (Invited) 11:25-11:50 OS12-4 Noriko Tomita (Invited) 11:50-12:10 OS12-5 Kenji Etchuya | GS1: GS-TB 10:40-11:00 GS1-17 Fredrik Lundell 11:00-11:20 GS1-18 Yusuke Yamaguchi 11:20-11:40 GS1-19 Takahiro Wako 11:40-12:00 GS1-20 Jong-Wook Lee | | | OS7: Convective Heat Transfer & Combustion 10:40-11:00 OS7-5 Masaki Hongoh 11:00-11:20 OS7-6 Dmitry Tereshko 11:20-11:40 OS7-7 Shang-Hao Huang 11:40-12:00 OS7-8 Victoria Timchenko | | 10:40 |
| 12:10 | | | | | | | |
| 13:10 | OS3: 13:10-13:55 OS3-1 Loic Favergon (Invited) 13:55-14:40 OS3-2 Oleg P. Solonenko | GS1: GS-TC 13:10-13:30 GS1-21 Ardian B. Gajani 13:30-13:50 GS1-22 Takeshi Osuka 13:50-14:10 GS1-23 Takahiro Imaizumi 14:10-14:30 GS1-24 Yuki Kutsuna | OS5: 13:00-14:30 Poster Presentations | OS5: | OS7: Fluid Dynamics & Measurement 13:10-13:30 OS7-9 Roman Brizitskii 13:30-13:50 OS7-10 Kiran Joy Irimpan, Viren Menezes | Liaison Office Session 13:10-14:40 Chair: Toshiyuki Takagi Toshiya Ueki Alexander Vasiliev Victoria Timchenko Fredrik Lundell Shigenao Maruyama Jeongmin Ahn Marie Pierre Favre Makoto Ohta | 13:10 |
| 14:40 | | | | | | | |
| 14:50 | OS3: 14:50-15:35 OS3-3 Svetlana N. Sorokova | GS1: GS-TD 14:50-15:10 GS1-25 Ying-Nung Chen 15:10-15:30 GS1-26 Shuang Xia 15:30-15:50 GS1-27 Keiichi Igari 15:50-16:10 GS1-28 Chayut Nuntadusit | OS5: Poster room | OS5: 14:30-15:00 OS5-8 Masato Hisatake 15:00-15:40 OS5-9 Erik P. M. Vermeulen 15:40-16:20 OS5-10 Shigeo Kagami | OS7: Radiation 14:50-15:10 OS7-11 Adil Al Mahdouri 15:10-15:30 OS7-12 Abid Ustaoglu | | 14:50 |
| 16:20 | | | | | | | |
| 16:30 | | GS1: GS-TE 16:30-16:50 GS1-29 Tomoya Kitamoto 16:50-17:10 GS1-30 Jinuk Kim 17:10-17:30 GS1-31 Kenichi Hoshino 17:30-17:50 GS1-32 Hiromitsu Morita | OS5: Poster room | OS5: 16:30-17:10 OS5-11 Ryuta Kawashima 17:10-17:50 OS5-12 Takeshi Iwatsubo | | | 16:30 |
| 18:00 | | | | | | | |
| 20:00 | 18:00-20:00 Banquet @ SAKURA | | | | | | 20:00 |

Wednesday, November 27, 2013

| ROOM | ROOM1 | ROOM2 | ROOM4 | ROOM5 | SHIRAKASHI 1 | SHIRAKASHI 2 | ROOM8 | ROOM |
|-------|---|---|--|--|---------------------------------------|---|--|-------|
| Floor | 1st Floor | | 2nd Floor | | 3rd Floor | | | Floor |
| 8:00 | | | | | | | | |
| 9:00 | OS10: Opening Takehiko Sato 9:00-9:30 OS10-1 Tetsuji Shimizu 9:30-10:00 OS10-2 Toshihiko Shiraishi 10:00-10:30 OS10-3 Makoto Kanzaki | OS2: 9:00-9:15 OS2-1 Pavel Vashchenkov 9:15-9:30 OS2-2 Yen-Sen Chen 9:30-9:45 OS2-3 Cheng-Chin Su 9:45-10:00 OS2-4 Ming-Chung Lo 10:00-10:15 OS2-5 Manuel Diaz 10:15-10:30 OS2-6 Juan-Chen Huang | OS4: 9:30-10:05 OS4-1 Fumio Inada (Invited) 10:05-10:30 OS4-2 Yoichi Utanohara | GS1: GS-WA 9:00-9:20 GS1-33 Hyunmin Choi 9:20-9:40 GS1-34 Chao Man 9:40-10:00 GS1-35 Hidenori Yamada 10:00-10:20 GS1-36 Pavel Vashchenkov | OSS: Poster room | OSS: 9:00-9:30 OS5-13 Noriko Behling 9:30-10:00 OS5-14 Parasuraman Selvam 10:00-10:30 OS5-15 Hiroshi Matsuo | OS8: 9:00-9:30 OS8-4 Alain Combescurie (Invited) 9:30-9:50 OS8-5 Jinhao Qiu 9:50-10:10 OS8-6 Masae Kanda 10:10-10:30 OS8-7 Yuta Yamamoto | 9:00 |
| 10:30 | | | | | | | | |
| 10:40 | OS10: 10:40-11:10 OS10-4 Atsuhiko Nakagawa 11:10-11:40 OS10-5 Hajime Sakakita 11:40-12:10 OS10-6 Toshiro Ohashi | OS2: 10:40-11:25 OS2-7 Jaw-Yen Yang (Invited) 11:25-12:10 OS2-8 Matthias Meinke (Invited) | OS4: 10:40-11:05 OS4-3 Takayuki Yamagata 11:05-11:30 OS4-4 Hiroshi Abe 11:30-11:55 OS4-5 Kengo Saito | GS1: GS-WB 10:40-11:00 GS1-37 Ko-Chun Chiang 11:00-11:20 GS1-38 Hideaki Ogawa 11:20-11:40 GS1-39 Ahmet Berk Kurtulus | OSS: Poster room | OSS: 10:40-11:00 OS5-16 Naruhiko Inayoshi 11:00-11:20 OS5-17 Florian Brémond 11:20-12:00 OS5-18 Reinhard Pfliegl | OS8: 10:40-11:20 OS8-8 Eric Maire (Keynote) 11:20-11:50 OS8-9 Yoshitake Nishi | 10:40 |
| 12:10 | | | | | | | | |
| 13:10 | OS10: 13:10-13:55 OS10-7 Chwee Teck Lim (Keynote Lecture) 13:55-14:40 OS10-8 Georg Isbary (Keynote Lecture) | OS2: 13:10-13:25 OS2-9 Hiroaki Kobayashi 13:25-13:40 OS2-10 Xinrong Su 13:40-13:55 OS2-11 Chang Luo 13:55-14:10 OS2-12 Shibo Qi 14:10-14:25 OS2-13 Yuma Fukushima 14:25-14:40 OS2-14 Daisuke Sasaki | | GS1: GS-WC 13:10-13:30 GS1-40 Tameo Nakanishi 13:30-13:50 GS1-41 Rahul Korah Shaji 13:50-14:10 GS1-42 Masaru Miyashita 14:10-14:30 GS1-43 Koji Abe | OSS: Poster room | OSS: 13:00-13:30 OS5-19 Philippe Kapsa 13:30-14:10 OS5-20 Joachim Knebel 14:10-14:50 OS5-21 Ray Hoemsen | OS8: 13:10-13:40 OS8-10 Fumio Kojima (Invited) 13:40-14:10 OS8-11 Mitsuharu Shiwa 14:10-14:40 OS8-12 Zhenmao Chen | 13:10 |
| 14:40 | | | | | | | | |
| 14:50 | OS10: 14:50-15:20 OS10-9 Katsuko S Furukawa (Invited) 15:20-15:50 OS10-10 Makoto Ohta (Invited) 15:50-16:05 OS10-11 Osman Omran Osman 16:05-16:20 OS10-12 Kazuhiro Nakamura 16:20-16:35 OS10-13 Kentaro Doi | OS2: 14:50-15:05 OS2-15 Keiji Onishi 15:05-15:20 OS2-16 Fang-an Kuo 15:20-15:35 OS2-17 Kun-Rung Huang 15:35-15:50 OS2-18 Ryotaro Sakai 15:50-16:05 OS2-19 Takashi Misaka 16:05-16:20 OS2-20 Kotaro Makino | | GS1: GS-WD 14:50-15:10 GS1-44 Bui Vu Hung 15:10-15:30 GS1-45 Saptarshi Basu 15:30-15:50 GS1-46 Han Krishna Chilukoti 15:50-16:10 GS1-47 Mikael A. Langthjem 16:10-16:30 GS1-48 Visakh Vaikuntanathan | 14:50-15:00 BREAK OSS: Poster room | OSS: 15:00-15:20 OS5-22 Neil Cooke 15:20-16:00 OS5-23 Roberto Horowitz Concluding Remarks Akira Miyamoto and Philippe Kapsa | OS8: 14:50-15:20 OS8-13 Yu Fukunishi (Invited) 15:20-15:50 OS8-14 Jun Ishimoto 15:50-16:20 OS8-15 Jinling Zhao | 14:50 |
| 16:20 | Closing Toshiro Ohashi | | | | | | | 16:20 |
| 16:30 | | OS2: 16:30-16:45 OS2-21 Takashi Ishida 16:45-17:00 OS2-22 Debasish Biswas 17:00-17:15 OS2-23 Shujie Li | | | | | OS8: 16:30-17:00 OS8-16 Hiroyuki Miki (Invited) 17:00-17:30 OS8-17 Julien Fontaine 17:30-18:00 OS8-18 Gábor Vértessy 18:00-18:10 Closing Jean-Yves Cavallé | 16:30 |
| 18:00 | | | | | | | | |

Tenth International Conference on Flow Dynamics

Program

Plenary Lectures

TACHIBANA

November 25, 2013

Chair: Rongjia Tao (Temple University, USA)

9:20-10:10 **Fluid Flow in Micron Spaces: Fluid dynamics in Microfluidic Devices** 68
Esther Amstad, David A. Weitz (Harvard University, USA)
(9:20-10:10, November 25 at TACHIBANA)

Chair: Shigenao Maruyama (Tohoku University, Japan)

10:15-11:05 **Porous Media Combustion – Its Potential Applications in Wide Range of Liquid and Gas Fuelled Cooking Stoves** 70
Subhash C. Mishra, P. Muthukumar (Indian Institute of Technology Guwahati, India)
(10:15-11:05, November 25, at TACHIBANA)

Chair: Seiji Samukawa (Tohoku University, Japan)

11:10-12:00 **Progress in Panasonic's R&D of Advanced Photovoltaic Technologies** 72
Shigeo Yata, Akira Terakawa, Masahiro Iseki, Mikio Taguchi, Eiji Maruyama and Makoto Tanaka (Panasonic Corporation, Japan)
(11:10-12:00, November 25, at TACHIBANA)

GS1: General Session

ROOM 5

November 25, 2013

GS-MA

Chair: Atsushi Shirai (Tohoku University, Japan)

GS1-1 **Reynolds-Number Dependency of Budget of Kinetic Energy and Turbulence Structure in Plane Jet** 76

13:00-13:20

Nannan Wu, Yasuhiko Sakai, Kouji Nagata (Nagoya University, Japan), Hiroki Suzuki (Nagoya Institute of Technology, Japan), Osamu Terashima (Nagoya University, Japan) and Toshiyuki Hayase (Tohoku University, Japan)

GS1-2 **Turbulent Structure of the Turbulent-Laminar Patterns in Poiseuille Flow at Low-Reynolds Numbers** 78

13:20-13:40

Koji Fukudome, Yoshifumi Ogami (Ritsumeikan University, Japan)

GS1-3 **Computational Study of Formation of Wing Tip Vortices at Low Reynolds Numbers** 80

13:40-14:00

Hiroshi Koizumi, Yuji Hattori (Tohoku University, Japan)

GS1-4 **Investigation on Aerodynamic Characteristics of Two-Dimensional Airfoils Using High Viscosity Fluid Tank** 82

14:00-14:20

Koyo Matsuzaki, Hidemasa Saito, Itaru Tamai, Gaku Sasaki, Takaaki Matsumoto and Koichi Yonemoto (Kyushu Institute of Technology, Japan)

14:30-14:40 BREAK

GS-MB

Chair: Daiju Numata (Tohoku University, Japan)

GS1-5 **Control Surface Effectiveness of Low Reynolds Number Flight Vehicles** 84

14:40-15:00

Masayuki Anyoji (Japan Aerospace Exploration Agency, Japan), Masato Okamoto, Hidenori Hidaka (Kanazawa Institute of Technology, Japan), Katsutoshi Kondo (Tokyo University of Science, Japan) and Kozo Fujii (Japan Aerospace Exploration Agency, Japan)

GS1-6 **Effect of Grid-Generated Disturbances on Aerodynamic Characteristics of an NACA0012 Airfoil at Low Reynolds Numbers** 86

15:00-15:20

Takaaki Tsuchiya, Daiju Numata and Keisuke Asai (Tohoku University, Japan)

GS1-7 **Reynolds Number Effect on Lift and Drag Characteristics of Three-dimensional Wings by Wake Integration Method** 88

15:20-15:40

Takahiro Makizono, Gaku Sasaki (Kyushu Institute of Technology, Japan), Hiroshi Ochi (Nishinippon Institute of Technology, Japan), Takaaki Matsumoto and Koichi Yonemoto (Kyushu Institute of Technology, Japan)

GS1-8 **Image-Processing Technique for Fluorescence Minituft Method in Dynamic Wind-Tunnel Testing** 90

15:40-16:00

Ryota Nakajima, Daiju Numata and Keisuke Asai (Tohoku University, Japan)

16:10-16:20 BREAK

GS-MC

Chair: Tetsuya Uchimoto (Tohoku University, Japan)

- GS1-9 **Numerical Evaluation of the Effect of the Mode of Microwave Propagating Inside a Pipe on the Detectability of a Microwave Nondestructive Testing Method** 92
16:20-16:40 Noritaka Yusa, Kota Sasaki and Hidetoshi Hashizume (Tohoku University, Japan)
- GS1-10 **Development of a Triple-Axis Thermal Acceleration Sensor** 94
16:40-17:00 Thien Xuan Dinh, Yoshifumi Ogami (Ritsumeikan University, Japan)
- GS1-11 **Numerical Study on the Propagation of Ultrasonic Acoustic Sound from a Parametric Array for Application to Underwater Technology** 96
17:00-17:20 Kei Fujisawa, Youichirou Kawaguchi (The University of Tokyo, Japan)
- GS1-12 **Characterization of Pressure-Sensitive Paint containing Ceramic Particles** 98
17:20-17:40 Sakiko Kitashima, Yousuke Sugioka, Daiju Numata and Keisuke Asai (Tohoku University, Japan)

ROOM 5

November 26, 2013

GS-TA

Chair: Fredrik Lundell (Royal Institute of Technology, Sweden)

- GS1-13 **Combined Influence of Form Drag and Thermal Non-Equilibrium State on the Stability of Mixed Convection in a Vertical Channel** 100
9:00-9:20 Manish K. Khandelwal, Premananda Bera and Anupam Chakrabarti (Indian Institute of Technology Roorkee, India)
- GS1-14 **Temperature and Pressure Measurements in Cold Flow of Vortex Tube** 102
9:20-9:40 Mohd Hazwan bin Yusof, Kouhei Moritake and Hiroshi Katanoda (Kagoshima University, Japan)
- GS1-15 **Variational Approach to Necessary and Sufficient Stability Conditions for Inviscid Shear Flow** 104
9:40-10:00 Makoto Hirota (Tohoku University, Japan), Philip J. Morrison (University of Texas at Austin, USA) and Yuji Hattori (Tohoku University, Japan)
- GS1-16 **Statistical Thermodynamic Approach to Droplet Distributions in Entrainment** 106
10:00-10:20 Yosuke Hirata, Miyuki Akiba (Toshiba Power & Industrial Systems R&D Center, Japan)
- 10:30-10:40 BREAK

GS-TB

Chair: Makoto Hirota (Tohoku University, Japan)

- GS1-17 **Flow Manipulation of Nano-Fibrillated Cellulose: a Key Technology for New Bio-based Materials** 108
10:40-11:00 Karl Håkansson, Fredrik Lundell, Lisa Prahl-Wittberg and Daniel Söderberg (Royal Institute of Technology, Sweden)

| | | |
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| GS1-18 11:00-11:20 | Numerical Evaluation of Propulsive Efficiency of Elastic Fin <u>Yusuke Yamaguchi</u> , Masataka Nakabayashi and Wataru Yamazaki (Nagaoka University of Technology, Japan) | 110 |
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ROOM 5

November 27, 2013

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GS-WD

Chair: Koji Fukudome (Ritsumeikan University, Japan)

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OS1: Discussion on Hybrid Rocket Propulsion for the Future Space Utilization Demand

ROOM 1

November 26, 2013

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Chair: Saburo Yuasa (Tokyo Metropolitan University, Japan)

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Kazuhisa Chiba (Hokkaido Institute of Technology, Japan), Masahiro Kanazaki (Tokyo Metropolitan University, Japan), Masaki Nakamiya (Kyoto University, Japan), Koki Kitagawa and Toru Shimada (Japan Aerospace Exploration Agency, Japan)

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14:40-14:50 BREAK

Engine Technology

Chair: Keisuke Sawada (Tohoku University, Japan)

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15:10-15:30

Yutaka Wada, Keisuke Seki (Akita University, Japan), Nobuji Kato (Katazen Corporation, Japan) and Keiichi Hori (Japan Aerospace Exploration Agency, Japan)

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OS2: Next-Generation CFD

ROOM 2

November 27, 2013

Chair: Shigeru Obayashi (Tohoku University, Japan)

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- OS2-2 **Assessment of Hypersonic Reentry Flow Modeling with Thermal** 210
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Heriberto Saldivar Massimi (National Cheng Kung University, Taiwan), Yen-Sen Chen (National Space Organization, Taiwan), Y. Y. Lian, Cheng-Chin Su, Ming-Chung Lo (National Chiao Tung University, Taiwan), Chih-Yung Wen (National Cheng Kung University, Taiwan), Jong-Shinn Wu (National Chiao Tung University, Taiwan), Y. A. Bondar, M. S. Ivanov (Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Russia) and Shen-Min Liang (Far East University, Taiwan)
- OS2-3 **A Parallel General-Purpose Direct Simulation Monte Carlo Code (PDSC++)** 212
9:30-9:45 **using an Unstructured Grid**
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- OS2-5 **Towards a General Purpose Algorithm for Applications on Rarefied Gas Flows** 216
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Jaw-Yen Yang, Manuel Diaz (National Taiwan University, Taiwan) and Ming-Hung Chen (National Cheng Kung University, Taiwan)
- OS2-6 **A Direct Solver for Semi-classical Boltzmann-BGK Equation in General** 218
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Juan-Chen Huang (National Taiwan Ocean University, Taiwan), Jaw-Yen Yang (National Taiwan University, Taiwan) and Man-Chun Lee (National Taiwan Ocean University, Taiwan)
- 10:30-10:40 BREAK

| | | |
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| Chair: Kazuhiro Nakahashi (Japan Aerospace Exploration Agency, Japan) | | |
| OS2-7 10:40-11:25 | Computations of Rarefied Gas Flows Using Semi-classical Boltzmann-ES-BGK Equation (<i>Invited</i>) <u>Jaw-Yen Yang</u> , Chin-Yuan Yan, Manuel Diaz (National Taiwan University, Taiwan) and Juan-Chen Huang (National Taiwan Ocean University, Taiwan) | 220 |
| OS2-8 11:25-12:10 | A Hierarchical Data Structure for Multi-Physics Problems (<i>Invited</i>) <u>Matthias Meinke</u> , Gonzalo Brito Gadeschi, Lennart Schneiders and Wolfgang Schröder (RWTH Aachen University, Germany) | 222 |
| 12:10-13:10 | LUNCH | |
| Chair: Satoru Yamamoto (Tohoku University, Japan) | | |
| OS2-9 13:10-13:25 | Design of the Next-Generation Vector Architecture for Postpeta-Scale CFD Kazuhiko Komatsu, Ryusuke Egawa, Hiroyuki Takizawa (Tohoku University / Japan Science and Technology Agency, Japan), Takashi Soga (NEC System Technologies, Ltd., Japan), Akihiro Musa (NEC Corporation, Japan) and <u>Hiroaki Kobayashi</u> (Tohoku University, Japan) | 224 |
| OS2-10 13:25-13:40 | Extending the Building Cube Method to Curvilinear Mesh with Adaptive Mesh Refinement <u>Xinrong Su</u> , Satoru Yamamoto (Tohoku University, Japan) and Kazuhiro Nakahashi (Japan Aerospace Exploration Agency, Japan) | 226 |
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| OS2-14 14:25-14:40 | Cartesian-based CFD Solver for Low-Reynolds Number Airfoils <u>Daisuke Sasaki</u> , Yuya Kojima, Tatsuya Kuroda, Takeshi Akasaka, Masato Okamoto (Kanazawa Institute of Technology, Japan), Koji Shimoyama and Shigeru Obayashi (Tohoku University, Japan) | 234 |
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| Chair: Daisuke Sasaki (Kanazawa Institute of Technology, Japan) | | |
| OS2-15 14:50-15:05 | Enhancement of Wall Boundary Condition for Dirty CAD on Building Cube Method based Immersed Boundary <u>Keiji Onishi</u> , Makoto Tsubokura (RIKEN, Japan) | 236 |

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| OS2-16 15:05-15:20 | Graphics Processor Unit Accelerated Finite-Volume Solver for Inviscid Euler Equation using a Ghost-cell Immersed Boundary Method <u>Fang-an Kuo</u> (National Chiao Tung University / National Applied Research Laboratories, Taiwan), Matthew R. Smith (National Cheng Kung University, Taiwan), Jen-Pao Su and Jong-Shinn Wu (National Chiao Tung University, Taiwan) | 238 |
| OS2-17 15:20-15:35 | An investigation of dissipation effects on a jet propulsion <u>Kun-Rung Huang</u> , Wu-Shung Fu, Wei-Hsiang Wang (National Chiao Tung University, Taiwan), Makoto Tsubokura (Hokkaido University / RIKEN, Japan) and Chung-Gang Li (RIKEN, Japan) | 240 |
| OS2-18 15:35-15:50 | Wavelet-Based Data Compression Technique for Building-Cube Method <u>Ryotaro Sakai</u> , Shigeru Obayashi (Tohoku University, Japan), Daisuke Sasaki (Kanazawa Institute of Technology, Japan) and Kazuhiro Nakahashi (Japan Aerospace Exploration Agency, Japan) | 242 |
| OS2-19 15:50-16:05 | Large Eddy Simulation of Rudimentary Landing Gear based on Building-Cube Method <u>Takashi Misaka</u> , Shigeru Obayashi (Tohoku University, Japan), Keizo Takenaka (Mitsubishi Heavy Industry, Japan) and Kazuhiro Nakahashi (Japan Aerospace Exploration Agency, Japan) | 244 |
| OS2-20 16:05-16:20 | Numerical Simulation of Internal Flows using 3DSFS+BC <u>Kotaro Makino</u> , Takashi Furusawa and Satoru Yamamoto (Tohoku University, Japan) | 246 |
| 16:20-16:30 | BREAK | |
| Chair: Takashi Misaka (Tohoku University, Japan) | | |
| OS2-21 16:30-16:45 | Unsteady Flow Simulation around Rudimentary Landing Gear by Building-Cube Method <u>Takashi Ishida</u> (Japan Aerospace Exploration Agency, Japan), Kazuhiro Imai and Keizo Takenaka (Mitsubishi Heavy Industries, Japan) | 248 |
| OS2-22 16:45-17:00 | Studies of Fluid Plasma Interaction Associated with Gas Blast Characteristics in Thermal Puffer Type GCB Based on High-Order LES Model <u>Debasish Biswas</u> , Aya Kitoh and Takeshi Shinkai (Toshiba Corporation, Japan) | 250 |
| OS2-23 17:00-17:15 | A 3D High-order Discontinuous Galerkin Method on Curved Grids with Mixed Elements <u>Shujie Li</u> (Institute of High Performance Computing, A*STAR, Singapore) | 252 |

OS3: Heat and Mass Transfer in Materials Processing

ROOM 4

November 26, 2013

Chair: Hidemasa Takana (Tohoku University, Japan)

OS3-1 **Kinetic Modeling Of Solid-Gas Reactions At Reactor Scale: A General Approach** 256
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Loïc Favergeon (Ecole Nationale Supérieure des Mines, France), Jacques Morandini (ASTEK Rhône-Alpes, France), Michèle Pijolat and Michel Soustelle (Ecole Nationale Supérieure des Mines, France)

OS3-2 **Scaling of Powder Spheroidization Process Based on Low Power DC-RF Plasma System** 258
13:55-14:40

Oleg P. Solonenko (Khristianovich Institute of Theoretical and Applied Mechanics, SB RAS, Russia), Hideya Nishiyama (Tohoku University, Japan), Andrey V. Smirnov (Khristianovich Institute of Theoretical and Applied Mechanics, SB RAS, Russia), Hidemasa Takana and Juyong Jang (Tohoku University, Japan)

14:40-14:50 BREAK

Chair: Loïc Favergeon (Ecole Nationale Supérieure des Mines, France)

OS3-3 **Modeling of Additions Nanoparticles on the Dynamics during the Sintering Process Alyumoselikatnoy Ceramics** 260
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Svetlana N. Sorokova, Anna G. Knyazeva (National Research Tomsk Polytechnic University, Russia)

OS4: Corrosion Problems under Flow in Energy Industries

ROOM 4

November 27, 2013

Chair: Yutaka Watanabe (Tohoku University, Japan)

- OS4-1 **Technical Basis of Fluid Dynamics Concerning JSME Pipe Wall Thinning** 264
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Fumio Inada, Kimitoshi Yoneda (Central Research Institute of Electric Power Industry (CRIEPI), Japan), Yutaka Watanabe (Tohoku University, Japan) and Akira Nakamura (Institute of Nuclear Safety System, Inc., Japan)
- OS4-2 **Numerical Evaluations of the Effect of Local Flow Fields on Flow Accelerated** 266
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Yoichi Utanohara, Koichi Kamahori, Akira Nakamura, Michio Murase (Institute of Nuclear Safety System, Inc., Japan) and Yukinori Nagaya (The Kansai Electric Power Co., Inc., Japan)
- 10:30-10:40 BREAK
- Chair: Yoichi Utanohara (Institute of Nuclear Safety System, Inc., Japan)
- OS4-3 **Numerical Studies on Mass Transfer Characteristics behind an Orifice in a** 268
10:40-11:05 **Curved Swirling Flow**
Takayuki Yamagata, Ai Ishizuka, Tsuyoshi Takano, Nobuyuki Fujisawa (Niigata University, Japan) and Shinji Ebara (Tohoku University, Japan)
- OS4-4 **Mechanistic Aspects of Flow-Accelerated Corrosion Suppression by Trace** 270
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Hiroshi Abe, Yutaka Watanabe (Tohoku University, Japan)
- OS4-5 **Influence of Material Hardness on Erosion Rate by Liquid Droplet** 272
11:30-11:55 **Impingement**
Kengo Saito, Takayuki Yamagata, Nobuyuki Fujisawa (Niigata University, Japan), Ryo Morita and Fumio Inada (Central Research Institute of Electric Power Industry, Japan)

OS5: Global / Local Innovations for Next Generation Automobiles

SHIRAKASHI 2

November 25, 2013

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|----------------------|--|-----|
| 13:00-13:10 | Opening Akira Miyamoto and Philipe Kapsa | |
| OS5-1 13:10-13:50 | Convergence of Transportation and Energy in the Future <u>Mark C. Williams</u> (URS, USA) | 276 |
| OS5-2 13:50-14:30 | Research and development of fully automated vehicles <u>Keiji Aoki</u> (Japan Automobile Research Institute, Japan) | 278 |
| OS5-3 14:30-15:10 | Human Factor Research Using a Driving Simulator <u>Kimihiko Nakano</u> (The University of Tokyo, Japan) | 280 |
| 15:10-15:30 | BREAK | |
| OS5-4 15:30-16:10 | Vehicle Innovations Bring Regional Community into the New Age Fuel Cell Vehicle and Hydrogen Move to the 2015 Introduction <u>Katsuhiko Hirose</u> (Toyota Motor Corporation, Japan) | 282 |
| OS5-5 16:10-16:50 | Research and Development of Transport Simulation <u>Alexandre Torday</u> (Transport Simulation Systems, Australia) | |
| OS5-6 16:50-17:30 | NDT-Innovations In The Automotive Industrial Sector And To Light-Weight Materials <u>Gerd Dobmann</u> (Fraunhofer-IZFP, Germany) | 284 |
| OS5-7 17:30-18:00 | Compact-Sizing of Optical Topography Technology (NIRS) <u>Kiyoshi Hasegawa</u> (Hitachi Ltd., Japan) | 286 |

SHIRAKASHI 2

November 26, 2013

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| 9:00-12:00 | Short Oral Presentations of Poster 3min for Each Academic Presentation (BREAK 10min) 3min for Each Industrial Presentation | |
| 12:00-12:50 | LUNCH | |

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13:00-14:30 **Poster Presentations** 288

SHIRAKASHI 2

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OS5-8 **Understanding the Triple Helix Model and the Finance of Innovation** 398
14:30-15:00 Masato Hisatake (Tohoku University, Japan)

OS5-9 **Understanding the Triple Helix Model and the Finance of Innovation** 400
15:00-15:40 Erik P. M. Vermeulen (Tilburg University, The Netherlands)

OS5-10 **Innovation, University Entrepreneurship and the Role of Triple Helix**
15:40-16:20 Shigeo Kagami (The University of Tokyo, Japan)

16:20-16:30 BREAK

OS5-11 **Can Functional Brain Imaging Prompt Innovations in Next-generation** 402
16:30-17:10 **Automobiles?**
Ryuta Kawashima (Tohoku University, Japan)

OS5-12 **Alzheimer's disease: from pathology to therapeutics** 404
17:10-17:50 Takeshi Iwatsubo (The University of Tokyo, Japan)

SHIRAKASHI 2

November 27, 2013

OS5-13 **Japanese Low Emission Vehicle (LEV) Policy** 406
9:00-9:30 **A Successful Strategy to Achieve Global Leadership in Next Generation**
Vehicles (NGV)
Noriko Behling (Author, USA)

OS5-14 **NH₃-DeNO_x Performance of the Composite [Fe-Beta + Fe(Mn)MCM-48]** 408
9:30-10:00 **Catalyst: Combining SCR Activity and NH₃ Oxidation Activity for NH₃ Slip**
Removal
Alexandr Yu. Stakheev, Dmitry A. Bokarev, Alina I. Mytareva (N. D. Zelinsky
Institute of Organic Chemistry, Russia), Rajesh Kumar Parsapur and
Parasuraman Selvam (Indian Institute of Technology Madras, India)

OS5-15 **Li-ion Battery Module for Small Electric Vehicles** 410
10:00-10:30 Hiroshi Matsuo (Micro Vehicle Lab. Ltd., Japan)

10:30-10:40 BREAK

OS5-16 **Research and Development of Tribological Techniques for Automotive Parts** 412
10:40-11:00 Naruhiko Inayoshi, Keiji Sasaki and Ryoichi Hombo (DENSO Corporation, Japan)

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| OS5-17 11:00-11:20 | Starved Lubrication: Contribution of Laser Surface Micro-Texturing <u>Florian Brémond</u> (IREIS, France), Denis Mazuyer (Ecole Centrale de Lyon, France), Philippe Maurin-Perrier (IREIS, France) and Juliette Cayer-Barrioz (Ecole Centrale de Lyon, France) | 414 |
| OS5-18 11:20-12:00 | Traffic Management Future <u>Reinhard Pfliegl</u> (A3PS, Austria) | 416 |
| 12:00-12:50 | LUNCH | |
| OS5-19 13:00-13:30 | Tribology for the Future: Biomimetism and Surface Engineering <u>Philippe Kapsa</u> (Ecole Centrale de Lyon, France) | 418 |
| OS5-20 13:30-14:10 | Synthetic Biofuels From Biomass <u>Joachim Knebel</u> , Nicolaus Dahmen and Jörg Sauer (Karlsruhe Institute of Technology, Germany) | 420 |
| OS5-21 14:10-14:50 | VEHICLE TECHNOLOGY & ENERGY CENTRE Canadian Applied Research Experience at Red River College <u>Ray Hoemsen</u> (Red River College of Applied Arts, Science and Technology, Canada) | 422 |
| 14:50-15:00 | BREAK | |
| OS5-22 15:00-15:20 | RED RIVER COLLEGE VEHICLE TECHNOLOGY & ENERGY CENTER Applied Research Project Selection: "Student & Staff Centered" <u>Neil Cooke</u> (Red River College of Applied Arts, Science and Technology, Canada) | 424 |
| OS5-23 15:20-16:00 | Modeling, Simulation, Analysis and Control of Freeway Traffic Corridors <u>Roberto Horowitz</u> (University of California, USA) | |
| | Concluding Remarks Akira Miyamoto and Philippe Kapsa | |

OS6: Smart Fluids and Materials, and Their Applications

ROOM 2

November 26, 2013

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| Chair: Masami Nakano (Tohoku University, Japan) | | |
| OS6-1 | Improved Smart Actuators And Energy Harvesters (<i>Invited</i>) | 428 |
| 9:00-9:30 | J-F. Capsal, M. Lallart, P-J. Cottinet, J. Galineau and <u>Daniel Guyomar</u> (INSA Lyon, France) | |
| OS6-2 | Physical Modeling of the Effect of Conductive Fillers on Electro-active Polymers used as Actuators (<i>Invited</i>) | 430 |
| 9:30-10:00 | Gildas Diguët (University of Johannesburg, South Africa), Jean-Marc Chenal and <u>Jean-Yves Cavaille</u> (INSA Lyon, France) | |
| OS6-3 | Novel Electroactive Polymer for Micro-motor Development (<i>Invited</i>) | 432 |
| 10:00-10:30 | <u>Miklós Zrínyi</u> , Rita Bauer (Semmelweis University, Hungary), Loránd Kelemen (Hungarian Academy of Sciences, Hungary) and Masami Nakano (Tohoku University, Japan) | |
| 10:30-10:40 | BREAK | |
| Chair: Weihua Li (University of Wollongong, Australia) | | |
| OS6-4 | Suppressing Turbulence and Enhancing the Liquid Suspension Flow in Pipeline with Electromagnetic Fields (<i>Invited</i>) | 434 |
| 10:40-11:10 | <u>Rongjia Tao</u> (Temple University, USA) | |
| OS6-5 | Electro-Rheological Behavior of Nano-Suspensions based on Titanium Dioxide Nano-Particles (<i>Invited</i>) | 436 |
| 11:10-11:40 | <u>Katsufumi Tanaka</u> , Haruki Kobayashi (Kyoto Institute of Technology, Japan) and Masami Nakano (Tohoku University, Japan) | |
| OS6-6 | Creation of a Smart Fluid and its Application by Using Blend Polymer Solution | 438 |
| 11:40-12:00 | <u>Masafumi Taniguchi</u> , Yuichiro Nagastu (Tokyo University of Agriculture and Technology, Japan) | |
| 12:10-13:10 | BREAK | |
| Chair: Rongjia Tao (Temple University, USA) | | |
| OS6-7 | Design and Evaluation of a Linear Damper Working with MR Shear Thickening Fluids (<i>Invited</i>) | 440 |
| 13:10-13:40 | Tongfei Tian, <u>Weihua Li</u> (University of Wollongong, Australia) and Masami Nakano (Tohoku University, Japan) | |
| OS6-8 | Synthesis and Magnetorheology of Iron-based Bidisperse Fluids | 442 |
| 13:40-14:00 | <u>Hiroya Abe</u> (Osaka University, Japan), Masami Nakano (Tohoku University, Japan) | |
| OS6-9 | Double Rotations of a Ferrodrops Array in a Rotating Magnetic Field | 444 |
| 14:00-14:20 | <u>Ching-Yao Chen</u> , He-Chin Lin and Hao-Chung Hsueh (National Chiao Tung University, Taiwan) | |

| | | |
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| OS6-10 14:20-14:40 | On the Breakup of Magnetic Fluid Bridge <u>Kazuya Takahashi</u> , Seiichi Sudo (Akita Prefectural University, Japan) and Hideya Nishiyama (Tohoku University, Japan) | 446 |
| 14:40-14:50 | BREAK | |
| Chair: Jean-Yves Cavaille (INSA Lyon, France) | | |
| OS6-11 14:50-15:20 | Design and Evaluation of Linear Seismic Damper Using MR Fluid Composite Rotary Brake (<i>Invited</i>) <u>Masami Nakano</u> , Tomoaki Inaba, Atsushi Totsuka (Tohoku University, Japan) and Akira Fukukita (Shimizu Corporation, Japan) | 448 |
| OS6-12 15:20-15:40 | Development of an Adaptive Structure with MR Elastomers Miao Guo, <u>Weihua Li</u> (University of Wollongong, Australia) | 450 |
| OS6-13 15:40-16:00 | Halloysite Nanotubule Clay for Efficient Water Purification <u>Alexander Vasiliev</u> (M. Lomonosov Moscow State University / Ural Federal University, Russia) and Yuri Lvov (Louisiana Tech University, USA) | 452 |
| OS6-14 16:00-16:20 | Interfacial Modification of Clay Nanotubes for the Sustained Release of Corrosion Inhibitors <u>Olga Volkova</u> (M. Lomonosov Moscow State University / Ural Federal University, Russia) and Yuri Lvov (Louisiana Tech University, USA) | 454 |

OS7: Cutting Edge of Thermal Science and Engineering

ROOM 6

November 26, 2013

Biological Heat Transfer

Chair: Victoria Timchenko (The University of New South Wales, Australia)

OS7-1 **Non-Invasive Detection of Breast Tumor using Curve Fitting Technique** 458
9:00-9:20 Koushik Das, Subhash C. Mishra (Indian Institute of Technology Guwahati, India)

OS7-2 **Magnetic Hyperthermia and Heat Conduction in Polymer Gels** 460
9:20-9:40 Attila Borsos, Rita A. Bauer, Zsófia Varga, Jedlovszky-Hajdú Angéla and Miklós Zrínyi (Semmelweis University, Hungary)

OS7-3 **Thermal Imaging and Screening of Subsurface Cancer during Thermal Recovery after Cold Stress** 462
9:40-10:00 Arka Bhowmik, Ramjee Repaka (Indian Institute of Technology Ropar, India) and Subhash C. Mishra (Indian Institute of Technology Guwahati, India)

OS7-4 **An Experimental Comparison between Thermal Diffusivity and Blood Perfusion Rate of Living and Dead Tissue by Inverse Analysis** 464
10:00-10:20 Takahiro Okabe, Junnosuke Okajima (Tohoku University, Japan), Yun Luo, Fang Wang (Shanghai Jiao Tong University, China), Atsuki Komiya (Tohoku University, Japan), Ichiro Takahashi (Yamagata University, Japan) and Shigenao Maruyama (Tohoku University, Japan)

10:20-10:40 BREAK

Convective Heat Transfer & Combustion

Chair: Wu-Shung Fu (National Chiao Tung University, Taiwan)

OS7-5 **Large Eddy Simulation of Turbulent Non-premixed Flame Using OpenFOAM** 466
10:40-11:00 Masaki Hongoh, Kazui Fukumoto and Yoshifumi Ogami (Ritsumeikan University, Japan)

OS7-6 **Boundary Heat Flux Estimation for the Heat Convection Flow Using the Velocity Field Data** 468
11:00-11:20 Gennady Alekseev, Dmitry Tereshko (Institute of Applied Mathematics FEB RAS / Far Eastern Federal University, Russia)

OS7-7 **Natural Convection between Vertical Parallel Plates with Asymmetric Heating** 470
11:20-11:40 Shang-Hao Huang, Wu-Shung Fu and Chung-Jen Chen (National Chiao Tung University, Taiwan)

OS7-8 **Synthetic Jets at Low Stokes Number: Numerical and Experimental Approach** 472
11:40-12:00 Isaac Ng, Victoria Timchenko, John Reizes (The University of New South Wales, Australia), Zdenek Travnicek, Jozef Kordik, Zuzana Brouckova (Academy of Sciences of the Czech Republic, Czech Republic)

12:10-13:10 LUNCH

Fluid Dynamics & Measurement

Chair: Atsuki Komiya (Tohoku University, Japan)

OS7-9 **Solvability of the Stationary MHD Equations under Mixed Boundary** 474
13:10-13:30 **Conditions for Magnetic Field**

Roman Brizitskii (Institute of Applied Mathematics FEB RAS / Far Eastern Federal University, Russia)

OS7-10 **Development and Validation of Fast Response Thermocouples for Shock Tunnel** 476
13:30-13:50 **Applications**

Kiran Joy Irimpan, Viren Menezes (Indian Institute of Technology Bombay, India)

14:40-14:50 BREAK

Radiation

Chair: Subhash C. Mishra (Indian Institute of Technology Guwahati, India)

OS7-11 **Seasonal Thermal Performance of Different Greenhouse Covering Materials** 478
14:50-15:10 Adil Al Mahdouri, Hiroki Gonome, Junnosuke Okajima and Shigenao Maruyama (Tohoku University, Japan)

OS7-12 **Comparison of Seasonal Performance of the Combined Involute and Compound** 480
15:10-15:30 **Parabolic Solar Concentrator in Single and Dual Forms**

Abid Ustaoglu, Junnosuke Okajima (Tohoku University, Japan), Xin-Rong (Ron) Zhang (Peking University, China) and Shigenao Maruyama (Tohoku University, Japan)

OS8: International Symposium on Smart Materials and Structures for Energy Saving

TACHIBANA

November 26, 2013

| | | |
|----------------------|--|-----|
| OS8-1 16:30-17:00 | Smart Microdevices Based on Ferromagnetic Shape Memory Alloys (<i>Invited</i>) <u>Manfred Kohl</u> , Marcel Gueltig (Karlsruhe Institute of Technology, Germany), Makoto Ohtsuka, Hiroyuki Miki (Tohoku University, Japan) and Ruizhi Yin (Karlsruhe Institute of Technology, Germany) | 484 |
| OS8-2 17:00-17:30 | Fatigue Monitoring Of CFRP In The VHCF Regime <u>Gerd Dobmann</u> , Christian Boller (Fraunhofer-IZFP, Germany) and Dietmar Eifler (Technical University, Germany) | 486 |
| OS8-3 17:30-18:00 | Quantitative Detection of Fatigue Damage in Holed Composite Laminates using an Embedded FBG Sensor <u>Tomonaga Okabe</u> (Tohoku University, Japan), Shigeki Yashiro (Shizuoka University, Japan) | 488 |

ROOM 8

November 27, 2013

| | | |
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| OS8-4 9:00-9:30 | Generic Elastic and Elasto Plastic Macroscopic Properties of a Closed Cell Polymer Foam (<i>Invited</i>) <u>Alain Combescure</u> , Carine Barbier and Dominique Baillis (INSA Lyon, France) | 490 |
| OS8-5 9:30-9:50 | Structural Health Monitoring and Non-Destructive Evaluation <u>Jinhao Qiu</u> , Chao Zhang, Jun Cheng and Hongli Ji (Nanjing University of Aeronautics & Astronautics, China) | 492 |
| OS8-6 9:50-10:10 | Preparation of Electrostrictive Polyurethane <u>Masae Kanda</u> (Tokai University, Japan), Kaori Yuse, Daniel Guyomar (INSA Lyon, France) and Yoshitake Nishi (Tokai University, Japan) | 494 |
| OS8-7 10:10-10:30 | Smart Energy Harvester using Digitally Autonomous Device <u>Yuta Yamamoto</u> , Kanjuro Makihara (Tohoku University, Japan) | 496 |
| 10:30-10:40 | BREAK | |
| OS8-8 10:40-11:20 | Fabrication, 3D Characterization and Simulation of Porous Metals for Energy Saving (<i>Keynote</i>) <u>Eric Maire</u> , Loic Courtois, Jérôme Adrien, Michel Perez, Damien Fabrègue and Sandrine Cottrino (INSA Lyon, France) | 498 |
| OS8-9 11:20-11:50 | High Strength of Prestressed CFRP Inspired by Reinforced Concrete Innovated by Great French Engineer <u>Yoshitake Nishi</u> , Takumi Okada (Tokai University, Japan) | 500 |
| 11:50-13:10 | LUNCH | |

| | | |
|-----------------------|--|-----|
| OS8-10 13:10-13:40 | Reliability Assessment for Pipe Elbows with Local Wall Pinning using Guided Wave Testing (<i>Invited</i>) <u>Fumio Kojima</u> , Jyunko Hioki, Hiroyuki Nakamoto (Kobe University, Japan) and Hideo Nishino (University of Tokushima, Japan) | 502 |
| OS8-11 13:40-14:10 | Non-destructive Materials Reliability Evaluation for Cu-alloy of Combustion Chamber <u>Mitsuharu Shiwa</u> , Donfeng He, Yoshinori Ono, Masao Hayakawa (National Institute for Materials Science, Japan), Hideo Sunakawa, Naoki Nagao, Sinich Moriya Eiichi Sato (Japan Aerospace Exploration Agency, Japan), Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan) | 504 |
| OS8-12 14:10-14:40 | Evaluation of Cavity Defect in Metallic Foam with DCPD Method <u>Zhenmao Chen</u> (Xi'an Jiaotong University, China), Shejuan Xie (Tohoku University, Japan), Xiaojuan Wang (Xi'an Jiaotong University, China), Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan) | 506 |
| 14:40-14:50 | BREAK | |
| OS8-13 14:50-15:20 | Flow Control Attempts Using Smart Materials (<i>Invited</i>) <u>Yu Fukunishi</u> , Seiichiro Izawa (Tohoku University, Japan) | 508 |
| OS8-14 15:20-15:50 | The Supercomputing of Fluid and Structure Interaction Caused by Natural Disasters <u>Jun Ishimoto</u> (Tohoku University, Japan) | 510 |
| OS8-15 15:50-16:20 | Reconstruction of Stiffness Coefficients in Orthotropic Plates Based on Lamb Waves Phase Velocities using Genetic Algorithm <u>Jinling Zhao</u> , Jinhao Qiu and Hongli Ji (Nanjing University of Aeronautics and Astronautics, China) | 512 |
| 16:20-16:30 | BREAK | |
| OS8-16 16:30-17:00 | Development of the Functional Hard Carbon Coating for Machine and Structural Materials (<i>Invited</i>) <u>Hiroyuki Miki</u> , Takanori Takeno, Hiroyuki Kosukegawa and Toshiyuki Takagi (Tohoku University, Japan) | 514 |
| OS8-17 17:00-17:30 | Promoting Energy-saving with Diamond-Like Carbon Coatings: Solid Lubrication Processes <u>Julien Fontaine</u> (Ecole Centrale de Lyon, France), Hiroyuki Miki, Takanori Takeno (Tohoku University, Japan), Thierry Le Mogne, Sandrin Bec, Michel Belin, (Ecole Centrale de Lyon, France), Koshi Adachi and Toshiyuki Takagi (Tohoku University, Japan) | 516 |
| OS8-18 17:30-18:00 | Nondestructive characterization of flake graphite cast iron by Magnetic Adaptive Testing <u>Gábor Vértesy</u> (Institute of Technical Physics and Materials Science, Hungary), Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan) and Ivan Tomáš (Academy of Sciences of the Czech Republic, Czech Republic) | 518 |
| 18:00-18:10 | Closing J. Y. Cavallé (INSA Lyon, France) | |

OS9: International Symposium on Innovative Energy Research

TACHIBANA

November 25, 2013

Session 1-1 Combustion I

Chair: Kaoru Maruta (IER, IFS, Tohoku University, Japan)

- 13:00-13:10 **Opening**
Kaoru Maruta (IER, IFS, Tohoku University, Japan)
- OS9-1 **On the Path to Effective Energy Production by Heat and Mass Return** 522
13:10-13:35 **Combustion Technologies (*Invited*)**
Sergey Minaev (Far-Eastern Federal University, Russia), Kaoru Maruta
(Tohoku University, Japan)
- OS9-2 **Modelling Hydrogen-Air Flames With Reduced Two-Step Kinetic Mechanisms** 524
13:35-14:00 **(*Invited*)**
Vladimir Gubernov (P. N. Lebedev Physical Institute of the Russian Academy
of Sciences, Russia)
- OS9-3 **Experimental and Numerical Investigation of CH₄/CO₂/O₂ Laminar Inverse** 526
14:00-14:25 **Diffusion Flames (*Invited*)**
Nichiki Okada, Shuhei Yoneyama, Tomohiro Yamanaka, Toshihisa Ueda and
Takeshi Yokomori (Keio University, Japan)
- 14:30-14:40 BREAK

Session 1-2 Combustion II

Chair: Hisashi Nakamura (IER, IFS, Tohoku University, Japan)

- OS9-4 **SHS Materials Radiative Porous Burners (*Invited*)** 528
14:40-15:05 Alexander Kirdyashkin, Anatoly Maznoy, Alexander Gushin (Tomsk Scientific
Center SB RAS, Russia) and Sergey Minaev (Far-Eastern Federal University,
Russia)
- OS9-5 **Flame Stabilization In A Mesoscale Bluff Body Combustor (*Invited*)** 530
15:05-15:30 Aiwu Fan, Jianlong Wan, Hong Yao and Wei Liu (Huazhong University of
Science and Technology, China)
- OS9-6 **Formation of Spinning Flames in Stepped Tube Combustors (*Invited*)** 532
15:30-15:55 Upendra W. Taywade, Anil A Deshpande and Sudarshan Kumar (Indina
Institute of Technology Bombay Powai, India)
- 16:10-16:20 BREAK

Session 2-1 Innovative Energy Research I

Chair: Takeshi Yokomori (Keio University, Japan)

- OS9-7 **Numerical Study of Methanol Reformation from a Single Channel with Cavities** 534
16:20-16:40 **Integrated with a Micro-combustor**
Prashant Nehe, Sudarshan Kumar (Indian Institute of Technology Bombay,
India)

OS9-8 **Multiphase High Density Hydrogen Energy and its Risk Assessment (*Invited*)** 536
16:40-17:05 Jun Ishimoto (Tohoku University, Japan)

TACHIBANA

November 26, 2013

Session 2-2 Innovative Energy Research II

Chair: Jun Ishimoto (IER, IFS, Tohoku University, Japan)

OS9-9 **On-wafer Monitoring Technique for Highly Efficient Fabrication Process of Nano Energy Devices (*Invited*)** 538
9:00-9:25 Tomohiro Kubota, Seiji Samukawa (Tohoku University, Japan)

OS9-10 **Basic Study on Flow Control by Using DC Corona Discharge** 540
9:25-9:50 Yoshinori Mizuno, Marius Blajan and Shimizu Kazuo (Shizuoka University, Japan)

OS9-11 **Investigation of Applying Laminar Flow-based Microfluidic Microbial Fuel Cell on The Screening of Carbon Sources for Electricity Generation** 542
9:50-10:15 Cheng-Hsun Lin, Hsiang-Yu Wang (National Cheng Kung University, Taiwan)

10:30-10:40 BREAK

Session 3 Energy Nano-Devices

(Solar cell, secondary battery, fuel cell, and optimum energy system)

10:40-10:50 **Session Opening**
Activity of Core Technology Consortium for Advanced Energy Devices in Tohoku University
Seiji Samukawa (IFS and WPI-AIMR, Tohoku University, Japan)

Energy Nano-Devices 1 – Fuel Cell

Chair: Takeo Ohno (WPI-AIMR, Tohoku University, Japan)

OS9-12 **Complex Hydrides for Hydrogen- and Electrochemical-Energy Storage (*Invited*)** 544
10:50-11:20 Shin-ichi Orimo (Tohoku University, Japan)

OS9-13 **Molecular Scale Analyses of Transport Phenomena in Polymer Electrolyte Fuel Cell (*Invited*)** 546
11:20-11:50 Takashi Tokumasu, Akinori Fukushima, Hironori Sakai, Takuya Mabuchi and Yuta Sugaya (Tohoku University, Japan)

Energy Device 2 – Analysis and Secondary Battery

Chair: Akio Higo (WPI-AIMR, Tohoku University, Japan)

OS9-14 **In Situ Analysis of Materials and Reactions in Solid Oxide Fuel Cells (*Invited*)** 548
13:10-13:40 Koji Amezawa, Takashi Nakamura, Keiji Yashiro, Tatsuya Kawada (Tohoku University, Japan), Yuki Oriyasa and Yoshiharu Uchimoto (Kyoto University, Japan)

| | | |
|---|--|-----|
| OS9-15 13:40-14:10 | All-solid-state Li-ion Battery Research using Epitaxial Thin Films (<i>Invited</i>) <u>Taro Hitosugi</u> , Masakazu Haruta and Susumu Shiraki (Tohoku University, Japan) | 550 |
| OS9-16 14:10-14:40 | A novel nanomaterial design for high energy density lithium ion batteries (<i>Invited</i>) <u>Itaru HONMA</u> (Tohoku University, Japan) | 552 |
| 14:40-14:50 | BREAK | |
| Energy Device 3 – Solar Cell and Optimization Method | | |
| Chair: Takeru Okada (IFS, Tohoku University, Japan) | | |
| OS9-17 14:50-15:20 | High Efficiency Silicon QD Solar Cells Using Bio-template Ultimate Top-down Processes (<i>Invited</i>) <u>Seiji Samukawa</u> (Tohoku University / CREST, Japan) | 554 |
| OS9-18 15:20-15:50 | Integration of nanostructures in crystalline silicon solar cells (<i>Invited</i>) <u>Noritaka Usami</u> , Yusuke Hoshi (Nagoya University, Japan) and Takeshi Tayagaki (Kyoto University, Japan) | 556 |
| OS9-19 15:50-16:20 | Multi-Objective Design Exploration and Energy Strategy (<i>Invited</i>) <u>Shigeru Obayashi</u> (Tohoku University, Japan) | 558 |

OS10: Advanced Physical Stimuli and Biological Responses

ROOM 1

November 27, 2013

Opening

Takehiko Sato (Tohoku University, Japan)

Chair: Satoyuki Kawano (Osaka University, Japan)

- OS10-1 **Effect on microorganisms by cold atmospheric plasmas** (Invited) 562
9:00-9:30 Tetsuji Shimizu, Julia L. Zimmermann, Gregor E. Morfill (Max-Planck
Institute for extraterrestrial physics, Germany), Georg Isbary and Wilhelm
Stolz (General Hospital Munich Schwabing, Germany)
- OS10-2 **Effects of Mechanical Vibration on Cell Proliferation and Differentiation**(Invited) 564
9:30-10:00 Toshihiko Shiraishi, Shin Morishita (Yokohama National University, Japan)
- OS10-3 **Muscle Contractile Activity and Its Beneficial Effects in Type 2 Diabetes** (Invited) 566
10:00-10:30 Makoto Kanzaki (Tohoku University, Japan)
- 10:30-10:40 BREAK
- Chair: Toshihiko Shiraishi (Yokohama National University, Japan)
- OS10-4 **Pulsed-Liquid Jet Surgical Device: Evolution from Shock Bubble Interaction to** 568
10:40-11:10 **Clinical Application** (Invited)
Atsuhiko Nakagawa, Kiyonobu Ohtani, Yoshikazu Ogawa, Toshiki Endo,
Masaki Iwasaki, Kuniyasu Niizuma (Tohoku University, Japan), Tatsuhiko
Arafune (Tokyo Denki University, Japan), Toshikatsu Washio (National
Institute of Advanced Industrial Science and Technology, Japan), Takashi Kato
(The University of Tokyo, Japan), Daisuke Kudo, Takashi Irinoda, Chikashi
Nakanishi, Tadashi Sakurai, Yoshihiro Kamiyama, Chiaki Sato, Masato
Yamada, Toru Nakano, Shinichi Yamashita, Tomoyuki Suzuki, Yuji Tanaka,
Naoyuki Takagi, Yoshimichi Imai, Yoshihiro Hagiwara, Hiroshi Kunikata,
Shunsuke Kawamoto and Teiji Tominaga (Tohoku University, Japan)
- OS10-5 **Introduction of Medical Plasma Equipment for the Minimally Invasive** 570
11:10-11:40 **Treatment** (Invited)
Hajime Sakakita (AIST / University of Tsukuba, Japan), Yuzuru Ikehara, Jaeho
Kim (AIST, Japan), Nobuyuki Shimizu (Sanno Hospital, Japan), Sanae Ikehara
(AIST, Japan), Hayao Nakanishi (Aichi Cancer Center Research Institute,
Japan), Hiromasa Yamada, Yusuke Yamagishi (University of Tsukuba, Japan),
Satoru Kiyama, Akiko Kubota (AIST, Japan), Masao Ichinose (Wakayama
Medical University, Japan) and Toru Niwa (Hashimoto Municipal Hospital,
Japan)
- OS10-6 **Novel Experimental System for Applying Cyclic Tensile Strain and Fluid Shear** 572
11:40-12:10 **Stress to Tenocytes** (Invited)
Toshiro Ohashi, Yasufumi Hagiwara (Hokkaido University, Japan), James HC
Wang (The University of Pittsburgh, USA) and Eijiro Maeda (Hokkaido
University, Japan)

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| Chair: Toshiro Ohashi (Hokkaido University, Japan) | | |
| OS10-7 | Modes of Collective Cell Migration arising from Physical Constraints | 574 |
| 13:10-13:55 | <i>(Keynote Lecture)</i> <u>Chwee Teck Lim</u> (National University of Singapore, Singapore) | |
| Chair: Takehiko Sato (Tohoku University, Japan) | | |
| OS10-8 | Cold Atmospheric Plasmas in Medicine <i>(Keynote Lecture)</i> | 576 |
| 13:55-14:40 | <u>Georg Isbary</u> (Hospital Schwabing, Germany), Tetsuji Shimizu, Julia Zimmermann, Gregor Morfill (Max Planck Institute for extraterrestrial physics, Germany) and Wilhelm Stolz (Hospital Schwabing, Germany) | |
| 14:40-14:50 | BREAK | |
| Chair: Makoto Kanzaki (Tohoku University, Japan) | | |
| OS10-9 | The Scaffold-free Cartilage Tissue by Mechanical Stress Loading for Tissue Engineering <i>(Invited)</i> | 578 |
| 14:50-15:20 | <u>Katsuko S Furukawa</u> , Masashi Yoshimoto and Takashi Ushida (The University of Tokyo, Japan) | |
| OS10-10 | Optimized Stent <i>(Invited)</i> | 580 |
| 15:20-15:50 | <u>Makoto Ohta</u> , Hitomi Anzai, Toshio Nakayama, Xiaobo Han and Noriko Tomita (Tohoku University, Japan) | |
| Chair: Daisuke Yoshino (Tohoku University, Japan) | | |
| OS10-11 | Computational Fluid Dynamics Modeling of Micro-Vibrating Flow Pumps | 582 |
| 15:50-16:05 | <u>Osman Omran Osman</u> , Satoyuki Kawano (Osaka University, Japan) | |
| OS10-12 | Sterilization of Bacterial Spores by Atmospheric Pressure Plasma | 584 |
| 16:05-16:20 | <u>Kazuhiro Nakamura</u> , Daisuke Yoshino, Tomoki Nakajima and Takehiko Sato (Tohoku University, Japan) | |
| OS10-13 | Dynamics and Self-Assembled Pattern Formation of Short DNA Fragments | 586 |
| 16:20-16:35 | <u>Kentaro Doi</u> , Ryosuke Nii, Hiroshi Takeuchi and Satoyuki Kawano (Osaka University, Japan) | |

Closing

Toshiro Ohashi (Hokkaido University, Japan)

OS11: Blood Flow for Medical Equipment

ROOM 4

November 25, 2013

- 13:00-13:10 **Opening**
Toshio Nakayama (Tohoku University, Japan)
- Chair: Toshio Nakayama (Tohoku University, Japan) & Guy Courbebaisse (INSA Lyon, France)
- OS11-1 **Modeling Thrombosis In Cerebral Aneurysms (*Invited*)** 590
13:10-13:50 Bastien Chopard, Orestis Malaspinas and Jonas Latt (University of Geneva, Switzerland)
- OS11-2 **Canceled**
13:50-14:10
- OS11-3 **Stagnant Blood Flow in Intracranial Aneurysms: A Possible Association with Atherosclerosis** 592
14:10-14:30 Shin-ichiro Sugiyama, Toshio Nakayama, Kenichi Funamoto, Daichi Suzuki, Kuniyasu Niizuma, Makoto Ohta and Teiji Tominaga (Tohoku University, Japan)
- 14:30-14:40 BREAK
- Chair: Makoto Ohta (Tohoku University, Japan) & Bastien Chopard (University of Geneva, Switzerland)
- OS11-4 **Investigation of the relationship between hemodynamics and pathology in cerebral aneurysms (*Invited*)** 594
14:40-15:20 Takanobu Yagi, Yuki Iwabuchi, Yasutaka Tobe, Mitsuo Umezu (Waseda University, Japan), Yoshifumi Hayashi, Hirota Yoshida, Kazutoshi Nishitani, Yoshifumi Okada and Shigemi Kitahara (Kitahara International Hospital, Japan)
- OS11-5 **Hemodynamic and Clinical Study of Y-stents for Treatment of Cerebral Aneurysms** 596
15:20-15:40 Kenichi Kono, Tomoaki Terada (Wakayama Rosai Hospital, Japan)
- OS11-6 **Development of a new catheter with innovative concepts for selective venous sampling-preliminary study** 598
15:40-16:00 Tomo Kinoshita, Kazumasa Seiji, Masashi Otake, Makoto Ohta (Tohoku University, Japan) and Kwon Guiryong (Terumo clinical supply Co., Japan)
- 16:10-16:20 BREAK

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| Chair: Toshio Nakayama (Tohoku University, Japan) & Takanobu Yagi (Waseda University, Japan) | | |
| OS11-7 | Flow Analysis for Coiled Intracranial Aneurysms | 600 |
| 16:20-17:00 | Carolina Vallecilla, Yu Chen (INSA Lyon, France), Masanori Kuze, Makoto Ohta (Tohoku University, Japan) and <u>Guy Courbebaisse</u> (INSA Lyon, France) | |
| OS11-8 | Influence of Ni-Ti Wire under the Shear Stress Environment on Endothelialization | 602 |
| 17:00-17:15 | <u>Sho Matsumoto</u> , Han Xiaobo (Tohoku University, Japan), Hisatoshi Kobayashi (National Institutes for Materials Science, Japan), Noriko Tomita and Makoto Ohta (Tohoku University, Japan) | |
| OS11-9 | Particle Response in Dielectrophoretic Flow Using CFD | 604 |
| 17:15-17:35 | <u>Kim Hyoung June</u> , Masahiro Takei (Chiba University, Japan) | |

**OS12: Basic and Applied Research
on Membrane Protein for Health Care**

ROOM 4

November 26, 2013

Chair: Makoto Ohta (Tohoku University, Japan)

OS12-1 **Structure and Mechanism of the Proton Pumping Vacuolar ATPase, a Rotary Motor Enzyme (*Invited*)** 608

9:00-9:45

Stephan Wilkens (The State University of New York Upstate Medical University, USA)

OS12-2 **Energy Generation Coupled with Decarboxylation Reactions in Bacteria (*Invited*)** 610

9:45-10:30

Keietsu Abe, Kei Nanatani (Tohoku University, Japan)

10:30-10:40 BREAK

Chair: Noriko Tomita (Tohoku University, Japan)

OS12-3 **Design of Engineered α -Hemolysins for Regulation of Hemolytic Activity by External Stimuli (*Invited*)** 612

10:40-11:25

Kazushi Kinbara, Mihoko Ui, Kousuke Harima, Sumire Endo, Kimio Akiyama (Tohoku University, Japan) and Yoshikazu Tanaka (Hokkaido University, Japan)

OS12-4 **Membrane Channel Dynamics Depended on Lipid Environment (*Invited*)** 614

11:25-11:50

Noriko Tomita (Tohoku University, Japan), Liviu Movileanu (Syracuse University, USA) and Makoto Ohta (Tohoku University, Japan)

OS12-5 **Structural Aspects of Proteins Modified by Oligosaccharides** 616

11:50-12:10

Kenji Etchuya, Yuri Mukai (Meiji University, Japan)

**OS13: The Ninth International Students / Young Birds
Seminar on Multi-Scale Flow**

SAKURA 2

November 25, 2013

Session 1

13:00-(14:20)

Short Oral Presentation

3 min for Short Oral Presentation without PC preparation

| | | |
|--------|---|-----|
| OS13-1 | Effects of Hydrostatic Pressure on Cell Cycle Progression and Morphology of Endothelial Cells <u>Kakeru Sato</u> , Daisuke Yoshino and Takehiko Sato (Tohoku University, Japan) | 620 |
| OS13-2 | Experimental Study on Bubble-Liquid Flow through a Hole at the Bottom of Closed Tank <u>Takumu Tamaki</u> , Yoshihiro Aoki, Tomonori Kitazume, Eiji Sakamoto and Tameo Nakanishi (Yamagata University, Japan) | 622 |
| OS13-3 | Cavitation Generation near Narrow Container Walls Induced by Underwater Explosion <u>Taketoshi Koita</u> , Mingyu Sun (Tohoku University, Japan) | 624 |
| OS13-4 | Interaction between Incident Shock Wave and Combustion Downstream of Ramp Injector in Supersonic Flow <u>Yoshitaka Iwamura</u> , Tatsuya Yamaguchi, Taku Kudo, Akihiro Hayakawa and Hideaki Kobayashi (Tohoku University, Japan) | 626 |
| OS13-5 | Status Report on the Development of the 0.3-m Magnetic Suspension and Balance System <u>Kohei Kakizaki</u> , Daiju Numata and Keisuke Asai (Tohoku University, Japan) | 628 |
| OS13-6 | SPH Simulation of Liquid Droplet Behavior on a Water-repellent Surface <u>Masumi Ito</u> , Masaya Shigeta, Seiichiro Izawa and Yu Fukunishi (Tohoku University, Japan) | 630 |
| OS13-7 | Numerical Simulation of Turbulent Spot Generation Process Using Interaction Between Streaky Structure and Jet <u>Joe Yoshikawa</u> (Tohoku University, Japan), Satoko Komurasaki (Nihon University, Japan), Masaya Shigeta (Osaka University, Japan), Seiichiro Izawa and Yu Fukunishi (Tohoku University, Japan) | 632 |
| OS13-8 | Numerical Analysis of Cryogenic Slush Flow in a Corrugated Pipe (SLUSH-3D) <u>Yoshiyuki Iwama</u> , Takumi Hosono and Katsuhide Ohira (Tohoku University, Japan) | 634 |
| OS13-9 | Molecular Dynamics Study of Oxygen Permeation of the Ionomer on Platinum Catalyst in PEFC Cathode Side <u>Yuta Sugaya</u> , Takashi Tokumasu (Tohoku University, Japan) | 636 |

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| OS13-10 | Development of Visualization System for Injection Molding by using PVA <u>Masashi Ohtake</u> , Kei Ozawa, Ken Nakajima and Makoto Ohta (Tohoku University, Japan) | 638 |
| OS13-11 | The Influence of Airflow Uniformity over the Duct Outlet on Cooling Performance of Vehicle Air-condition Kaiping Wen, Chenguang Lai and <u>Chao Man</u> (Chongqing University of Technology, China) | 640 |
| OS13-12 | Characteristics of Chemical Species Generated by a Gas-Liquid Plasma Flow Using a Wire Electrode <u>Masashi Hara</u> , Daisuke Yoshino (Tohoku University, Japan), Tetsuji Shimizu (Max-Planck Institute for Extraterrestrial Physics, Germany) and Takehiko Sato (Tohoku University, Japan) | 642 |
| OS13-13 | The Effect of Vibration of Ablation Catheter on the Temperature of the Electrode <u>Kaihong Yu</u> (Tohoku University, Japan), Tetsui Yamashita (JMS Co., Ltd., Japan), Shigeaki Shingyochi (NIDEC COPAL ELECTRONICS Corp., Japan) and Makoto Ohta (Tohoku University, Japan) | 644 |
| OS13-14 | Extension of PTV to Three Dimensional Measurement of Velocity Distribution Using Two-Color Intensity Ratio <u>Hiroshi Isoya</u> , Naoki Shino, Haruko Nagai and Takeshi Yokomori (Keio University, Japan) | 646 |
| OS13-15 | Application of Paralleling Methods in Solving the Inverse Problem for the Reaction-Diffusion Equations Olga. V. Soboleva (Institute of Applied Mathematics FEB RAS, Russia) and <u>Michael. A. Shepelov</u> (Institute of Applied Mathematics FEB RAS / Far Eastern Federal University, Russia) | 648 |
| OS13-16 | Aerodynamic Influence of a Propeller Wake on NACA0012 Airfoil at Low Reynolds Number <u>Fumiyasu Makino</u> , Hiroki Nagai (Tohoku University, Japan) | 650 |
| OS13-17 | Pressure Wave Propagation and Unsteady Behavior of Cloud Cavitation in a Cylindrical Convergent-Divergent Nozzle <u>Shota Hayashi</u> , Keiichi Sato (Kanazawa Institute of Technology, Japan) | 652 |
| OS13-18 | Effect of Impingement Surface Geometry on Erosion in Cavitating Water Jet <u>Kouhei Yoshihisa</u> , Kazuki Niyama and Keiichi Sato (Kanazawa Institute of Technology, Japan) | 654 |
| OS13-19 | A Molecular Dynamics Study for Diffusivity of Proton and Water in Nafion Membrane <u>Takuya Mabuchi</u> , Takashi Tokumasu (Tohoku University, Japan) | 656 |
| OS13-20 | Acetic Acid Decomposition by Coaxial Cylinder Type DBD Tube with Mist Flow <u>Tomohiro Shibata</u> , Hideya Nishiyama (Tohoku University, Japan) | 658 |

- OS13-21 **Effect of Beam Deflection on Measurement of Boundary Layers Using Phase-shifting Interferometer** 660
Eita Shoji, Ryota Nakaoku, Atsuki Komiya, Junnosuke Okajima and Shigenao Maruyama (Tohoku University, Japan)
- OS13-22 **The Effects of Droplet Diameter and Electric Voltage on Droplet Behavior with High Speed Rotary Bell-Cup Atomizer** 662
Tomoyuki Katayama, Tatsuya Soma, Yasuhiro Saito, Yohsuke Matsushita, Hideyuki Aoki (Tohoku University, Japan), Toshiki Haneda, Yohsuke Hatayama, Minoru Shirota, Takao Inamura (Hirosaki University, Japan), Daichi Nakai, Genki Kitamura, Masanari Miura, Takukatsu Asakawa and Masatoshi Daikoku (Hachinohe Institute of Technology, Japan)
- OS13-23 **An Experimental and Computational Study for the Development of High-efficiency Fluidized Bed Solar Reactor** 664
Seung-Jae Lee, Atsushi Sakurai, Sho Suzuki, So Sakuma, Koji Matsubara, Nobuyuki Gokon and Tatsuya Kodama (Niigata University, Japan)
- OS13-24 **Multi-Objective Optimization and Data Mining for Process Compressor Design** 666
Ray A. Rockenbach, Koji Shimoyama and Shigeru Obayashi (Tohoku University, Japan)

(14:20-15:40) **Poster Presentation**

SAKURA 2

November 26, 2013

Session 2

9:00-(10:10)

Short Oral Presentation

3min for Short Oral Presentation without PC preparation

- OS13-25 **The Effect of Surface Reactions on Gas-phase Reactions of CH₄/Air Mixture in a Micro Flow Reactor with a Controlled Temperature Profile** 668
Yuta Kizaki, Kenichiro Saruwatari, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa and Kaoru Maruta (Tohoku University, Japan)
- OS13-26 **Pressure Dependence of n-Butane/Air Weak Flames in a Micro Flow Reactor with a Controlled Temperature Profile** 670
Shogo Kikui, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa and Kaoru Maruta (Tohoku University, Japan)
- OS13-27 **Evaluation of Heat Transfer of Turbulent Natural Convection in Vertical Parallel Plates by Large Eddy Simulation** 672
Takuma Kogawa, Junnosuke Okajima, Yuka Iga, Atsuki Komiya and Shigenao Maruyama (Tohoku University, Japan)
- OS13-28 **Experimental Study on Flow and Heat Transfer of Boiling Liquid Nitrogen in a Triangular Pipe** 674
Takuya Morishita, Ren Sakata, Katsuhide Ohira, Kazushi Miyata, Koichi Takahashi (Tohoku University, Japan), Hiroaki Kobayashi, Hideyuki Taguchi, Motoyuki Hongoh and Takayuki Kojima (JAXA, Japan)

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| OS13-29 | Study on Jet Flame Characteristics in High-temperature Oxy-fuel Condition <u>Takakazu Onishi</u> , Li Xing, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa, Kaoru Maruta(Tohoku University, Japan), Tadahiro Araake and Susumu Mochida (Nippon Furnace Corporation, Japan) | 676 |
| OS13-30 | Characterization of DBD Reactive Air Jet under High Temperature and High Pressure for Combustion Assist <u>Hikaru Asano</u> , Tomoki Nakajima, Hidemasa Takana and Hideya Nishiyama (Tohoku University, Japan) | 678 |
| OS13-31 | Effect of Nozzle Diameter on NO_x Emission of High-Pressure Pulse Spray Combustion <u>Satoki Yokoi</u> , Shota Sugawara, Junichi Tanimoto, Ryuichi Sagawa, Yasuhiro Saito, Yohsuke Matsushita, Hideyuki Aoki (Tohoku University, Japan) and Masakazu Shoji (Shizen kankyo sangyo Co. Ltd., Japan) | 680 |
| OS13-32 | Flow and Heat Transfer Characteristics of Slush Nitrogen in a Horizontal Triangular Pipe <u>Yutaro Saito</u> , Jun Okuyama, Koichi Takahashi and Katsuhide Ohira (Tohoku University, Japan) | 682 |
| OS13-33 | Study on Ignition Characteristics of Syngas in a Micro Flow Reactor with a Controlled Temperature Profile <u>Hiroki Takahashi</u> , Takuya Tezuka, Susumu Hasegawa, Hisashi Nakamura and Kaoru Maruta (Tohoku University, Japan) | 684 |
| OS13-34 | Filtration Inspiration from Nature <u>James Herringer</u> (RMIT University, Australia), James G. Mitchell (Flinders University, Australia) and Gary Rosengarten (RMIT University, Australia) | 686 |
| OS13-35 | Variability of Thermal Conductivity Measurement for High-Density Glass Wool by Using Guarded Hot Plate Apparatus Utilizing Peltier Module <u>Tatsuya Kobari</u> , Junnosuke Okajima, Atsuki Komiya and Shigenao Maruyama (Tohoku University, Japan) | 688 |
| OS13-36 | Influence of Gravity Direction in the Boiling with Impinging Flow Using High-Carbon Alcohol Aqueous Solutions <u>Hiroshi Ito</u> , Daiki Shimano and Naoki Ono (Shibaura Institute of Technology, Japan) | 690 |
| OS13-37 | Development of a New Cooling System Using Phase Change Material for Power Battery Thermal Management of Electric Vehicles <u>Takuya Ojio</u> , Keisuke Kanbara, Takashi Yamada and Naoki Ono (Shibaura Institute of Technology, Japan) | 692 |
| OS13-38 | Comparison of High-pressure Homogenizer and Disc Mill in Microalgae Oil Extraction <u>Shun Tsutsumi</u> , Takehiro Shibuya, Kouhei Baisho, Yasuhiro Saito, Yohsuke Matsushita and Hideyuki Aoki (Tohoku University, Japan) | 694 |
| OS13-39 | Effect of Secondary Wick on Startup Process of Loop Heat Pipe <u>Masahiko Taketani</u> , Hiroki Nagai (Tohoku University, Japan) | 696 |

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| OS13-40 | Development of High-performance TSP by Mixing Fine Particle <u>Takehito Horagiri</u> , Hiroki Nagai (Tohoku University, Japan) | 698 |
| OS13-41 | Experimental and Numerical Determination of Radiative Properties of CeO₂ Packed Bed <u>Kyohei Ogino</u> , Atsushi Sakurai (Niigata University, Japan), Hiroki Gonome and Shigenao Maruyama (Tohoku University, Japan) | 700 |
| OS13-42 | Preliminary Experiment of Supersonic Micro-channel Gas Flow Visualization by Using Interferometer <u>Yuya Takahashi</u> , Junnosuke Okajima, Yuka Iga, Atsuki Komiya and Shigenao Maruyama (Tohoku University, Japan) | 702 |
| OS13-43 | Explosion Venting of Porous Walls Gas Storage <u>Taisia Miroshnichenko</u> , Nickolay Belyakov, Nickolay Lutsenko and Sergey Minaev (Far Eastern Federal University, Russia) | 704 |
| OS13-44 | Modeling Mass and Heat Transfer in Geothermal Reservoirs Using Fractional Differential Equations <u>Anna Suzuki</u> , Yuichi Niibori (Tohoku University, Japan), Sergei A. Fomin (California State University, USA), Vladimir A. Chgunov (Kazan Federal University, Russia) and Toshiyuki Hashida (Tohoku University, Japan) | 706 |
| OS13-45 | Effects of Ambient Pressure on Liquid Sheet Breakup of Airblast Atomizer <u>Kodai Kato</u> , Soichiro Suzuki, Taku Kudo (Tohoku University, Japan), Soichiro Kato, Mitsunori Itoh (IHI Corporation, Japan), Akihiro Hayakawa and Hideaki Kobayashi (Tohoku University, Japan) | 708 |
| OS13-46 | Evaluation of CO₂/Water/Rock Interactions for CO₂ Geological Sequestration: Experimental Study of CO₂ Storage Capacity Using a Manometric Method <u>Kaori Endo</u> , Koyo Ryu (Tohoku University, Japan), Takashi Fujii (National Institute of Advanced Industrial Science and Technology, Japan) and Toshiyuki Hashida (Tohoku University, Japan) | 710 |
| OS13-47 | Characterization of Gas Permeability in Rock for the Development of CO₂ Geological Storage Technology <u>Koyo Ryu</u> , Kaori Endo (Tohoku University, Japan), Takashi Fujii (National Institute of Advanced Industrial Science and Technology, Japan) and Toshiyuki Hashida (Tohoku University, Japan) | 712 |
| (10:10-11:30) | Poster Presentation | |
| Session 3 | | |
| 13:10-(14:20) | Short Oral Presentation 3 min for Short Oral Presentation without PC preparation | |
| OS13-48 | Numerical Modeling of ECT Signals for Fatigue Crack <u>Hao Feng</u> , Ryoichi Urayama, Shejuan Xie, Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan) | 714 |
| OS13-49 | Gravity Assists and Associated Phase-Space Flows in Space Mission Design <u>Kenta Oshima</u> , Tomohiro Yanao (Waseda University, Japan) | 716 |

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| OS13-50 | Flutter Analysis of Deployable Wing using Multibody Dynamics <u>Hiroki Sakiyama</u> , Kanjuro Makihara (Tohoku University, Japan) | 718 |
| OS13-51 | Study on the Reduction of Wind Pressure of Solar Panels <u>Yusuke Sato</u> , Mingyu Sun (Tohoku University, Japan) | 720 |
| OS13-52 | Observation of Heat and Fluid Flow in the Cooling of Phase Change Material for Power Battery Thermal Management of Electric Vehicles <u>Kosuke Nonaka</u> , Kazuhiro Kudo, Takashi Yamada and Naoki Ono (Shibaura Institute of Technology, Japan) | 722 |
| OS13-53 | Prototype Experiment and Numerical Analysis of Processing a Thin Plate from the Molten Metal <u>Mitsutaka Umeta</u> , Naoki Kondo and Naoki Ono (Shibaura Institute of Technology, Japan) | 724 |
| OS13-54 | Flow-Coupled Multibody Dynamics Simulation for an Aerial Deployment of a Folded Wing <u>Koji Fujita</u> (Tohoku University, Japan), Toshikazu Motoda (Japan Aerospace Exploration Agency, Japan) and Hiroki Nagai (Tohoku University, Japan) | 726 |
| OS13-55 | Experimental Evaluation of the Applicability of a Sided-incidence Microwave Probe for a Microwave Nondestructive Testing Method <u>Kota Sasaki</u> , Noritaka Yusa and Hidetoshi Hashizume (Tohoku University, Japan) | 728 |
| OS13-56 | The Effect of Size of Caking Coal and Low-quality Coal on the Tensile Strength of Coke <u>Shohei Matsuo</u> , Tetsuya Kanai, Ayuko Toishi, Yasuhiro Saito, Yohsuke Matsushita, Hideyuki Aoki (Tohoku University, Japan), Seiji Nomura and Shigeto Miyashita (Nippon Steel & Sumitomo Metal Corp., Japan) | 730 |
| OS13-57 | Effect of Cation Substitution on Chemical Stability and Transport Properties of Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_{3-δ}-based Mixed Conductors <u>Fang Wang</u> , Takashi Nakamura, Keiji Yashiro, Junichiro Mizusaki and Koji Amezawa (Tohoku University, Japan) | 732 |
| OS13-58 | Evaluation of Fatigue Process of Molybdenum-containing Diamond-like Carbon Coatings for Sensor Application <u>Mami Takahashi</u> , Hiroyuki Miki, Takanori Takeno and Toshiyuki Takagi (Tohoku University, Japan) | 734 |
| OS13-59 | Study on Micro-/Nanoscale Gas-Film Lubrication of Sliding Surface with Three-Dimensional Structure <u>Yoshiaki Kawagoe</u> , Shigeru Yonemura, Susumu Isono, Takanori Takeno, Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan) | 736 |
| OS13-60 | Lubrications of MoS₂ Dispersed Ti based Composite Materials Formed by the Compression Shearing Method at Room Temperature <u>Sho Takeda</u> (Tohoku University, Japan), Noboru Nakayama (Shinshu University, Japan), Hiroyuki Miki (Tohoku University, Japan), Hiroyuku Takeishi (Chiba Institute of Technology, Japan) and Toshiyuki Takagi (Tohoku University, Japan) | 738 |

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| OS13-61 | Development of Phosphor-TSP for High-Temperature Distribution Measurement <u>Akiho Ishida</u> , Hiroki Nagai (Tohoku University, Japan) | 740 |
| OS13-62 | Mechanical Properties and Martensitic Transformation of Ni-Mn-In Based Magnetic Shape Memory Alloy Films <u>Koki Tsuchiya</u> , Makoto Ohtsuka, Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan) | 742 |
| OS13-63 | Studies of Transport Mechanism of The Bacterial Aspartate : Alanine Antiporter (AspT). Functional Analysis of The Amino Acid Residues in The Transmembrane Domain 3 of AspT. <u>Satomi Suzuki</u> , Takuya Kimura, Ayako Sasahara, Kei Nanatani and Keietsu Abe (Tohoku University, Japan) | 744 |
| OS13-64 | Quantitative Evaluation of Residual Strain in Carbon Steels by Magnetic Incremental Permeability Method <u>Seiya Sato</u> , Tetsuya Uchimoto, Toshiyuki Takagi, Shejuan Xie, Ryoichi Urayama, Takeshi Sato (Tohoku University, Japan), Zhenmao Chen (Xi'an Jiaotong University, China) and Yasuhiko Yoshida (The Kansai Electric Power Company, Inc., Japan) | 746 |
| OS13-65 | Mixed-Lubrication of Fine Textured Polycrystalline CVD Diamond Surface <u>Kyohei Naito</u> , Hiroyuki Miki (Tohoku University, Japan), Michel Belin (Ecole Centrale de Lyon, France) and Toshiyuki Takagi (Tohoku University, Japan) | 748 |
| OS13-66 | Development of High Temperature Electromagnetic Acoustic Transducer for Monitoring of Metal Processing <u>Shohei Ogata</u> , Tetsuya Uchimoto, Toshiyuki Takagi, Toshiaki Ichihara (Tohoku University, Japan) and Gerd Dobmann (Fraunhofer IZFP, Germany) | 750 |
| OS13-67 | Anomalous Behaviors of Ultra-High Molecular Weight Polyethylene Processed by Sintering <u>Tiana Deplancke</u> , Olivier Lame, François Rousset, Roland Seguela and Gérard Vigier (INSA Lyon, France) | 752 |
| OS13-68 | Effect Of Adhesive Forces On The Prediction Of Cold Spray Process <u>Paul Profizi</u> , Alain Combescure (INSA Lyon, France) | 754 |
| OS13-69 | Tribological Characteristics of Cu-DLC Under Micro-vibration Kosuke Ito, Dongkelong Ai, <u>Takuma Ohnishi</u> (Nihon University, Japan), Takanori Takeno, Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan) | 756 |
| (14:20-15:40) | Poster Presentation | |

PS1: IFS Collaborative Research Forum

HAGI

November 26, 2013

Chair: Kiyonobu Ohtani (Tohoku University, Japan)

9:00-10:30

Short Oral Presentation

(2.5 min for Short Oral Presentation)

- CRF-1 **Study on Flight Stability of Badminton Shuttlecock for Impulsive Change of Angle of Attack**
Kenichi Nakagawa, Hiroaki Hasegawa (Akita University, Japan), Masahide Murakami (University of Tsukuba, Japan) and Shigeru Obayashi (Tohoku University, Japan)
- CRF-2 **Enhancement of the Airfoil Using Active Control of Boundary Layer**
Shuko Ito, Hiroaki Hasegawa, Tetsuya Miyakoshi (Akita University, Japan) and Shigeru Obayashi (Tohoku University, Japan)
- CRF-3 **Flow Instabilities of Boiling Nitrogen in a Horizontal Pipe**
Hisatoshi Watanabe, Katsuhide Ohira, Kazushi Miyata, Koichi Takahashi (Tohoku University, Japan), Hiroaki Kobayashi, Hideyuki Taguchi, Motoyuki Hongoh and Takayuki Kojima (Japan Aerospace Exploration Agency, Japan)
- CRF-4 **Pressure Drop of Vapor-Liquid Two-Phase Nitrogen Flow in a Corrugated Pipe**
Hisatoshi Watanabe, Katsuhide Ohira, Kazushi Miyata, Koichi Takahashi (Tohoku University, Japan), Hiroaki Kobayashi, Hideyuki Taguchi, Motoyuki Hongo and Takayuki Kojima (Japan Aerospace Exploration Agency, Japan)
- CRF-5 **Fundamental Study of Air-Leakage Detection System for Space-Debris Impact using Mechanochromism Metal Complex**
Kakeru Nemoto, Ryo Takahashi, Kiyonobu Ohtani and Kanjuro Makihara (Tohoku University, Japan)
- CRF-6 **Toward Numerical Simulation of Jet-Wake Vortex Interaction**
Takashi Misaka, Shigeru Obayashi (Tohoku University, Japan), Anton Stephan, Frank Holzäpfel and Thomas Gerz (Deutsches Zentrum für Luft- und Raumfahrt, Germany)
- CRF-7 **Thermal Effects in Bubble Clouds of Cavitation**
Kazuki Niiyama (Kanazawa Institute of Technology, Japan), Yuka Iga (Tohoku University, Japan)
- CRF-8 **Unsteady Fluid Dynamic Forces measurements on Airfoils with Heaving and Feathering Oscillations at Very Low Reynolds Number**
Tatsuya Kuroda, Masato Okamoto, Daisuke Sasaki, Takeshi Akasaka (Kanazawa Institute of Technology, Japan), Koji Shimoyama and Shigeru Obayashi (Tohoku University, Japan)
- CRF-9 **Numerical Investigation of Ionization and Radiation Processes in Rarefied Reentry Flows**
Alexander Shevyrin, Mikhail Ivanov, Yevgeniy Bondar, Pavel Vashchenkov (Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Russia) and Shigeru Yonemura (Tohoku University, Japan)

- CRF-10 **Shock Tube Measurements of Precursor Radiation ahead of Hypersonic Shock Waves**
Shota Ago, Gouji Yamada, Makoto Setou, Hiromitsu Kawazoe (Tottori University, Japan) and Shigeru Obayashi (Tohoku University, Japan)
- CRF-11 **Application of a Sensitivity -Adjustable Three Component Force Balance to a Silent Supersonic Biplane Model**
Singo Imagawa, Katsuyuki Inoue, Gouji Yamada, Hiromitsu Kawazoe (Tottori University, Japan) and Shigeru Obayashi (Tohoku University, Japan)
- CRF-12 **Design Exploration for the Next Generation High Wing Aircraft**
Akihiro Hashimoto (Tohoku University, Japan), Shinkyu Jeong (Kyunghee University, Korea) and Shigeru Obayashi (Tohoku University, Japan)
- CRF-13 **EVOLVE: A Linked Visualization Environment for Explanatory Variables and Objective Function of Optimization Problems**
Takayuki Itoh, Maki Kubota (Ochanomizu University, Japan), Shigeru Obayashi and Yuriko Takeshima (Tohoku University, Japan)
- CRF-14 **Reconstruction of Wall Thinning from Pulsed Eddy Current Testing Signals**
Zhenmao Chen (Xi'an Jiaotong University, China), Shejuan Xie, Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan)
- CRF-15 **Numerical Simulation Research of External Flow Field on Ahmed Model**
Chenguang Lai, Xun Liu, Chao Man and Yuting Zhou (Chongqing University of Technology, China)
- CRF-16 **Simulation analysis on grain boundaries thought relation between Cr depletion distribution and local magnetic properties**
Kenichi Terasima, Suzuki Kenji, Yamaguchi Katsuhiko (Fukushima University, Japan), Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan)
- CRF-17 **Mass and Heat Diffusion Through Nano-Structured Surfaces**
Gary Rosengarten (Royal Melbourne Institute of Technology University / The University of New South Wales, Australia), Thilaksiri Bandara, Clifford Shum, Mostafa Kahini (Royal Melbourne Institute of Technology University, Australia) and Anggito Tetuko (The University of New South Wales, Australia)
- CRF-18 **Numerical Study of Natural Convection in a Tilted Cubical Cavity: Effect of the Prandtl Number on the Stability of the Flow**
Juan F. Torres (Tohoku University, Japan / École Centrale de Lyon, France), Daniel Henry (École Centrale de Lyon, France), Atsuki Komiya, Junnosuke Okajima and Shigenao Maruyama (Tohoku University, Japan)
- CRF-19 **Investigation of Subsonic-Supersonic Hybrid-Stabilized Argon-Water Electric Arc With Inhomogeneous Mixing of Plasma Species: Parametric Numerical Study of Turbulence**
Jiří Jeništa (Institute of Plasma Physics AS CR, Czech Republic), Hidemasa Takana, Hideya Nishiyama (Tohoku University, Japan), Milan Hrabovský and Tetyana Kavka (Institute of Plasma Physics AS CR, Czech Republic)

- CRF-20 **Kinetics of Excited States and Radicals in a Nanosecond Pulse Discharge and Afterglow in Nitrogen and Air**
Ivan Shkurenkov, David Burnette, Walter R. Lempert, Igor V. Adamovich (The Ohio State University, USA), Hidemasa Takana and Hideya Nishiyama (Tohoku University, Japan)
- CRF-21 **Researches on a Sensing-Based Dynamic Forced Ventilation Control of Leaking Hydrogen**
Kazuo Matsuura (Ehime University, Japan), Masami Nakano and Jun Ishimoto (Tohoku University, Japan)
- CRF-22 **The Effects of the Unburned-Gas Temperature on the Hydrodynamic Instability of Three-Dimensional Premixed Flames**
Takuto Yanagioka, Wataru Yamazaki (Nagaoka University of Technology, Japan), Hideaki Kobayashi (Tohoku University, Japan) and Satoshi Kadowaki (Nagaoka University of Technology, Japan)
- CRF-23 **Ignition Studies of Gaseous Pre-mixtures in Array of Large-scale Vorticities**
Roman Fursenko, Sergey Minaev, Evgeniy Sereshchenko (Far Eastern Federal University / ITAM SB RAS, Russia), Shenyang Shy (National Central University, Taiwan), Kaoru Maruta and Hisashi Nakamura (Tohoku University, Japan)
- CRF-24 **Blast Pressure Mitigation by Water around a Subsurface Magazine**
Tomohiro Tanaka, Akiko Matsuo (Keio University, Japan), Shigeru Obayashi and Kiyonobu Ohtani (Tohoku University, Japan)
- CRF-25 **In-situ Measurement of Upward/Downward Radiative Heat Flux in Earth's Atmosphere**
Noboru Yamada, Takanori Yoshida (Nagaoka University of Technology, Japan), Junnosuke Okajima and Shigenao Maruyama (Tohoku University, Japan)
- CRF-26 **On Dynamic Processes in Porous Energy Releasing Objects with Partial Closure of the Object's Outlet**
Nickolay A. Lutsenko (IACP FEB RAS / Far Eastern Federal University, Russia)
- CRF-27 **Effect of the Pits Size on Nucleate Pool Boiling Heat Transfer and Critical Heat Flux of Liquid Nitrogen on the Surfaces with Small Triangular Pits**
Kazushi Miyata, Katsuhide Ohira (Tohoku University, Japan) and Hideo Mori (Kyushu University, Japan)
- CRF-28 **Optimization of Artificial small Islands Arrangement for Tsunami Diminishing using Design Exploration**
Fumiya Togashi (SAIC, USA), Shinkyu Jeong (Tohoku University, Japan) and Rainald Lohner (George Mason University, USA)
- CRF-29 **In-depth Investigation of Twinkling Sign: Optical Observation of Ultrasound Radiation Force Driven Oscillation of Glass Particle**
Lei Liu (GE Healthcare Japan Corporation, Japan), Kenichi Funamoto (Tohoku University, Japan), Masayuki Tanabe (Kumamoto University, Japan) and Toshiyuki Hayase (Tohoku University, Japan)

- CRF-30 **Cardiac Evaluation of Fetal Mice by ECG and Ultrasound**
Takuya Ito, Kenichi Funamoto, Rika Sugibayashi, Kiyoe Funamoto, Clarissa Velayo, Miyuki Endo, Yupeng Dong, Toshiyuki Hayase and Yoshitaka Kimura (Tohoku University, Japan)
- CRF-31 **Numerical simulation of ultrasound imaging for detection of microcalcification in soft tissue**
Masayuki Tanabe, Eiji Tagomori (Kumamoto University, Japan), Lei Liu (GE Healthcare Japan Corporation, Japan), Kenichi Funamoto (Tohoku University, Japan), Masahiko Nishimoto (Kumamoto University, Japan) and Toshiyuki Hayase (Tohoku University, Japan)
- CRF-32 **Bactericidal Effect of Plasma Discharge against Biofilm-producing *Pseudomonas aeruginosa* on Contact Lenses**
Yoshihisa Nakano (Tohoku University, Japan), Shigeru Fujimura (Tohoku University / Tohoku Pharmaceutical University, Japan), Takehiko Sato and Daisuke Yoshino (Tohoku University, Japan)
- CRF-33 **Characteristics of Non-equilibrium Plasma Flow for Viral Inactivation**
Yuji Kudo, Michiko Okamoto, Daisuke Yoshino, Takehiko Sato, Akira Suzuki and Hitoshi Oshitani (Tohoku University, Japan)
- CRF-34 **Endothelial cell orientation under uniform spatial gradient in fluid shear stress**
Daisuke Yoshino (Tohoku University, Japan), Naoya Sakamoto (Kawasaki University of Medical Welfare, Japan) and Masaaki Sato (Tohoku University, Japan)
- CRF-35 **Flow Formation in Atmospheric Plasma Discharge between Pin Electrode and Water Surface**
Tetsuji Shimizu, Gregor E. Morfill (Max-Planck Institute for extraterrestrial physics, Germany), Naoya Kishimoto, Masashi Hara, Daisuke Yoshino and Takehiko Sato (Tohoku University, Japan)
- 10:30-10:40 BREAK
- Chair: Hidemasa Takana (Tohoku University, Japan)
10:40-12:10 **Short Oral Presentation**
(2.5 min for Short Oral Presentation)
- CRF-36 **Mechanism of Blast-induced Traumatic Brain Injury**
Atsuhiko Nakagawa, Kiyonobu Ohtani (Tohoku University, Japan), Keisuke Goda, Tatsuhiko Arafune (The University of Tokyo, Japan), Toshikatsu Washio (National Institute of Advanced Industrial Science and Technology, Japan), Toshiyuki Hayase and Teiji Tominaga (Tohoku University, Japan)
- CRF-37 **Attenuation and Reduction Effect of Underwater Explosion by Porous Materials**
Kazutaka Kitagawa (Aichi Institute of Technology, Japan), Kiyonobu Ohtani (Tohoku University, Japan)

- CRF-38 **Biological Actuation with the Magnetic Stimulation**
Hitoshi Mori (IFG Corporation, Japan), Toshiyuki Takagi, Shinichi Izumi, Hiroyasu Kanetaka (Tohoku University, Japan), Kazumi Mori, Kenji Yashima, Risa Sasaki and Toshihiko Abe (IFG Corporation, Japan)
- CRF-39 **Research Friction and Drilling on Bio-composite Model**
Makoto Ohta, Kei Ozawa (Tohoku University, Japan), Vincent Fridrici and Philippe Kapsa (École Centrale de Lyon, France)
- CRF-40 **Development of a Program for Blood flow and Cell Behaviors Based on LBM Method**
Makoto Ohta (Tohoku University, Japan), Bastien Chopard (Geneva University, Switzerland) and Hitomi Anzai (Tohoku University, Japan)
- CRF-41 **Channel Properties of Membrane Proteins on Lipid Bilayers**
Makoto Ohta (Tohoku University, Japan), Liviu Movileanu (Syracuse University, USA) and Noriko Tomita (Tohoku University, Japan)
- CRF-42 **Hemodynamic Analysis of Sidewall Type Intracranial Aneurysms**
Shin-ichiro Sugiyama, Toshio Nakayama, Makoto Ohta and Teiji Tominaga (Tohoku University, Japan)
- CRF-43 **Evaluation of Intracranial Aneurysm Rupture Using MR-Measurement-Integrated Simulation**
Shin-ichiro Sugiyama (Kohnan Hospital, Japan), Kenichi Funamoto, Daichi Suzuki, Toshiyuki Hayase and Teiji Tominaga (Tohoku University, Japan)
- CRF-44 **Toward Development of a Forensic Visualization Lifecycle Management System**
Issei Fujishiro, Kazuhide Ueda (Keio University, Japan), Xiaoyang Mao, Masahiro Toyoura, Atsushi Sugiura (University of Yamanashi, Japan), Yuriko Takeshima and Toshiyuki Hayase (Tohoku University, Japan)
- CRF-45 **Observation of Hypoxia Cellular Response by using Microfluidic Devices**
Shuichiro Fukushima, Reiko Maehara (Osaka University, Japan) and Kenichi Funamoto (Tohoku University, Japan)
- CRF-46 **Effects of Temporal and Spatial Oxygen Heterogeneity on Cell Processes**
Kenichi Funamoto (Tohoku University, Japan), Ioannis K. Zervantonakis (Harvard Medical School, USA), Kiyoe Funamoto, Takuya Ito, Yoshitaka Kimura (Tohoku University, Japan) and Roger D. Kamm (Massachusetts Institute of Technology, USA)
- CRF-47 **Hyperthermia Treatment of Lung Cancer using Laser and Inhalable Nanoparticles**
Rupesh Singh (Indian Institute of Technology Guwahati, India), Junnosuke Okajima (Tohoku University, Japan), Subhash C. Mishra (Indian Institute of Technology Guwahati, India), Shigenao Maruyama (Tohoku University, Japan) and Ujjal Barman (Indian Institute of Technology Guwahati, India)
- CRF-48 **Photoconductivity Decay and Carrier Lifetime in Silicon Nanodisk Array Structure Fabricated by Using Bio-templates and Neutral Beam Etching**
Daisuke Ohori, Atsuhiko Fukuyama (University of Miyazaki, Japan), Seiji Samukawa (Tohoku University / Japan Science and Technology Agency, Japan) and Tetsuo Ikari (University of Miyazaki, Japan)

- CRF-49 **Intelligent Information Processing Circuits Using Nanodisk Array Structure**
Takashi Morie, Takashi Tohara (Kyushu Institute of Technology, Japan), Kazuhiko Endo (National Institute of Advanced Industrial Science and Technology, Japan), Makoto Igarashi and Seiji Samukawa (Tohoku University, Japan)
- CRF-50 **Double-Dot Si Single-Electron Transistor with Tunable Coupling Capacitance**
Takafumi Uchida, Masashi Arita (Hokkaido University, Japan), Akira Fujiwara (NTT Corporation, Japan), Seiji Samukawa (Tohoku University, Japan) and Yasuo Takahashi (Hokkaido University, Japan)
- CRF-51 **Fabrication of InAs Quantum Dots on Nitrided GaAs (001) Surface**
Toshiyuki Kaizu, Takashi Kita (Kobe University, Japan)
- CRF-52 **Fabrication of Advanced CMOS Transistors**
Kazuhiko Endo (National Institute of Advanced Industrial Science and Technology, Japan), Seiji Samukawa (Tohoku University, Japan)
- CRF-53 **Thermal Resistance between Nano-Structured Surfaces and Liquids**
Masahiko Shibahara (Osaka University, Japan), Taku Ohara and Gota Kikugawa (Tohoku University, Japan)
- CRF-54 **Computational Study of Bubble Behavior in Semiconductor Cleaning**
Naoya Ochiai, Jun Ishimoto (Tohoku University, Japan) and Jin-Goo Park (Hanyang University, Korea)
- CRF-55 **Visualized Propagation Process of Positive Primary Streamers in Water**
Hidemasa Fujita (Tohoku University, Japan), Seiji Kanazawa (Oita University, Japan), Kiyonobu Ohtani, Atsuki Komiya and Takehiko Sato (Tohoku University, Japan)
- CRF-56 **Trimming of Silicon Optical Waveguide by Neutral Beam Oxidation**
Jingnan Cai (The University of Tokyo, Japan), Tomohiro Kubota, Seiji Samukawa (Tohoku University, Japan) and Kazumi Wada (The University of Tokyo, Japan)
- CRF-57 **Viscosity Effects on Shock Wave Propagation in Microchannels**
Georgy Shoev, Yevgeniy Bondar (Khristianovich Institute of Theoretical and Applied Mechanics, Russia), Kaoru Maruta (Tohoku University, Japan) and Mikhail Ivanov (Khristianovich Institute of Theoretical and Applied Mechanics, Russia)
- CRF-58 **Solution Particle Process Using Advanced Hybrid Plasma Flow System**
Juyong Jang, Hidemasa Takana (Tohoku University, Japan), Yasutaka Ando (Ashikaga Institute of Technology, Japan), Oleg P. Solonenko (Khristianovich Institute of Theoretical and Applied Mechanics, SB RAS, Russia) and Hideya Nishiyama (Tohoku University, Japan)
- CRF-59 **Effect of Titanium Content Ration on Mechanical properties of Ti/Al Composite Material Formed by Compression Shearing Method at Room Temperature**
Shota Sakagami, Masaomi Horita, Noboru Nakayama (Shinshu University, Japan), Hiroyuki Miki, Toshiyuki Takagi (Tohoku University, Japan) and Hiroyuku Takeishi (Chiba Institute of Technology, Japan)

- CRF-60 **Beam Studies of Plasma Surface Interaction**
Kazuhiro Karahashi, Satoshi Hamaguchi (Osaka University, Japan) and Seiji Samukawa (Tohoku University, Japan)
- CRF-61 **Study of The Mechanism of Contact Alignment for The Slider Specimen of Tribometer**
Minoru Goto (Ube National College of Technology, Japan), Toshiyuki Takagi (Tohoku University, Japan), Kosuke Ito (Nihon University, Japan), Takanori Takeno and Hiroyuki Miki (Tohoku University, Japan)
- CRF-62 **Development of Bio-template Process for Etching Mask of 2D Dispersive Nanoparticle Array**
Ichiro Yamashita (Nara Institute of Science and Technology, Japan), Rikako Tsukamoto (Tohoku University, Japan), Naofumi Okamoto, Ryouta Matsuyama (Nara Institute of Science and Technology, Japan), Yosuke Tamura and Seiji Samukawa (Tohoku University, Japan)
- CRF-63 **Construction of Interaction Model for Dissipative Particle Dynamics Method Based on Molecular Dynamics Simulation**
Yuta Yoshimoto, Ikuya Kinefuchi, Toshiki Mima (The University of Tokyo, Japan), Akinori Fukushima, Takashi Tokumasu (Tohoku University, Japan) and Shu Takagi (The University of Tokyo, Japan)
- CRF-64 **A Molecular Dynamics Study on the Thermodynamic and Transport Properties of Liquid Hydrogen**
Hiroki Nagashima, Takashi Tokumasu (Tohoku University, Japan), Shin-ichi Tsuda (Shinshu University, Japan), Nobuyuki Tsuboi (Kyushu Institute of Technology, Japan), Mitsuo Koshi (Yokohama National University, Japan) and A. Koichi Hayashi (Aoyama Gakuin University, Japan)
- CRF-65 **Quantum Molecular Analysis For The Deposition Process Of SiC Substrate**
Rieko Sudo, Kenichi Kanna (Sagamihara Incubation Center, Japan) and Takashi Tokumasu (Tohoku University, Japan)
- CRF-66 **Numerical Study of High-Speed Condensable Vapor Flow with LDI Erosion**
Jun Ishimoto (Tohoku University, Japan), Guanghao Wu (Soft Flow Co., Ltd., Japan) and Kazuo Matsuura (Ehime University, Japan)
- CRF-67 **Ultra-High Heat Flux Cooling Characteristics of Cryogenic Micro-Solid Nitrogen Particles**
Jun Ishimoto, Naoya Ochiai (Tohoku University, Japan) and Kozo Saito (University of Kentucky, USA)
- CRF-B1 **Frontier Science of Next Generation Reactive Fluid**
Jun Ishimoto, Kaoru Maruta and Takehiko Sato (Tohoku University, Japan)
- 12:10-13:10 **Lunch and Poster Session**

Chair: Shigeru Yonemura (Tohoku University, Japan)

15:40-16:20

Short Oral Presentation

(2.5 min for Short Oral Presentation)

- CRF-68 **Transport Phenomena of Substances in Electrolyte of Solid Oxide Fuel Cell**
Takashi Tokumasu (Tohoku University, Japan), Jeongmin Ahn (Syracuse University, USA)
- CRF-69 **Momentum Transport Characteristics in a Water Liquid Bridge between Si Surfaces**
Takashi Tokumasu (Tohoku University, Japan), Marie-Helene Meurisse, Nicolas Fillot and Philippe Vergne (INSA-Lyon, France)
- CRF-70 **Development and Micro-Channel Flow Evaluation of Electro-Rheological Nano-Suspensions**
Katsufumi Tanaka, Seiya Robson, Wataru Nakano, Haruki Kobayashi, Ryuichi Akiyama (Kyoto Institute of Technology, Japan), Masami Nakano and Atsushi Totsuka (Tohoku University, Japan)
- CRF-71 **Development of a Micro-motor for MEMS Utilizing Novel Electroactive Polymer Fabricated by Photolithography**
Miklós Zrínyi, Rita Bauer (Semmelweis University, Hungary), Loránd Kelemen (Hungarian Academy of Sciences, Hungary) and Masami Nakano (Tohoku University, Japan)
- CRF-72 **On Hydrogen Generation by the Collapse of Cavitation Bubbles**
Takehiko Sato (Tohoku University, Japan), Marc Tinguely (Swiss Federal Institute of Technology Lausanne, Switzerland), Masanobu Oizumi (Tohoku University, Japan) and Mohamed Farhat (Swiss Federal Institute of Technology Lausanne, Switzerland)
- CRF-73 **Analysis of Plasma-generated Bubbles by Electron Microscope**
Takehiko Sato (Tohoku University, Japan), Takashi Miyahara (Shizuoka University, Japan) and Tatsuyuki Nakatani (Toyo Advanced Technologies Co. Ltd., Japan)
- CRF-74 **The Continuous Spectrum in the Moore-Saffman-Tsai-Windnall Instability**
Yuji Hattori, Makoto Hirota (Tohoku University, Japan) and Stefan G. Llewellyn Smith (University of California at San Diego, USA)
- CRF-75 **A Numerical Study of the Effect of Large Deformations of a Trailing Vortex on Its Breakdown**
Naoya Takahashi (Tokyo Denki University, Japan), Takeshi Miyazaki (University of Electro-Communications, Japan), Nozomu Hatakeyama and Yuji Hattori (Tohoku University, Japan)
- CRF-76 **Effects of External Disturbances on Spatial Development of Turbulence and toward the Control of Thermo-Fluid Dynamics (Cases of Boundary Layer and Jets)**
Kouji Nagata, Yasuhiko Sakai (Nagoya University, Japan), Toshiyuki Hayase (Tohoku University, Japan), Osamu Terashima, Nannan Wu, Shuang Xia, Tomoaki Watanabe, Yasumasa Ito, Zhou Yi and Akihiro Sasoh (Nagoya University, Japan)

- CRF-77 **Researches on the Suppression Control of Hole Tone Phenomena**
Kazuo Matsuura (Ehime University, Japan), Masami Nakano (Tohoku University, Japan)
- CRF-78 **Generation Mechanism of Rising Film Flow along the Rotating Conical Outer Surface and the Subsequent Atomization Characteristics**
Keisuke Matsuda, Takahiro Adachi (Akita University, Japan), Junnosuke Okajima (Tohoku University, Japan) and Takeshi Akinaga (Aston University, UK)
- CRF-79 **A View On Kinetic Force Method From Two-Particle Kinetic Equation**
Vladimir Saveliev (National Center of Space Researches and Technologies, Kazakhstan), Svetlana Filko (Zhetysu State University, Kazakhstan) and Shigeru Yonemura (Tohoku University, Japan)
- CRF-80 **Numerical and Experimental Research on Active Control of Self-Sustained Flow Oscillations with Sound Interaction**
Mikael A. Langthjem (Yamagata University, Japan), Masami Nakano (Tohoku University, Japan)
- CRF-81 **Study on Flow-induced Vibration of Soft Fins**
Akira Rinoshika (Yamagata University, Japan), Masami Nakano (Tohoku University, Japan)
- CRF-82 **Modeling of Heat Flow and Entropy Change at Martensitic Transformations in the Framework of Landau Theory**
Anna Kosogor (Institute of Magnetism, Ukraine), Vladimir Khovaylo (National University of Science and Technology "MISIS", Russia), Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan)
- CRF-83 **Stability Analysis of Vortices with Axial Flow based on Energetics and its Application**
Yasuhide Fukumoto (Kyushu University, Japan), Yuji Hattori (Tohoku University, Japan)
- 16:20-16:30 BREAK
- Chair: Kennichi Funamoto (Tohoku University, Japan)
16:30-16:50 **Short Oral Presentation**
(2.5 min for Short Oral Presentation)
- CRF-84 **Oscillating Flow of Magnetic Fluid between Two Parallel Plates**
Masahide Ito, Seiichi Sudo (Akita Prefectural University, Japan) and Hideya Nishiyama (Tohoku University, Japan)
- CRF-85 **Viscoelastic Properties of MR Shear Thickening Fluids**
Weihua Li (University of Wollongong, Australia), Masami Nakano (Tohoku University, Japan)

- CRF-86 **Particle structural formations of colloidal MR fluid and their influences on magnetic rheological response**
Hiroya Abe (Osaka University, Japan), Masami Nakano (Tohoku University, Japan)
- CRF-R1 **Supercomputing and Scale Modeling of Flotsam Mixed Tsunami**
Jun Ishimoto (Tohoku University, Japan), Kozo Saito (University of Kentucky, USA)
- CRF-R2 **Flammability Limits of Low-Lewis-number premixed Flames**
Sergey Minaev (Far Eastern Federal University, Russia), Kaoru Maruta (Tohoku University, Japan), Roman Fursenko (ITAM SB RAS, Russia), Sudarshan Kumar (Indian Institute of Technology, India) and Boris Mazurok (IAE SB RAS, Russia)
- CRF-R3 **Electrical Conductivity and Defect Evaluation of Multilayer CFRP Laminates by Eddy Current Testing**
Jun Cheng, Jinhao Qiu, Hongli Ji (Nanjing University of Aeronautics and Astronautics, China), Toshiyuki Takagi, Tetsuya Uchimoto (Tohoku University, Japan) and Ning Hu (Chiba University, Japan)
- 16:50-18:00 **Poster Session**

PS2: Young Researcher Overseas Visits Program Research Forum

HAGI

November 26, 2013

Chair: Jun Ishimoto (Tohoku University, Japan)

14:50-15:38

Oral Presentation

(8 min for Presentation)

- YRF-1 **Development of a Microfluidic Device for a Three-Dimensional Cell Culture under a Controlled Hypoxic Environment**
Kenichi Funamoto (Tohoku University, Japan), Ioannis K. Zervantonakis (Harvard Medical School, USA) and Roger D. Kamm (Massachusetts Institute of Technology, USA)
- YRF-2 **Combustion Chemistry and Its Experimental Validation for Biofuels and Surrogate Fuels -Collaboration between Quantum Chemistry and Combustion Engineering-**
Hisashi Nakamura (Tohoku University, Japan), Henry Curran (National University of Ireland, Ireland)
- YRF-3 **Thermal sprayed coating integrity evaluation using acoustic and electromagnetic methods**
Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan), Xiaodong Deng, Thomas Monnier, Joel Courbon, Thierry Douillard and Varlot Masenelli (INSA de Lyon, France)
- YRF-4 **Membrane and Hindered Diffusion of Protein -Quantitative Evaluation-**
Atsuki Komiya (Tohoku University, Japan), Jérôme Chevalier, Sébastien Pruvost and Jean-Yves Cavaille (INSA de Lyon, France)
- YRF-5 **Analysis of Relationship between Lipid Environment and Protein Nanopore Properties -Toward Creation of Blood Cell Model with Various Membrane Strength-**
Noriko Tomita (Tohoku University, Japan), Stephan Wilkens (SUNY Upstate Medical University, USA), Liviu Movileanu (Syracuse University, USA) and Makoto Ohta (Tohoku University, Japan)
- YRF-6 **Crosslinking Effect in Amorphous Polymers on Heat Transfer Characteristics**
Gota Kikugawa (Tohoku University, Japan), Pawel Keblinski (Rensselaer Polytechnic Institute, USA) and Taku Ohara (Tohoku University, Japan)

PS3: Fluids Science Research Award Lecture

HAGI

November 26, 2013

Chair: Toshiyuki Hayase (Tohoku University, Japan)

13:10-13:50

Ultrasonic Velocity Profiler: How Turbulent is Turbulence?

Yasushi Takeda (Swiss Federal Institute of Technology Zurich, Switzerland)

13:50-14:30

CFD in the Merging Period of Practical Engineering and Basic Turbulence Studies –Nonlinear Acoustics and Flow Control as Application Examples–

Kozo Fujii (Japan Aerospace Exploration Agency, Japan)

Liaison Office Session

ROOM 8

November 26, 2013

13:10-14:40 **Present Status and Future Plan of Liaison Office Activities**

Chair: Toshiyuki Takagi

Tohoku University, Toshiya Ueki (Executive Vice President for General Affairs, International Relations and Academic Affairs) (10min)

Moscow State University, Alexander Vasiliev (8 min)

UNSW and University of Sydney, Victoria Timchenko (8 min)

KTH Royal Institute of Technology, Fredrik Lundell (8 min)

KAIST, Shigenao Maruyama(Tohoku University) (8 min)

Syracuse University, Jeongmin Ahn (8 min)

INSA Lyon, University of Lyon, Marie Pierre Favre (8 min)

IFS, Makoto Ohta(8 min)

Discussion