Preface

I would like to express my heartfelt condolences to the victims of the Great East Japan Earthquake. I would also like to express my appreciation for the heartfelt support and speedy assistance received from overseas.

The earthquake happened on 11th March 2011, measuring 9.0 on the Richter scale was one of the largest recorded in our history, and the accompanying tsunami and the accident of Fukushima Daiichi Nuclear Power Plant cased enormous damage. However, our campuses proved secure and happily no injuries were sustained.

Tohoku University is currently putting all its energy into the restoration of our educational and research capabilities.

The people living in the 21st century are facing at big risks as global warming, shortage of food and energy, epidemic diseases, local starvation, poverty, and so on. In the mean time, we are always dreaming and making very best efforts for the progress of civilization by realizing higher quality of life and welfare. For those reasons, people are placing high expectations on the technology development in the frontier fields as state-of-the-art medical sciences, life sciences, IT, space technology, aviation technology, oceanology, and so forth.

"Flow Dynamics" is a comprehensive scientific field which deals with the flow and transport phenomena concerning to quantum wave, air, any fluid, any material, energy and information. Research on "Flow Dynamics" is expected to contribute to the society by challenging such crucial and unexplored tasks as above, and, by producing solutions for people's better life and dreams.

We are pleased to announce that we are strongly motivated to hold "Eighth International Conference on Flow Dynamics", ICFD2011, broadly as originally planned, aiming to explore new science horizon and cutting edge technologies of "Flow Dynamics", and to provide young researchers with unique opportunities of experience and self-development in this very attractive and competitive field of science and technology. We believe that this conference will give us a great opportunity to discuss what we have learned from this disastrous effects, how to fortify our social systems to be durable and safer under these kinds of forces of nature, and, what we can do to transform our society living in harmony with the mother nature, from the viewpoint of flow dynamics.

The Conference is comprised of 1 General Session, 13 Organized Sessions, 4 Planned Sessions and 1 Special Session.

The number of presenters will be over 400. We are glad to see the number of presenters increasing compared to last year. Your continued support will be greatly appreciated. This international conference will be a typical symbol of recovery in Tohoku area in spite of catastrophic damage of earthquake and tsunami.

On behalf of the organizing committee of the Eighth International Conference on Flow Dynamics, I express my best wishes for your very enjoyable participation, successful exchanges of fruitful information and interactions among the participants from all over the world.

Dr. Shigenao Maruyama
Distinguished Professor and Project Leader
Tohoku University Global COE Program
"World Center of Education and Research for Trans-disciplinary Flow Dynamics"

Eighth International Conference on Flow Dynamics

Organized and Sponsored by:

- The Global COE Program, "World Center of Education and Research for Trans-disciplinary Flow Dynamics"
- Institute of Fluid Science, Tohoku University

In cooperation with:

- Cryogenics and Superconductivity Society of Japan
- Combustion Society of Japan
- The Japan Society of Applied Physics
- The Japan Society of Mechanical Engineers
- Atomic Energy Society of Japan Computational Science and Engineering Division
- The International Centre for Heat and Mass Transfer (ICHMT)
- Japan Society of Maintenology, Tohoku/Hokkaido Branch
- Aoba Foundation for the Promotion on Engineering
- Fluid Sciences Foundation

SCOPE:

It was a disaster the earthquake and tsunami hit the north-eastern part of Japan on March 11, 2011. This unprecedented tragedy also left the Fukushima Dai-ichi Nuclear Power Plant crippled, on which we are continuing to put lots of efforts to stabilize in safe. During this course of the time, we have received innumerous calls, letters and e-mails from our friend worldwide expressing condolences, sympathies and support offers onto us. We, in Japan, felt comforted, encouraged and empowered tremendously by such kind of warm and heartfelt messages and offers. On behalf of all the people of Tohoku and Japan, we thank you very much for the support of you. Yes, we are all right and we shall come back soon to the ordinary course of our family life, education, research and industrial works. Here in Sendai, recovery works are proceeding fairly smoothly and we have a firm confidence in that Tohoku University shall contribute to the creation of revitalized Tohoku District and Japan. Under the circumstances, we have decided to have the annual conference ICFD2011 in November, in Sendai as ordinarily, and we like to encourage you all to join in it to contribute for the development of methodologies and practical measures for our harmonious co-existence and symbiosis with the earth and all the lives living on the planet.

The Eighth International Conference on Flow Dynamics, in the annual series, which is fully supported by Tohoku University Global COE Program "World Center of Education and Research for Trans-disciplinary Flow Dynamics (ICFD2011)" will be held on November 9th through 11th at Hotel Metropolitan Sendai, Sendai, Japan. We changed the venue from the originally planned Matsushima to Hotel Metropolitan Sendai, Sendai. The objectives of this conference are not only to explore new science horizon and exchange information in cutting edge technologies in "Flow Dynamics", but also to provide young researchers and students with unique opportunities of education and self-development.

Flow dynamics is a comprehensive scientific field which deals with the flow and transport phenomena concerning to any fluid, any material, energy and information. The scope of this conference covers the fluid, thermal, material, molecular and quantum dynamics of the multi-scale flows ranging from nano-scale flows such as behavior of molecules, atoms, ions and electrons, to gigantic scale flows such as solar radiation, air-flow, multi-phase flow, typhoon on earth, oceanic flow and volcanic flow, etc.

We cordially invite you scholars, researchers, engineers, educationists and planners in the related research and development areas of bio-, nano-, material-, energy- and environmental-sciences and technologies, particularly in the academic field of mechanical engineering, aerospace engineering, nuclear engineering, physics, medical science, chemistry, chemical engineering, to join in the conference.

CONFERENCE COMMITTEE:

General Chair:

Shigenao Maruyama (Tohoku University)

Executive Committee Members:

Keisuke Asai (ICFD2011 Chair, Tohoku University)
Kaoru Maruta (AFI/TFI-2011 Chair, Tohoku University)
Toshiyuki Takagi (CEO of ICFD2011, Tohoku University)
Toshiyuki Hayase (IFS Director, Tohoku University)

International Scientific Committee Members:

Chair: Shigenao Maruyama (Tohoku University)

Australia
- Masud Behnia (The University of Sydney)
- Gary Rosengarten (The University of New South Wales)

Canada
- Javad Mostaghimi (University of Toronto)

China
- XinGang Liang (Tsinghua University)
- Xing Zhang (Tsinghua University)

France
- Patrick Bourgin (ECL)
- Jean-Yves Cavaille (INSA de Lyon)
- Philippe Kapsa (ECL)

Germany
- Serge A. Shapiro (Freie University Berlin)

India
- Subhash C. Mishra (Indian Institute of Technology Guwahati)

Italy
- Gian Piero Celata (ENEA)

Japan
- Yu Fukunishi (Tohoku University)
- Masato Furukawa (Kyushu University)
- Nobuhide Kasagi (The University of Tokyo)
- Chisachi Kato (The University of Tokyo)
- Yoichiro Matsumoto (The University of Tokyo)
- Junichiro Mizusaki (Tohoku University)
- Kazuhiro Nakahashi (Tohoku University)
- Masami Nakano (Tohoku University)
- Tomohide Niimi (Nagoya University)
- Hideya Nishiyama (Tohoku University)
- Masaki Sano (The University of Tokyo)
- Akihiro Sasoh (Nagoya University)
- Masaaki Sato (Tohoku University)
- Toshiyuki Takagi (Tohoku University)
- Michio Tokuyama (Tohoku University)
- Takashi Yabe (Tokyo Institute of Technology)
- Satoru Yamamoto (Tohoku University)

Korea
Joon-Hyun Lee (KETEP)
Joon Sik Lee (Seoul National University)
Hyung Jin Sung (Korea Advanced Institute of Science and Technology)
Russia
Mikhail Ivanov (Institute of Theoretical and Applied Mechanics SB RAS)
Oleg P. Solonenko (Insitute of Theoretical and Applied Mechanics SB RAS)
Alexander Vasiliev (Moscow State University)
Sweden
Fredrik Lundell (KTH)
Switzerland
Bastien Chopard (University of Geneve)
Dimos Poulikakos (ETH Zurich)
Taiwan
Wu-Shung Fu (National Chiao Tung University)
UK
Yiannis Ventikos (University of Oxford)
USA
Louis N. Cattafesta III (University of Florida)
Yiguang Ju (Princeton University)
Kozo Saito (Kentucky University)
John P. Sullivan (Purdue University)
Rongia Tao (Temple University)
Satish Udpa (Michigan State University)

Organizing Committee Members:

Chair: Keisuke Asai (Tohoku University)
Hideyuki Aoki, Shinji Ebara, Yu Fukunishi, Hidetoshi Hashizume, Nozomu Hatakeyama, Yuka Iga, Jun Ishimoto, Takatoshi Ito, Tetsuya Kodama, Atsuki Komiya, Kaoru Maruta, Goro Masuya, Hiroyuki Miki, Hideo Miura, Akira Miyamoto, Junichiro Mizusaki, Kazuhiro Nakahashi, Masami Nakano, Hideya Nishiyama, Shigeru Obayashi, Taku Ohara, Katsuhide Ohira, Makoto Ohta, Seiji Samukawa, Mamiko Sasao, Kazuhisa Sato, Takehiko Sato, Keisuke Sawada, Atsuhi Shirai, Yuriko Takeshima, Takashi Tokumasu, Michio Tokuyama, Tetsuya Uchimoto, Yutaka Watanabe, Shigeru Yonemura, Noritaka Yusa

Administrative Staff

Farouq Ahmed, Mehdi Baneshi, Arunabhiram Chutia, Ardian Gojani, Natsuko Hatakeyama, Mizuho Ito, Kaoru Kano, Hiroyuki Kosukegawa, Hisanori Masuda, Tomomi Nagayoshi, Fumio Saito, Yuko Sasaki, Yuko Shimokawara, Ryoko Suzuki, Masashi Takeyama, Naoto Wada, Pengfei Wang

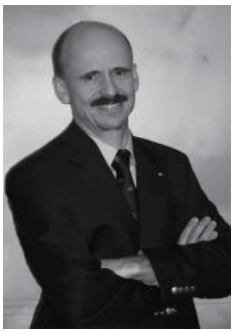
Plenary Lectures

Energy Sustainability: A Combustion Perspective

Suk Ho Chung (King Abdullah University of Science and Technology, Saudi Arabia)
(10:00-10:50, November 9, at SENDAI (EAST))

Transport Phenomena, Fluid Mechanics and Multiscale Modelling Techniques for Clinical Decision Support

Yiannis Ventikos (University of Oxford, UK)
(11:00-11:50, November 9, at SENDAI (EAST))



Low-Order Aeromechanical Modeling for Conceptual Design of Fuel-Efficient Aircraft

Mark Drela (MIT, USA)
(8:00-8:50, November 10, at SENDAI (EAST))

Sessions

General Session:

- GS1: General Session

Organized Sessions:

- OS1: Next-Generation CFD
  Organizer: K. Nakahashi, H. Kobayashi, S. Obayashi, S. Yamamoto and K. Yamamoto (Tohoku University)

- OS2: Advanced Control of Smart Fluids and Fluid Flows
  Organizer: M. Nakano, Y. Fukunishi (Tohoku University)

- OS3: Wind Tunnel Experiment on Unsteady Phenomena
  Organizer: S. Izawa, H. Nagai (Tohoku University)

- OS4: Research Frontiers in Green Aviation
  Organizer: S. Obayashi, K. Asai (Tohoku University) and S. Watanabe (JAXA)

- OS5: Research Frontiers in Green Hybrid Rocket Propulsion
  Organizer: T. Shimada (JAXA), K. Sawada (Tohoku University)

- OS6: Aerodynamics for Mars Exploration Aerial Vehicle
  Organizer: H. Nagai(Tohoku University), A. Oyama (JAXA)

- OS7: Thermal-Fluid Flows and Plasma Physics
  Organizer: W. S. Fu, C.Y. Chen (National Chiao Tung University, Taiwan)

- OS8: Flow-induced Degradations in Piping Systems of Nuclear Power Plants
  Organizer: Y. Watanabe, T. Takagi (Tohoku University) and Joël Courbon (INSA-Lyon, France)

- OS9: Fluid-induced Seismicity: Modeling and Application
  Organizer: T. Ito, H. Asanuma (Tohoku University)

- OS10: Biofluid for Medical Application
  Organizer: T. Nakayama, M. Ohta (Tohoku University)

- OS11: Micro Channels and Membrane Proteins
  Organizer: N. Tomita, M. Ohta (Tohoku University)

- OS12: The Seventh International Students/Young Birds Seminar on Multi-Scale Flow
  Organizer: Y. Shimizu, R. Sakai and J. F. Torres (Tohoku University)
  Supervisor: J. Mizusaki, K. Sato, Y. Iga, A. Komiya(Tohoku University)

- OS13: Clean and Efficient Combustion Technology (AFI/TFI-2011)
  Organizer: O. Fujita (Hokkaido University), K. Maruta (Tohoku University)

Planned Sessions:

- PS1: IFS Collaborative Research Forum (AFI/TFI-2011)
  Organizer: K. Maruta (Tohoku University)

- PS2: 5th Functionality DEsign of the COntact Dynamics: (DECO2011)
  Organizer: T. Takagi, H. Miki (Tohoku University) and Julien Fontaine (LTDS, France)

- PS3: Plasma Medicine and Cell Engineering
  Organizer: T. Sato (Tohoku University), T. Ohashi (Hokkaido University) and T. Hirata (Tokyo City University)

  PS4: The 12th Japan-Korea Students' Symposium New Energy Flow for Sustainable Society －Properties and Applications of Energy Materials－
  Organizer: M. Shimizu (Tohoku University), J. Wonhyo (Seoul National University)
  Supervisor: J. Mizusaki (Tohoku University), H. I. Yoo (Seoul National University)

Special Session:

- Memorial Session for the Late Professor Hiroshi Higuchi, Syracuse University, USA
  Organizer: T. Hayase (Tohoku University)

General Information

Registration:
8:00 - , Wednesday, November 9
The conference registration desk is located in the lobby, 4th floor in the morning. It will be moved to 3rd floor in the afternoon.

7:30 - , Thursday, November 10
The conference registration desk is located in the lobby, 3rd floor.

7:50 - , Friday, November 11
The conference registration desk is located in the lobby, 3rd floor.

Opening: (at SENDAI (EAST))
9:30- , Wednesday, November 9

Students/Young Birds Friendship Night: (at SAKURA HALL, Tohoku University)
18:00 – 20:00, Wednesday, November 9
All students and young researchers can attend to Students/Young Birds Friendship Night.

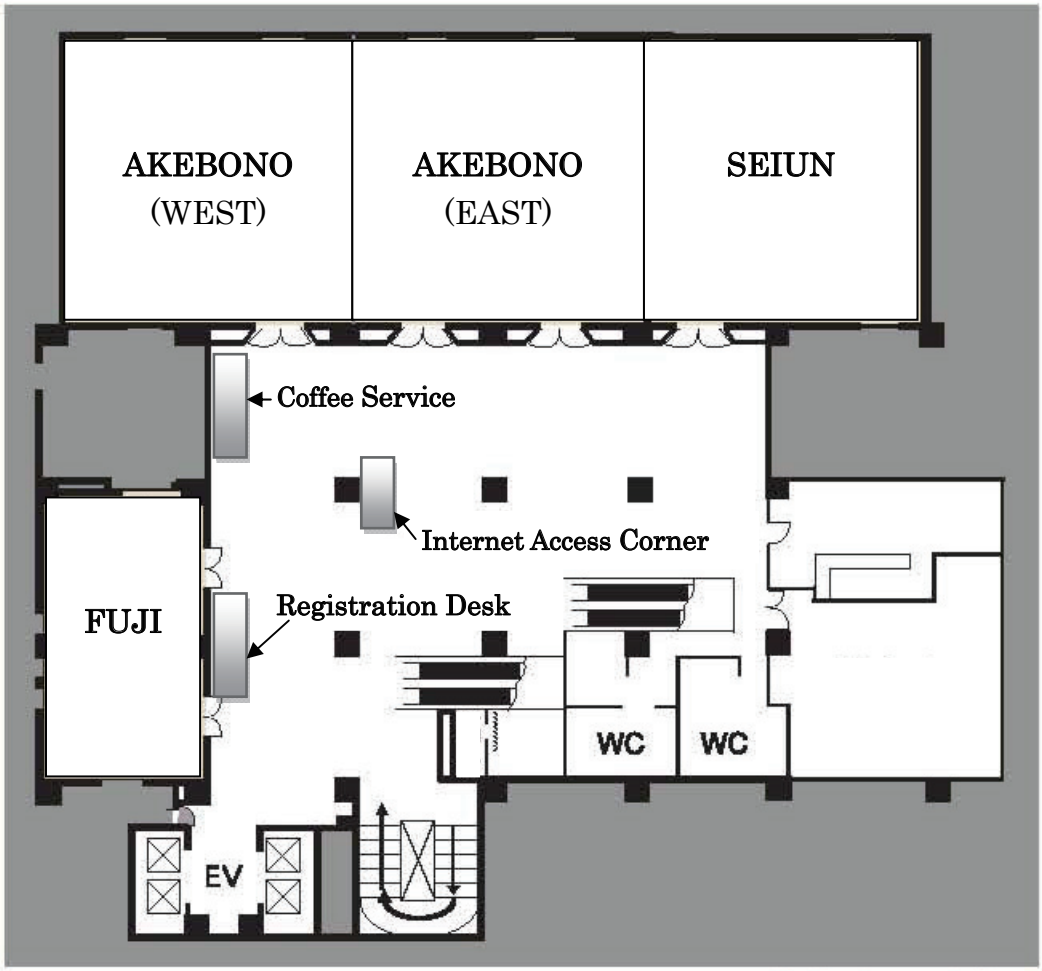
Banquet: (at SENDAI)
18:30 – 21:00, Thursday, November 10

Internet access corner
All conference attendees may use internet for free. Free Ethernet access will be possible during the conference at 3rd floor. Standard wired hubs (with RJ45 sockets) will be provided for networking.

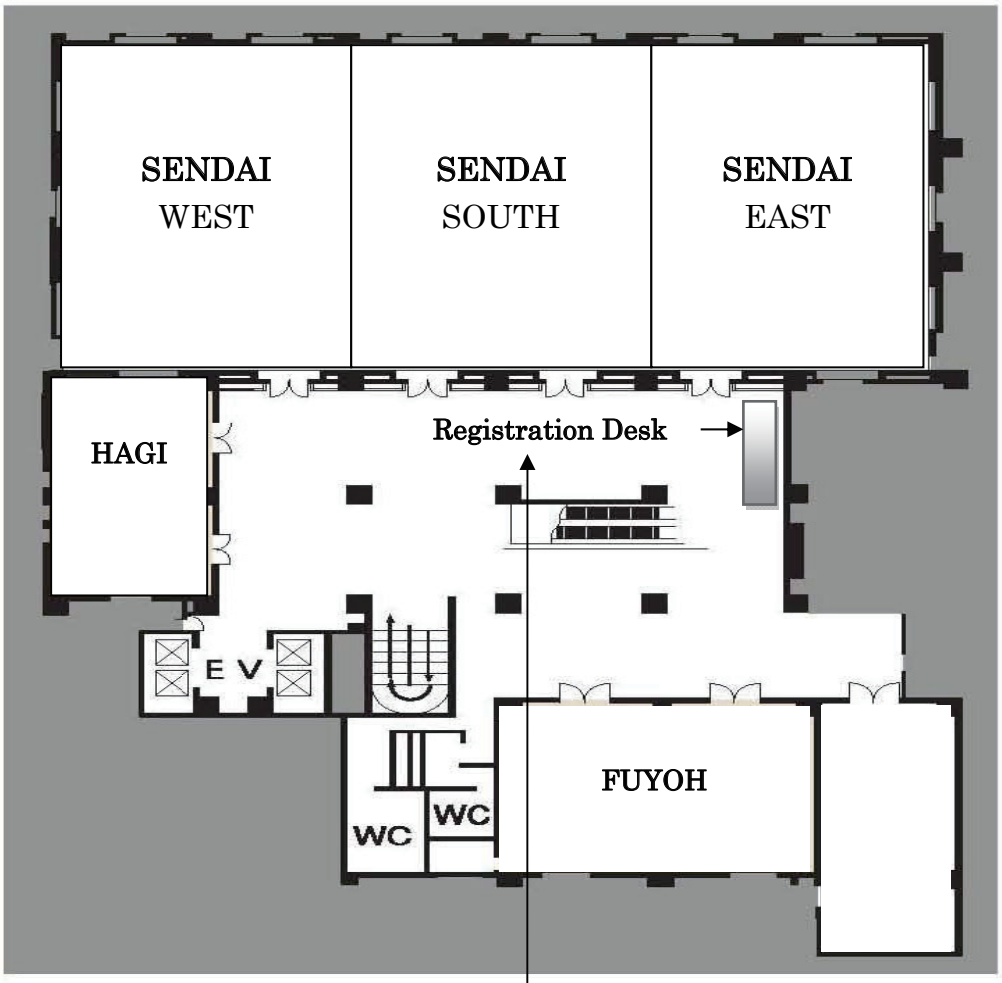
Coffee service:
Coffee is served in the lobby, 3rd floor.

ICFD2011 Secretariat:
COE Building, Institute of Fluid Science, Tohoku University
2-1-1, Katahira, Aoba, Sendai, 980-8577, Japan
Phone&Fax: +81-22-217-5301 E-mail: icfd2011@gcoe.ifs.tohoku.ac.jp

3rd floor (AKEBONO, SEIUN, FUJI)

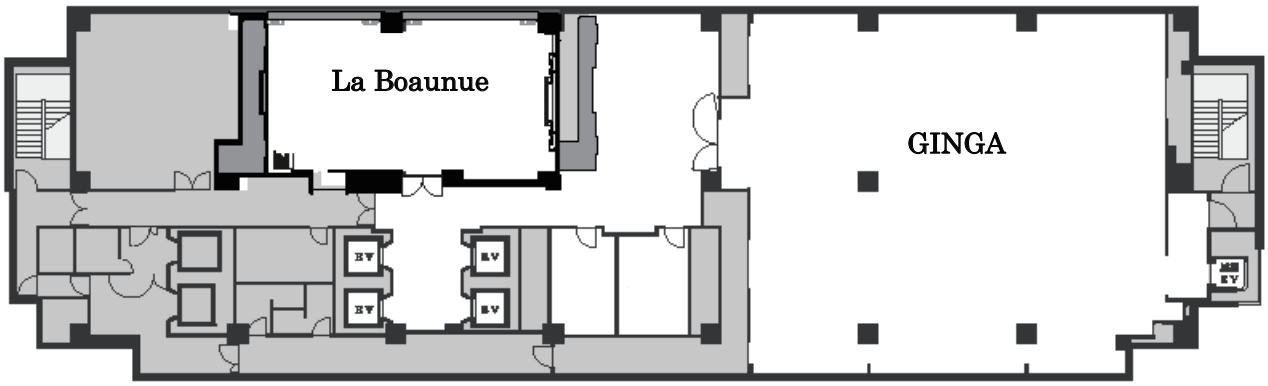


4th floor (SENDAI, FUYOH, HAGI)



The conference registration desk is located in the lobby, on 4th floor in the morning of November 9.
Then, it will be moved to 3rd floor in the afternoon onwards.

21st floor (La Boaune)



8th ICFD (2011) Time Table

Wednesday, November 9, 2011

ROOM	AKEBONO (WEST)	AKEBONO (EAST)	SEIUN	FUJI	SENDAI (EAST)
Floor	3rd Floor				4th Floor
8:00					
9:00					
10:00	9:30-10:00 **Opening Address** @SENDAI (EAST)				
	10:00-10:50 **Plenary Lecture** @SENDAI (EAST) "Energy Sustainability: A Combustion Perspective" Suk Ho Chung (King Abdullah University of Science and Technology, Saudi Arabia)				
11:00	BREAK				
	11:00-11:50 **Plenary Lecture** @SENDAI (EAST) "Transport Phenomena, Fluid Mechanics and Multiscale Modelling Techniques for Clinical Decision Support" Yiannis Ventikos (University of Oxford, UK)				
12:00					
13:00	13:00-13:05 Opening 13:05-(14:05) OS12-1 - OS12-20 Session 1 -Award Session- *Short Oral Presentation*	13:00-13:35 OS8-1 John M. Pietralik (Invited)		13:00-13:30 OS13-1 Yiguang Ju (Invited)	
		13:35-14:00 OS8-2 Toshiaki Ikohagi (Invited)		13:30-14:00 OS13-2 Vladimir E. Zarko (Invited)	
14:00	(14:05-16:05) OS12-1 - OS12-20 *Poster Presentation*	14:00-14:25 OS8-3 Satish Udpa (Invited)	14:00-14:40 OS5-1 Carmine Carmicino (Invited)	BREAK	
		14:25-14:50 OS8-4 Fumio Kojima (Invited)		14:10-14:30 OS13-3 Hideaki Kobayashi	
		BREAK	14:40-15:00 OS5-2 Shintaro Iwasaki	14:30-14:50 OS13-4 Shenqyang Steven Shy	
15:00		15:00-15:25 OS8-5 Fumio Inada (Invited)	15:00-15:20 OS5-3 Sakashi Hatagaki	14:50-15:10 OS13-5 Ayane Johchi	
		15:25-15:50 OS8-6 Nobuyuki Fujisawa (Invited)	15:20-15:40 OS5-4 Harunori Nagata	15:10-15:30 OS13-6 Makito Katayama	
			BREAK	BREAK	
16:00		15:50-16:15 OS8-7 Jun Ishimoto (Invited)	16:00-16:40 OS5-5 Arif Karabeyoglu (Invited)	15:40-16:00 OS13-7 Mohammad Akram	
		16:15-16:35 OS8-8 Hiroaki Kikkawa		16:00-16:20 OS13-8 Sergey Minaev	
	16:30-17:00 GS1-1 Sung Jin Kim (Invited)	16:35-16:55 OS8-9 Hiroshi Abe		16:20-16:40 OS13-9 Jeongmin Ahn	
17:00		BREAK	16:40-17:00 OS5-6 Koki Kitagawa	16:40-17:00 OS13-10 Takeshi Yokomori	
	17:00-17:20 GS1-2 Makatar Wae-Hayee	17:05-17:30 OS8-10 Gábor Vértesy (Invited)	17:00-17:20 OS5-7 Takafumi Ishiguro	BREAK	
	17:20-17:40 GS1-3 Toshimi Takagi		17:20-17:40 OS5-8 Takakazu Morita	17:10-17:30 OS13-11 Mitsumasa Ikeda	
	BREAK	17:30-17:55 OS8-11 Joël Courbon (Invited)	BREAK	17:30-17:50 OS13-12 Osamu Fujita	
18:00	17:50-18:10 GS1-4 Wakana Iwakami Nakano	17:55-18:20 OS8-12 Zhenmao Chen (Invited)	18:00-18:40 OS5-9 Alberto Guardone (Invited)		
	18:10-18:30 GS1-5 Takeshi Sugimoto	18:20-18:40 OS8-13 Ryoichi Urayama			
	18:30-18:50 GS1-6 Daiki Terakado	18:40-19:00 OS8-14 Shejuan Xie	18:40-19:00 OS5-10 Shigeru Aso		
19:00	18:50-19:10 GS1-7 Hiroaki Konno		BREAK		
			19:20-19:40 OS5-11 Kang Ming Chuang		
			19:40-20:00 OS5-12 Shinya Maruyama		
20:00			20:00-20:20 OS5-13 Keisuke Sotozono		
21:00					

FUYOH	HAGI	La Boaune	SAKURA HALL (Tohoku University)	ROOM
4th Floor		21st Floor	Katahira Campus	Floor
				8:00
				9:00
9:30-10:00 **Opening Address** @SENDAI (EAST)				10:00
10:00-10:50 **Plenary Lecture** @SENDAI (EAST) "Energy Sustainability: A Combustion Perspective" Suk Ho Chung (King Abdullah University of Science and Technology, Saudi Arabia)				
BREAK				11:00
11:00-11:50 **Plenary Lecture** @SENDAI (EAST) "Transport Phenomena, Fluid Mechanics and Multiscale Modelling Techniques for Clinical Decision Support" Yiannis Ventikos (University of Oxford, UK)				
				12:00
13:00-13:40 OS6-1 Kojiro Suzuki (Invited)	13:00-13:10 Opening Remarks			13:00
	13:10-13:50 OS9-1 Françoi Henri Cornet (Invited)			
13:40-14:00 OS6-2 Masaru Koike		13:30-14:00 OS7-1 Subhash C. Mishra (Invited)		
14:00-14:20 OS6-3 Koju Hiraki	13:50-14:30 OS9-2 Michael Fehler (Invited)	14:00-14:20 OS7-2 Ching-Shii Wang		14:00
14:20-14:40 OS6-4 Masahiro Kanazaki		14:20-14:40 OS7-3 Yao-Hsien Liu		
BREAK	BREAK	14:40-15:00 OS7-4 Ramjee Repaka		
15:00-15:20 OS6-5 Shintaro Shigeoka	14:45-15:25 OS9-3 Xinglin Lei (Invited)	15:00-15:20 OS7-5 Ching-Yao Chen		15:00
15:20-15:40 OS6-6 Gaku Sasaki		15:20-15:40 OS7-6 Chi-Chuan Wang		
15:40-16:00 OS6-7 Takahiro Kobayashi	15:25-15:50 OS9-4 Kazuhiko Tezuka	15:40-16:00 OS7-7 Yi-Wei Yang		
16:00-16:20 OS6-8 Ken Nishihara	15:50-16:15 OS9-5 Hiroshi Asanuma			16:00
BREAK	BREAK			
16:40-17:00 OS6-9 Koji Fujita	16:30-16:55 OS9-6 Takatoshi Ito			
17:00-17:20 OS6-10 Takashi Hayashida	16:55-17:20 OS9-7 Tsuyoshi Ishida			17:00
17:20-17:40 OS6-11 Masayuki Anyoji	17:20-17:45 OS9-8 Hiroyuki Shimizu			
17:40-18:00 OS6-12 Hiroki Nagai	17:45-17:55 Closing			
			18:00-20:00 **Students / Young Birds Friendshp Night** @ SAKURA HALL, Katahira, Tohoku University	18:00
				19:00
				20:00
				21:00

Thursday, November 10, 2011

ROOM	AKEBONO (WEST)	AKEBONO (EAST)	SEIUN	FUJI	SENDAI (EAST)
Floor	3rd Floor				4th Floor
8:00	8:00-8:50 **Plenary Lecture @** SENDAI (EAST) "Low-Order Aeromechanical Modeling for Conceptual Design of Fuel-Efficient Aircraft" Mark Drela (MIT, USA)				
9:00	9:00-(9:40) OS12-21 - OS12-32 Session2 *Short Oral Presentation*	8:50-9:10 PS4-1 Yu Inagaki 9:10-9:30 PS4-2 Eui-Chol Shin 9:30-9:50 PS4-3 Li Xinxin	9:00-9:20 OS5-14 Takaya Koda 9:20-9:40 OS5-15 Nobuyuki Tsuboi 9:40-10:00 OS5-16 Daisuke Saito	9:00-9:30 OS11-1 Yoshiyuki Kamio (Invited) 9:30-10:00 OS11-2 Yoshikazu Tanaka (Invited)	
	(9:40-11:40) OS12-21 - OS12-32 *Poster Presentation*	BREAK			
10:00		10:00-10:20 PS4-4 Fang Wang 10:20-10:40 PS4-5 Sung Min Choi 10:40-11:00 PS4-6 H. Kudo	BREAK 10:20-10:40 OS5-17 Tzu Hao Chou 10:40-11:00 OS5-18 Yen-Sen Chen	10:00-10:30 OS11-3 Liviu Movileanu (Invited) BREAK 10:45-11:10 OS11-4 Noriko Tomita (Invited)	
11:00		BREAK 11:10-11:30 PS4-7 Y. Fujimaki 11:30-11:50 PS4-8 Kiyong Ahn	11:00-11:20 OS5-19 Toru Shimada 11:20-12:00 Wrap-up	11:10-11:40 OS11-5 Takuo Yasunaga (Invited) 11:40-12:00 OS11-6 Atsushi Kase	
12:00		11:50-12:10 PS4-9 Taihei Miyasaka 12:10-12:30 PS4-10 Shinji Sukino			
13:00	13:00-(14:00) OS12-33 - OS12-51 Session3 *Short Oral Presentation*		12:40-13:00 OS3-1 Daisuke Aoki 13:00-13:20 OS3-2 Kei Nose	13:00-13:05 Opening 13:05-13:45 PS3-1 Keynote Lecture Gyoo-Cheon Kim	
		13:30-14:15 Tutorial Lecture Kisuk Kang	13:20-13:40 OS3-3 Tomoki Hayashi 13:40-14:00 OS3-4 Shun Tazoe	13:45-14:25 PS3-2 Keynote Lecture Kerry Manton	
14:00	(14:00-16:00) OS12-33 - OS12-51 *Poster Presentation*	BREAK	14:00-14:20 OS3-5 Kounosuke Matsumoto BREAK	BREAK	
15:00		14:30-14:50 PS4-11 Keiichi Shirasu 14:50-15:10 PS4-12 Jaeyeon Hwang 15:10-15:30 PS4-13 Syo Onodera	14:30-15:00 OS3-6 Nobumasa Sekishita (Invited) 15:00-15:30 OS3-7 Hitoshi Ishikawa (Invited)	14:45-15:15 PS3-3 Hajime Sakakita (Invited) 15:15-15:45 PS3-4 Takamichi Hirata (Invited)	
16:00		15:30-15:50 PS4-14 Ryusuke Mihara 15:50-16:10 PS4-15 Wonhyo Joo BREAK	15:30-15:50 OS3-8 Shailendra D. Sharma 15:50-16:10 OS3-9 Ryohei Norimatsu 16:10-16:30 OS3-10 Kenta Watanabe	BREAK 16:00-16:30 PS3-5 Yukiko T. Matsunaga (Invited)	
17:00	17:00-17:20 GS1-8 Ardian B. Gojani 17:20-17:40 GS1-9 Kisa Matsushima 17:40-18:00 GS1-10 Jing Wang	16:25-16:45 PS4-16 Y. Kimura 16:45-17:05 PS4-17 Y. Shirai 17:05-17:25 PS4-18 Hannah Cho 17:25-17:45 PS4-19 T. Masumitsu	16:30-16:50 OS3-11 Sharad Trivedi, Viren Menezes 17:00-18:30 Special Session: Memorial Session for the Late Professor Hiroshi Higuchi Presenter: Mark Glauser Yasuaki Kohama Yoshiya Nakamura	16:30-17:00 PS3-6 Taiji Adachi (Invited) BREAK 17:15-17:45 PS3-7 Sunao Katsuki (Invited)	
18:00	18:00-18:20 GS1-11 Wei Liu	17:45-18:05 PS4-20 Hyung-Soon Kwon		17:45-18:15 PS3-8 Oleg P. Solonenko (Invited)	
19:00					
20:00	18:30-21:00 **Banquet** @SENDAI				
21:00					

SENDAI (WEST)	FUYOH	HAGI	La Boaune	ROOM
4th Floor			21st Floor	Floor

8:00-8:50
Plenary Lecture @ SENDAI (EAST)
"Low-Order Aeromechanical Modeling for Conceptual Design of Fuel-Efficient Aircraft"
Mark Drela (MIT, USA)

SENDAI (WEST)	FUYOH	HAGI	La Boaune	
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		10:20-10:40 OS7-10 Yu-Sheng Huang		
	10:30-11:00 OS2-4 Miklós Zrínyi (Invited)	10:40-11:00 OS7-11 Chi-Chuan Wang	10:30-11:00 OS1-3 Jaw-Yen Yang (Invited)	
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18:30-21:00
Banquet @SENDAI

20:00

21:00

Friday, November 11, 2011

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			8:20-8:40 GS1-13 Jia-Syuan Li	
			8:40-9:00 GS1-14 WooJae Kim	
9:00	9:00-(9:45) OS12-52 - OS12-65 Session4 *Short Oral Presentation*	8:50-9:10 PS4-21 Hidetaka Watanabe	BREAK	9:00-9:40 PS3-9 Keynote Lecture Tetsuji Shimizu
		9:10-9:30 PS4-22 Euisung Kim	9:10-9:30 GS1-15 Mehdi Baneshi	
		9:30-9:50 PS4-23 R. A. Budiman	9:30-9:50 GS1-16 Hideyuki Tanno	9:40-10:10 PS3-10 Satoshi Hamaguchi (Invited)
10:00	(9:45-11:45) OS12-52 - OS12-65 *Poster Presentation*	BREAK	9:50-10:10 GS1-17 Chayut Nuntadusit	
		10:00-10:20 PS4-24 Y. Kawamura	BREAK	BREAK
		10:20-10:40 PS4-25 Jakyu Chun	10:30-11:00 GS1-18 Bing-Yang Cao (Invited)	10:25-10:55 PS3-11 Masaru Tanaka (Invited)
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		11:10-11:30 PS4-27 Kiyotaka Konno	11:20-11:40 GS1-20 Yuan Dong	11:25-11:45 PS3-13 Xiaobo Han
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18:00		17:45-18:05 PS4-40 Jinsoo Kim		
19:00				
20:00				
21:00				

FUYOH	HAGI	La Boaune	ROOM
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8:30-8:50 GS1-23 Yukiko Agata			
8:50-9:10 GS1-24 Sivakumar Deivandren	9:00-9:45 OS10-1 Karkenahalli Srinivas (Invited)	9:00-9:30 OS4-1 Akihiro Sasoh (Invited)	9:00
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Eighth International Conference on Flow Dynamics

Program

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AKEBONO (WEST)
November 9, 2011

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AKEBONO (WEST)
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OS1: Next-Generation CFD

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NextGen CFD for Complex Physics
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NextGen CFD by Building-Cube Method
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OS2: Advanced Control of Smart Fluids and Fluid Flows

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La Boaune
November 11, 2011

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SEIUN
November 9, 2011

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OS5-3 15:00-15:20 — **Effectiveness of Concave-convex Surface Grain for Hybrid Rocket Combustion** — 288
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Chair: Saburo Yuasa (Tokyo Metropolitan University, Japan)

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Arif Karabeyoglu (Space Propulsion Group Inc., USA)

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OS5-9 18:00-18:40 **Nozzle Design for Supersonic Flows of N_2O at Supercritical and Close-to-Critical Conditions *(Invited)*** 300
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OS5-10 18:40-19:00 **Enhancement of Multi-Section Swirl Injection Method for Increase of Regression Rate and Combustion Efficiency of Hybrid Rockets** 302
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Chair: Shigeru Aso (Kyushu University, Japan)

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Kang-Ming Chuang, Jong-Shinn Wu (National Chiao Tung University, Taiwan) and Yen-Sen Chen (Hsinchu Science Park, Taiwan)

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Chair: Keiichi Hori (Japan Aerospace Exploration Agency, Japan)

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Chair: Toru Shimada (Japan Aerospace Exploration Agency, Japan) and Keisuke Sawada (Tohoku University, Japan)

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OS6: Aerodynamics for Mars Exploration Aerial Vehicle

FUYOH
November 9, 2011

Chair: Hiroki Nagai (Tohoku University, Japan)

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Chair: Kojiro Suzuki (The University of Tokyo, Japan)

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Chair: Koju Hiraki (Kyushu Institute of Technology, Japan)

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Koji Fujita, Hiroki Nagai, Keisuke Asai (Tohoku University, Japan) and Hiroshi Tokutake (Kanazawa University, Japan)

OS6-10 17:00-17:20 **Design of A Propeller of An Airplane on Mars** 342
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Masayuki Anyoji, Taku Nonomura, Akira Oyama, Kozo Fujii (Japan Aerospace Exploration Agency, Japan), Kei Nose, Daiju Numata, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)

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OS7: Thermal-Fluid Flows and Plasma Physics

La Boaune
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Chair: C. C. Wang (National Chiao-Tung University, Taiwan)

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HAGI
November 10, 2011

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

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OS7-10 10:20-10:40	**Numerical Simulations on Immiscible Rotating Hele-Shaw Flows: A Phase-Field Approach** Yu-Sheng Huang, Ching-Yao Chen (National Chiao Tung University, Taiwan)	368
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OS7-13 11:20-11:40	**Outflow Boundary Condition in Finite Volume Method for Unsteady-state, Variable Density, Incompressible Fluid Flow Calculation in Unstructured Grid** Sohey Nozawa, Yohsuke Matsushita (Kyushu University, Japan), Hiroaki Tominaga and Masayasu Mouri (DELIGHT Co., Ltd., Japan)	374
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OS7-23 16:40-17:00 **Streamer Dynamics in Methane/Air DBD Under High Pressure and High Temperature Conditions** 394
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OS8: Flow-induced Degradations in Piping Systems of Nuclear Power Plants

AKEBONO (EAST)
November 9, 2011

Session1
Chair: Yutaka Watanabe (Tohoku University, Japan)

OS8-1 13:00-13:35	**The Role of Flow in Flow-Accelerated Corrosion under Nuclear Power Plant Conditions *(Invited)*** John M. Pietralik (Atomic Energy of Canada Ltd., Canada)	400
OS8-2 13:35-14:00	**On Evaluation of LDI Erosion Rate based on Fluid/Solid Coupled Simulation *(Invited)*** Toshiaki Ikohagi (Tohoku University, Japan)	402
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Session2
Chair: Jean-Yves Cavaillé (INSA-Lyon, France)

OS8-5 15:00-15:25	**A Consideration of Effects of Hydrodynamics on Pipe-Wall-Thinning Phenomena *(Invited)*** Fumio Inada, Kimitoshi Yoneda, Ryo Morita, Masaaki Satake and Kazutoshi Fujiwara (Central Research Institute of Electric Power Industry (CRIEPI), Japan)	408
OS8-6 15:25-15:50	**Occurrence of Asymmetric Pipe-wall Thinning behind an Orifice by Combined Effect of Swirling Flow and Orifice Bias *(Invited)*** Nobuyuki Fujisawa, Takayuki Yamagata, Akihiro Ito, Syo Kanno and Tsuyoshi Takano (Niigata University, Japan)	410
OS8-7 15:50-16:15	**Computational Study of Liquid Droplet Impingement Erosion in Nuclear Power Plant *(Invited)*** Jun Ishimoto (Tohoku University, Japan), Shinji Akiba, Kazuhiro Tanji (Tohoku Electric Power Co., Inc., Japan) and Kazuo Matsuura (Tohoku University, Japan)	412
OS8-8 16:15-16:35	**Overview of Pipe Wall Thickness Management at Tohoku Electric Power** Hiroaki Kikkawa, Kunihiro Sato and Akira Sato (Tohoku Electric Power Co., Inc., Japan)	414

OS8-9 16:35-16:55	**Mechanistic Study of Combined Effect of Cr Content and Water Chemistry on FAC Rate of Carbon Steels** Hiroshi Abe, Yutaka Watanabe (Tohoku University, Japan)	416
16:55-17:05	BREAK	

Session3

Chair: Hak-Joon Kim (Sungkyunkwan University, Korea)

OS8-10 17:05-17:30	**Nondestructive Investigation of Wall Thinning in Doubled Layer Tube by Magnetic Adaptive Testing *(Invited)*** Gábor Vértesy (Research Institute for Technical Physics and Materials Science, Hungary), Ivan Tomáš (Institute of Physics, Czech Republic), Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan)	418
OS8-11 17:30-17:55	**Can Acoustic Emission Help Monitor Damage of Pipes or Just Understand Damage Mechanisms? *(Invited)*** Nathalie Godin, Marion Fregonese and Joël Courbon (INSA-Lyon, France)	420
OS8-12 17:55-18:20	**Reconstruction of Stress Corrosion Crack with Multi-frequency ECT Signals *(Invited)*** Zhenmao Chen (Xi'an Jiaotong University, China), Shejuan Xie (Tohoku University, Japan), Li Wang (Xi'an Jiaotong University, China), Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan)	422
OS8-13 18:20-18:40	**Online Monitoring of Pipe Wall Thinning using Electromagnetic Acoustic Resonance** Ryoichi Urayama, Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan) and Shigeru Kanemoto (The University of Aizu, Japan)	424
OS8-14 18:40-19:00	**Three Dimensional Wall Thinning Defect Reconstruction from Pulsed Eddy Current Testing Signals** Shejuan Xie (Tohoku University, Japan), Zhenmao Chen, Xiaowei Wang (Xi'an Jiaotong University, China), Li Wang (Xi'an Jiaotong University/ Xi'an Posts and Telecommunications Institute, China), Toshiyuki Takagi and Tetsuya Uchimoto (Tohoku University, Japan)	426

OS9: Fluid-induced Seismicity: Modeling and Application

HAGI
November 9, 2011

13:00-13:10 **Opening Remarks**
Takatoshi Ito (Tohoku University, Japan)

Chair: Takatoshi Ito (Tohoku University, Japan)

OS9-1 13:10-13:50 **Seismic and Aseismic Fluid Induced Motions *(Invited)*** 430
François Henri Cornet (University de Strasbourg, France)

OS9-2 13:50-14:30 **Seismicity and Geomechanics Associated with the Stimulation of a Tight Well on the Boundary of a Producing Geothermal Energy System *(Invited)*** 432
Michael Fehler, Alison Malcolm and Maria Silva (Massachusetts Institute of Technology, USA)

14:30-14:45 BREAK

Chair: Hiroshi Asanuma (Tohoku University, Japan)

OS9-3 14:45-15:25 **Seismological Aspects about Fluid Induced Seismicity: Insights Gained from Recent Studies at Core, Reservoir, and Regional scales *(Invited)*** 434
Xinglin Lei (Advanced Industrial Science and Technology, Japan)

OS9-4 15:25-15:50 **Coupled Hydraulic and Microseismic Analysis for Reservoir Stimulation** 436
Kazuhiko Tezuka, Yusuke Kumano, Tetsuya Tamagawa (Japan Petroleum Exploration Co., Ltd., Japan) and Kimio Watanabe (Renergies, Japan)

OS9-5 15:50-16:15 **Characteristics of Earthquakes Observed at Geothermal Fields** 438
Hiroshi Asanuma, Yusuke Mukuhira, Doone Wyborn, Markus Häring, Masaho Adachi and Hiroaki Niitsuma (Tohoku University, Japan)

16:15-16:30 BREAK

Chair: Takatoshi Ito (Tohoku University, Japan)

OS9-6 16:30-16:55 **Pressure and Flow Structure Estimation from Microseismic Monitoring** 440
Takatoshi Ito, Hiroyuki Maki (Tohoku University, Japan) and Hideshi Kaieda (Central Research Institute of Electric Power Industry, Japan)

OS9-7 16:55-17:20 **Fault-Plane Solution of Acoustic Emission Induced by Pore Pressure Increase in a Tri-axial Experiment of Berea Sandstone** 442
Tsuyoshi Ishida, Daisuke Fukahori, Motoi Ishida, Ryousuke Sato, Sumihiko Murata (Kyoto University, Japan), Shigenobu Onozuka, Kazuhito Oseto and Koji Yamamoto (Japan Oil, Gas and Metals National Corporation, Japan)

OS9-8 17:20-17:45 **Distinct Element Modeling of Acoustic Emission Induced by Hydraulic Fracturing in Laboratory** 444
Hiroyuki Shimizu (Tohoku University, Japan), Sumihiko Murata (Kyoto University, Japan), Takatoshi Ito (Tohoku University, Japan) and Tsuyoshi Ishida (Kyoto University, Japan)

17:45-17:55 **Closing**
Hiroshi Asanuma (Tohoku University, Japan)

OS10: Biofluid for Medical Application

HAGI
November 11, 2011

Chair: Makoto Ohta and Toshio Nakayama (Tohoku University, Japan)

OS10-1 9:00-9:45	**Optimisation of Stents for Cerebral Aneurysm Application *(Invited)*** Karkenahalli Srinivas, Chang-Joon Lee (The University of Sydney, Australia)	448
OS10-2 9:45-10:30	**Computational Fluid Dynamics using Medical Images on Biomechanics (*Invited*)** Teruo Matsuzawa, Futoshi Mori (Japan Advanced Institute of Science and Technology, Japan), Kiyoshi Kumahata (Fujitsu Nagano Systems Engineering, Ltd., Japan) and Sho Hanida (Japan Advanced Institute of Science and Technology, Japan)	450
OS10-3 10:30-10:45	**Visualization of Flow Characteristics of Prosthetic Mono-leaflet Heart Valve** Sanjeev D. Muskawad, Shailendra D. Sharma (Indian Institute of Technology Bombay, India)	452
OS10-4 10:45-11:00	**Stent Effects on Aneurysms by Changes in Vascular Architecture** Kenichi Kono, Yuko Tanaka, Ryo Yoshimura, Takeshi Fujimoto, Hideo Okada, Aki Shintani and Tomoaki Terada (Wakayama Rosai Hospital, Japan)	454
OS10-5 11:00-11:15	**Comparison between Ultrasonic-Measurement-Integrated Simulation and Ordinary Simulation with Measured Upstream Velocity Condition** Shusaku Sone, Takaumi Kato, Kenichi Funamoto, Toshiyuki Hayase (Tohoku University, Japan), Masafumi Ogasawara, Takao Jibiki, Hiroshi Hashimoto and Koji Miyama (GE Healthcare Japan, Japan)	456
OS10-6 11:15-11:30	**Effect of Aspect Ratio of Cerebral Aneurysm on Flow Reduction with Stent** Toshio Nakayama, Makoto Ohta (Tohoku University, Japan)	458

OS11: Micro Channels and Membrane Proteins

FUJI
November 10, 2011

Chair: Noriko Tomita (Tohoku University, Japan)

OS11-1 9:00-9:30 **Bacterial Two-component and Hetero-oligomeric Pore-forming Cytolytic Toxins: Structures, Pore-forming Mechanism, and the Organization of the Genes *(Invited)*** 462
Yoshiyuki Kamio (Yamagata University, Japan)

OS11-2 9:30-10:00 **Crystal Structure of the Octameric Pore of Staphylococcal γ-hemolysin *(Invited)*** 464
Yoshikazu Tanaka, Keitaro Yamashita, Yuka Kawai, Nagisa Hirano (Hokkaido University, Japan), Jun Kaneko, Noriko Tomita, Makoto Ohta (Tohoku University, Japan), Yoshiyuki Kamio (Yamagata University, Japan), Min Yao and Isao Tanaka (Hokkaido University, Japan)

OS11-3 10:00-10:30 **Three-state Discrete Kinetics of the OpdK Protein Pore *(Invited)*** 466
Belete R. Cheneke (Syracuse University, USA), Bert Van den Berg (Program in Molecular Medicine, USA) and Liviu Movileanu (Syracuse University, USA)

10:30-10:45 BREAK

Chair: Makoto Ohta (Tohoku University, Japan)

OS11-4 10:45-11:10 **Characterization and Image Analysis of Heteroheptameric Structure on Staphylococcal γ-hemolysin Transmembarne Pore *(Invited)*** 468
Noriko Tomita, Kazuyo Abe, Jun Kaneko (Tohoku University, Japan), Yoshiyuki Kamio (Yamagata University, Japan) and Makoto Ohta (Tohoku University, Japan)

OS11-5 11:10-11:40 **Structural Analysis of Protein Complexes by Electron Microscopy and Image Analysis (*Invited*)** 470
Takuo Yasunaga, Yoshihiro Tsukada, Jin Mingyue, Keita Watanabe, Kaori Ogawa, Hiroko Takazaki, Risa Yamashita (Kyushu Institute of Technology, Japan) and Takeyuki Wakabayashi (Teikyo University, Japan)

OS11-6 11:40-12:00 **Two-dimensional Numerical Simulation of the Behavior and Deformation of Erythrocyte Passing through a Microchannel** 472
Atsushi Kase, Kiyoshi Bando and Kenkichi Ohba (Kansai University, Japan)

OS12: The Seventh International Students/Young Birds Seminar on Multi-Scale Flow

AKEBONO (WEST)
November 9, 2011

13:00-13:05	**Opening**	
Session 1 13:05-(14:05)	**-Award Session -** **Short Oral Presentation** 3 min for Short Oral Presentation without PC preparation	
OS12-1	**X-Ray Computed Tomographic Study of Changes in Packing State of Hydrogen Storage Alloys** Masahiko Okumura, Ayaka Ikado, Yasuhiro Saito, Hideyuki Aoki, Takatoshi Miura (Tohoku University, Japan) and Yoshiaki Kawakami (Takasago Thermal Engineering Co., Ltd. , Japan)	476
OS12-2	**Process of Leading Edge Receptivity to Periodic Disturbances** Yu Nishio, Masaya Shigeta, Seiichiro Izawa and Yu Fukunishi (Tohoku University, Japan)	478
OS12-3	**Comparison of Carbon Black Configurations Formed by Benzene and Acetylene Pyrolysis** Kiminori Ono, Miki Yanaka, Sho Tanaka, Yasuhiro Saito, Masakazu Shoji, Hideyuki Aoki, Takatoshi Miura (Tohoku University, Japan), Okiteru Fukuda, Takayuki Aoki and Togo Yamaguchi (Asahi Carbon Co., Ltd., Japan)	480
OS12-4	**Quantification of Non-adhesion Particle Boundary by Observation of Coke Fracture Cross-section** Tetsuya Kanai, Yoshiaki Yamazaki, Xiaoqing Zhang, Ataru Uchida, Yasuhiro Saito, Masakazu Shoji, Hideyuki Aoki, Takatoshi Miura (Tohoku University, Japan), Seiji Nomura, Yukihiro Kubota and Hideyuki Hayashizaki (Nippon Steel Corporation, Japan)	482
OS12-5	**A Study of 4 Dimensional City Modeling from Car-mounted Omnidirectional Images** Ken Sakurada, Jun Yanagisawa, Daiki Tetsuka, Takayuki Okatani and Koichiro Deguchi (Tohoku University, Japan)	484
OS12-6	**Simulation of Boundary Layer Receptivity to Outer Disturbances** Shuta Noro, Masaya Shigeta, Seiichiro Izawa and Yu Fukunishi (Tohoku University, Japan)	486
OS12-7	**Conceptual Examination of a Small UAV for Mars Exploration Flight** Koji Fujita, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)	488
OS12-8	**The Effects of Standoff Distance on the Laser-Induced Liquid Jet in a Narrow Channel** Muhd Hilmi Bin Shapien, Mingyu Sun (Tohoku University, Japan)	490

OS12-9 **Study on a Micromixing Device Utilizing Surface Tension Effect on Gas-Liquid Free Interface** 492
Takashi Yamada, Naoki Kato, Kazuki Takeda and Naoki Ono (Shibaura Institute of Technology,Japan)

OS12-10 **Effect of Oscillation Frequency on High Pressure Pulse Spray** 494
Ryuichi Sagawa, Yoshinori Kojima, Yasuhiro Saito, Masakazu Shoji, Hideyuki Aoki and Takatoshi Miura (Tohoku University, Japan)

OS12-11 **Quasi-one-dimensional Modeling of Supersonic Combustors** 496
Junji Noda (Tohoku University, Japan), Sadatake Tomioka (Japan Aerospace Exploration Agency, Japan) and Goro Masuya (Tohoku University, Japan)

OS12-12 **Quantative Evaluation of Relationship between Coke Strength and Microstructure of Ferro-coke with HPC Additioin** 498
Ataru Uchida, Tetsuya Kanai, Yoshiaki Yamazaki, Kenichi Hiraki, Zhang Xiaoqing, Yasuhiro Saito, Hideyuki Aoki, Takatoshi Miura (Tohoku University, Japan), Noriyuki Okuyama, Nobuyuki Komatsu and Maki Hamaguchi (Kobe Steel Ltd., Japan)

OS12-13 **Secondary Cavitation Induced by Underwater Electric Discharge in a Tube** 500
Taketoshi Koita, Kentaro Hayashi and Mingyu Sun (Tohoku University, Japan)

OS12-14 **A Study on Micromixer Utilizing Thin Liquid Film** 502
Kazuki Takeda, Naoki Kato, Takashi Yamada and Naoki Ono (Shibaura Institute of Technology, Japan)

OS12-15 **Analysis of Fluid Flow and Concentration Distribution in a Cylindrical Micromixer** 504
Ryota Suzuki, Ken Yamazaki, Takeshi Hosoya and Naoki Ono (Shibaura Institute of Technology, Japan)

OS12-16 **Dryout of Boiling with Impinging Flow in T-shaped Mini Channel with High-carbon Alcohol Aqueous Solutions** 506
Yuki Kumagai, Minoru Otsuka, Keigo Yonemura and Naoki Ono (Shibaura Institute of Technology, Japan)

OS12-17 **The Effect of Dispersed State to Control of Radiative Properties of Coatings Pigmented with Nanoparticles** 508
Hiroki Gonome, Mehdi Baneshi, Junnosuke Okajima, Atsuki Komiya and Shigenao Maruyama (Tohoku University, Japan)

OS12-18 **Water Purification Using Activated Mist Flow with Plasma** 510
Tomohiro Shibata, Hideya Nishiyama (Tohoku University, Japan)

OS12-19 **Fibre Orientation and Fibre Streaks in Turbulent Half Channel Flow** 512
Karl Håkansson, Mathias Kvick, Fredrik Lundell, Lisa Prahl-Wittberg (Royal Institute of Technology, Sweden) and L. Daniel Söderberg (Royal Institute of Technology / Innventia AB, Sweden)

OS12-20 **Irregular Reflection of Weak Shock Waves in Steady Flows** 514
Georgy Shoev, Yevgeniy Bondar, Alexey Kudryavtsev, Dmitry Khotyanovsky and Mikhail Ivanov (Khristianovich Institute of Theoretical and Applied Mechanics, Russia)

(14:05-16:05) **Poster Presentation**

AKEBONO (WEST)

November10, 2011

Session 2

9:00-(9:40) **Short Oral Presentation**
3min for Short Oral Presentation without PC preparation

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Hiroki Nagashima, Takashi Tokumasu (Tohoku University, Japan), Shin-ichi Tsuda (Shinshu University, Japan), Nobuyuki Tsuboi (Kyushu Institute of Technology, Japan), Mitsuo Koshi (The University of Tokyo, Japan) and Koichi Hayashi (Aoyama Gakuin University, Japan)

OS12-22 **Influence of Plaque Movement on Blood Flow and Blood Vessel around Stenosis Area** 518
Yasutomo Shimizu, Shuya Shida and Makoto Ohta (Tohoku University, Japan)

OS12-23 **Verification of Blunt Dissection Simulation for Brain Surgery** 520
Masano Nakayama, Xin Jiang, Satoko Abiko, Atsushi Konno and Masaru Uchiyama (Tohoku University, Japan)

OS12-24 **Observation of Behavior of Injection for Composite Material using Micro-CT** 522
Kei Ozawa (Tohoku University, Japan), Yuji Katakura, Yukihiko Shibata (Tecno Cast, Japan) and Makoto Ohta (Tohoku University, Japan)

OS12-25 **PIV Measurement of Steady Flow in PVA Model with Compliant Wall as Cerebral Aneurysm** 524
Shuya Shida, Hiroyuki Kosukegawa and Makoto Ohta (Tohoku University, Japan)

OS12-26 **A Multi Scale Simulation on the Diffusion and Chemical Reaction of Automotive Exhaust Gas on Metal/Oxide Particles** 526
Sunho Jung, Ryo Nagumo, Ryuji Miura, Ai Suzuki, Hideyuki Tsuboi, Nozomu Hatakeyama, Hiromitsu Takaba and Akira Miyamoto (Tohoku University, Japan)

OS12-27 **Adaptive Autofocus for Cell Motility** 528
Takeshi Obara (Tohoku University, Japan), Yasunobu Igarashi (Olympus Software Technology Corp., Japan) and Koichi Hashimoto (Tohoku University, Japan)

OS12-28	**Molecular Dynamics Study of Proton and Water Transfer in Polyelectrolyte Membrane** Takuya Mabuchi, Takashi Tokumasu (Tohoku University, Japan)	530
OS12-29	**Molecular Dynamics Study of Oxygen Permeation in the Ionomer on Pt Catalyst** Kiminori Sakai, Takashi Tokumasu (Tohoku University, Japan)	532
OS12-30	**Analysis of Axisymmetric Radiative Heat Transfer in Biological Tissue using the Radiation Element Method** Shigenao Maruyama, Yoshiyuki Sato (Tohoku University, Japan), Atsushi Sakurai (Niigata University, Japan), Junnosuke Okajima, Mehdi Baneshi and Atsuki Komiya (Tohoku University, Japan)	534
OS12-31	**Multi Scale Simulation on Carrier Multiplication Effect of Si Quantum Dot** Sho Hirose, Ryo Nagumo, Ryuji Miura, Ai Suzuki, Hideyuki Tsuboi, Nozomu Hatakeyama, Hiromitsu Takaba and Akira Miyamoto (Tohoku University, Japan)	536
OS12-32	**A Multi Scale Modeling of Anode Reaction in Biofuel Cell** Hiroshi Kobayashi, Ryo Nagumo, Ryuji Miura, Ai Suzuki, Hideyuki Tsuboi, Nozomu Hatakeyama, Hiromitsu Takaba and Akira Miyamoto (Tohoku University, Japan)	538
(9:40-11:40)	**Poster Presentation**	
Session 3 13:00-(14:00)	**Short Oral Presentation** 3 min for Short Oral Presentation without PC preparation	
OS12-33	**Study on Ignition Characteristics of PRF/Air Mixtures at 1-5 atm in a Micro Flow Reactor with a Controlled Temperature Profile** Mikito Hori, Akira Yamamoto, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa and Kaoru Maruta (Tohoku University, Japan)	540
OS12-34	**Cetane Number and Weak Flames of Diesel PRF in a Micro Flow Reactor with a Controlled Temperature Profile** Satoshi Suzuki, Mikito Hori, Akira Yamamoto, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa and Kaoru Maruta (Tohoku University, Japan)	542
OS12-35	**Computational Study on Near-Limit Behavior of Low-Lewis-Number Radiative Counterflow Flame under Microgravity** Koichi Takase, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa, Xing Li and Kaoru Maruta (Tohoku University, Japan)	544
OS12-36	**Development of Temperature-Sensitive Paint for Cryogenic Cavitation Test** Shota Fujii, Kazuki Niiyama, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)	546

OS12-37 **Study on Weak Flame Behavior of Lower Alkane Fuels in Micro Flow Reactor with Controlled Temperature Profile** 548
Taiki Kamada, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa and Kaoru Maruta (Tohoku University, Japan)

OS12-38 **Numerical Study of Heat Transfer for Cryogenic Slush Flow in a Horizontal Circular Pipe** 550
Takumi Hosono, Katsuhide Ohira (Tohoku University, Japan)

OS12-39 **High-accuracy Calculation for Aerodynamic Heating using Temperature-Sensitive Paint** 552
Kazuki Nishigata, Ryosuke Sawamura, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)

OS12-40 **Secondary Wick Effect for Performance of Loop Heat Pipes** 554
Kouhei Magome, Hiroki Nagai (Tohoku University, Japan)

OS12-41 **Heat Transfer Characteristics of Oscillating Heat Pipe by Difference of Surface Characteristic** 556
Takamu Kanayama, Takuro Daimaru, Hiroki Nagai (Tohoku University, Japan) and Hiroyuki Ogawa (Japan Aerospace Exploration Agency / ISAS, Japan)

OS12-42 **Development of Temperature-Sensitive Paint for High-Temperature Measurement** 558
Ryosuke Sawamura, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)

OS12-43 **Gas Phase and Surface Reactions of $H_2/O_2/N_2$ Mixture in a Micro Flow Reactor with a Controlled Temperature Profile** 560
Kenichiro Saruwatari, Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa and Kaoru Maruta (Tohoku University, Japan)

OS12-44 **A Study of Thermal Design for the Development of High-efficiency Fluidized Bed Solar Reactor** 562
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OS12-45 **Spectral Radiative Properties of Greenhouse Plastic Films Using Inverse Method** 564
Adil Al Mahdouri, Mehdi Baneshi (Tohoku University, Japan), Alice Barthel (Ecole Centrale Lyon, France), Hiroki Gonome, Junnosuke Okajima and Shigenao Maruyama (Tohoku University, Japan)

OS12-46 **Experimental Study on $CH_4/O_2/CO_2$ Counterflow Premixed Flame Extinction in Low-Stretch-Rates under Microgravity and Transition from Counterflow Flame to Ball-like Flame** 566
Xing Li (Tohoku University, Japan and Beijing Jiaotong University, China), Hisashi Nakamura, Takuya Tezuka, Susumu Hasegawa, Koichi Takase (Tohoku University, Japan), Li Jia (Beijing Jiaotong University, China) and Kaoru Maruta (Tohoku University, Japan)

OS12-47 **High Temperature Steam Oxidation Kinetics and Film Characteristics for Austenitic Stainless Steels** 568
Seung Mo Hong, Yutaka Watanabe and Hiroshi Abe (Tohoku University, Japan)

OS12-48 **Effect of Temperature Compensation for Dual-layer PSP/TSP in Low Speed Flow** 570
Kil-Ju Moon, Yuichiro Ambe, Hiroaki Kawabata and Hideo Mori (Kyushu University, Japan)

OS12-49 **A Study on Turbulent Premixed Combustion for $CO/H_2/CO_2/O_2$ Mixture at High Pressure** 572
Futoshi Matsuno, Jinhua Wang, Yuki Otawara, Yasuhiro Ogami and Hideaki Kobayashi (Tohoku University, Japan)

OS12-50 **Traveling Performance Evaluation of Various Planetary Rover Locomotion Mechanisms** 574
Masataku Sutoh, Keiji Nagatani and Kazuya Yoshida (Tohoku University, Japan)

OS12-51 **Effects of Gas Properties on Molecular Gas-Film Lubrication** 576
Susumu Isono, Shigeru Yonemura, Takanori Takeno, Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan)

(14:00-16:00) **Poster Presentation**

AKEBONO (WEST)

November11, 2011

Session 4

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

OS12-52 **Investigation of Dielectric Barrier Discharge Planar Jets at Atmospheric Pressure** 578
Qing Li (Tohoku University, Japan / Tsinghua University, China), Hidemasa Takana (Tohoku University, Japan), Yi-Kang Pu (Tsinghua University, China) and Hideya Nishiyama (Tohoku University, Japan)

OS12-53 **Incompressible SPH Simulation of a Droplet and a Liquid Column with Marangoni Convection** 580
Masumi Ito, Seiichiro Izawa, Yu Fukunishi and Masaya Shigeta (Tohoku University, Japan)

OS12-54 **Experimental Study of Water Jet Formation by Electric Discharge in Tubes with Various Width** 582
Kentaro Hayashi, Taketoshi Koita and Mingyu Sun (Tohoku University, Japan)

OS12-55 **Simulation of Velocity Fluctuation Generated by Vibrating Actuator** 584
Hajime Okawa, Masaya Shigeta, Seiichiro Izawa and Yu Fukunishi (Tohoku University, Japan)

OS12-56 **A Numerical Study of Bubble Collapsing in Cavitating Flows over A Hydrofoil** 586
Katsuhisa Suzuki, Mingyu Sun (Tohoku University, Japan)

OS12-57 **Spatial Correlations of Velocity Fluctuation in a Supersonic Flowfield with Transverse Injection** 588
Shohei Uramoto, Toshinori Kouchi and Goro Masuya (Tohoku University, Japan)

OS12-58 **Numerical Analysis of Cryogenic Solid-Liquid Slush Flow in a Square Pipe** 590
Daisuke Naka, Atsuhito Ota and Katsuhide Ohira (Tohoku University, Japan)

OS12-59 **Pressure-Drop Reduction Phenomenon of Cryogenic Solid-Liquid Slush Flow in a Corrugated Pipe** 592
Jun Okuyama, Kei Nakagomi, Katsuhide Ohira and Koichi Takahashi (Tohoku University, Japan)

OS12-60 **Advancement of Alumina Powder Spheroidization Process in a Low Power DC-RF Hybrid Plasma Flow System by Water Droplets Injection** 594
Juyong Jang, Hidemasa Takana (Tohoku University, Japan), Sangkyu Park (Woosuk University, Korea) and Hideya Nishiyama (Tohoku University, Japan)

OS12-61 **Numerical Analysis of Aerodynamic Characteristics of JAXA Silent Supersonic Technology Demonstrator including the Effect of Jet Exhaust at Low Speed** 596
Jun Hattori, Daisuke Sasaki and Kazuhiro Nakahashi (Tohoku University, Japan)

OS12-62 **Reconstruction of Model Movement in Dynamic Wind Tunnel Testing** 598
K. S. N. Abhinav Kumar, Tatsuya Hara, Daiju Numata and Keisuke Asai (Tohoku University, Japan)

OS12-63 **Effects of Elevated Ambient Pressure on Atomization Characteristics of Airblast Atomizer** 600
Shinichiro Ishikawa, Taku Kudo, Hideaki Kobayashi (Tohoku University, Japan) and Soichiro Kato (IHI Corporation, Japan)

OS12-64 **Evaluation of Aerodynamic Characteristics of a Triangular Airfoil at Low Reynolds Number and High-Subsonic Mach Number** 602
Tetsuya Suwa, Kei Nose, Daiju Numata, Hiroki Nagai and Keisuke Asai (Tohoku University, Japan)

OS12-65 **Gait Analysis of MR-SPCOM KNEE, a Prosthetic Knee Joint with Optional Stance and Swing Control System Utilizing MR Fluid Brake** 604
Takashi Suzuki, Yuichi Hikichi and Masami Nakano (Tohoku University, Japan)

(9:45-11:45) **Poster Presentation**

Session 5
13:00-(13:45) **Short Oral Presentation**
3 min for Short Oral Presentation without PC preparation

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Liang He, Masaya Toda, Yusuke Kawai, Hidetoshi Miyashita, Shuai Chen, Mamoru Omori, Toshiyuki Hashida and Takahito Ono (Tohoku University, Japan)

OS12-67 **An Automatic Task Assignment Method for Heterogeneous Computing Systems** 608
Katsuto Sato, Kazuhiko Komatsu, Hiroyuki Takizawa and Hiroaki Kobayashi (Tohoku University, Japan)

OS12-68 **Friction Properties between Stainless Steel and Partly Polished Polycrystalline Diamond Film with Ti Interlayer** 610
Yosuke Nakayama, Hiroyuki Miki, Takanori Takeno and Toshiyuki Takagi (Tohoku University, Japan)

OS12-69 **Continuous Membrane Deformable Mirror for Next-generation Astronomical Observation** 612
Tong Wu, Masayuki Akiyama, Toshiyuki Takagi and Kazuhiro Hane (Tohoku University, Japan)

OS12-70 **Vacuum Package Method Based on Reflowing of Low-Melting Temperature Metal for MEMS** 614
Hoang Manh Chu, Jun Mizuno, Toshiyuki Takagi and Kazuhiro Hane (Tohoku University, Japan)

OS12-71 **Stabilization of Hardware in the Loop Simulation** 616
Fumihito Sugai, Xin Jiang, Satoko Abiko, Atsushi Konno and Masaru Uchiyama (Tohoku University, Japan)

OS12-72 **Simulation Study of Transport Phenomena in Supercooled Cu-Ti-Zr Liquids** 618
Hiroyuki Fujii, Michio Tokuyama (Tohoku University, Japan)

OS12-73 **Electromagnetic Non-destructive Evaluation of Creep Damage of Mod. 9Cr-1Mo Steel Focusing on High-frequency Magnetization Process** 620
Kentaro Shibuya, Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan)

OS12-74 **Slip Characteristics Identification for Biped Walking of a Humanoid Robot on Sand** 622
Shunsuke Komizunai, Atsushi Konno, Satoko Abiko and Masaru Uchiyama (Tohoku University, Japan)

OS12-75 **Thickness Evaluation of Thermal Spraying on Boiler Tubes by Eddy Current Testing** 624
Yohei Takahashi, Ryoichi Urayama, Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan), Hiroshi Naganuma, Kazufumi Sugawara and Tomoaki Sasaki (Tohoku Electric Power Engineering & Construction Co. Inc, Japan)

OS12-76 **Development of Wheeled Mobile Robot to Traverse Rough Terrain in Outdoor Fields** 626
Takeshi Ohki, Kiichi Sato, Genki Yamauchi, Keiji Nagatani and Kazuya Yoshida (Tohoku University, Japan)

OS12-77 **A High Density 2D Array of ϕ6-nm Silicon-Nanodisk Structures and its Optical Characteristics for Solar Cells** 628
Makoto Igarashi, Mohd Fairuz Budiman, Weiguo Hu and Seiji Samukawa (Tohoku University, Japan)

OS12-78 **Hydrogen Dissociative Adsorption on Pd (111), Pd (100) and Stepped Pd (332) Surfaces: A Comparative Study of Electronic Structures at Different Coverage** 630
Farouq Ahmed, Ryo Nagumo, Ryuji Miura, Ai Suzuki, Hideyuki Tsuboi, Nozomu Hatakeyama, Hiromitsu Takaba and Akira Miyamoto (Tohoku University, Japan)

OS12-79 **Dynamic Wind-Tunnel Testing of a Rolling Delta-Wing using a Robotic Manipulator** 632
Hiroyuki Abe, Nobuhiro Nakata, Daiju Numata, Xin Jiang, Atsushi Konno and Keisuke Asai (Tohoku University, Japan)

OS12-80 **Micro-Motor Utilizing Electric Field-Responsive Polymer Composites** 634
Takayuki Okumura, Masami Nakano (Tohoku University, Japan) and Miklos Zrinyi (Semmelweis University, Hungary)

(13:45-15:45) **Poster Presentation**

OS13: Clean and Efficient Combustion Technology (AFI/TFI-2011)

Please refer to separate proceedings.

FUJI
November 9, 2011

Chair: Kaoru Maruta (Tohoku University, Japan)

OS13-1 13:00-13:30 **Development of A High Pressure Syngas Kinetic Mechanism for Advanced Gas Turbines (*Invited*)**
Jeffrey Santner, Michael. P. Burke, Frederick L. Dryer and Yiguang Ju (Princeton University, USA)

OS13-2 13:30-14:00 **Numerical Simulation of Radiation Driven Transient Combustion of Energetic Materials (*Invited*)**
Vladimir E. Zarko, Lev K. Gusachenko and Alexander D. Rychkov (SB RAS, Russia)

14:00-14:10 BREAK

Chair: Sergey Minaev (ITAM SB RAS, Russia)

OS13-3 14:10-14:30 **Turbulent Combustion of Model Coal-gasification Syngas at High Pressure**
Hideaki Kobayashi, Yasuhiro Ogami (Tohoku University, Japan)

OS13-4 14:30-14:50 **High-Pressure Turbulent Ignition Transition**
Shenqyang Steven Shy, Yao-Wen Shiu, Chien-Chia Liu, Hua-Jung Chung, Ming-Wei Peng (National Central University, Taiwan)

OS13-5 14:50-15:10 **Measurement of Three-Dimensional Flame Structure by Simultaneous Dual-Plane CH PLIF, Single-Plane OH PLIF and Dual-Plane Stereoscopic PIV**
Ayane Johchi, Masayasu Shimura, Mamoru Tanahashi and Toshio Miyauchi (Tokyo Insitute of Technology, Japan)

OS13-6 15:10-15:30 **DNS on Autoignition and Flame Propagation of Methane-Air Mixtures at High Pressure**
Makito Katayama, Naoya Fukushima, Masayasu Shimura, Mamoru Tanahashi and Toshio Miyauchi (Tokyo Institute of Technology, Japan)

15:30-15:40 BREAK

Chair: Osamu Fujita (Hokkaido University, Japan)

OS13-7 15:40-16:00 **Flame Propagation in Diverging Microchannels**
Mohammad Akram (Indian Institute of Technology Bombay, India), Roman Fursenko, Sergey Minaev (ITAM SB RAS, Russia) and Sudarshan Kumar (Indian Institute of Technology Bombay, India)

OS13-8 **Oscillating and Rotating Flame Patterns in Microchannels**
16:00-16:20 Sergey Minaev, Roman Fursenko, Evgeniy Sereschenko (ITAM SB RAS, Russia), Aiwu Fan (Huazhong University of Science Technology, China), Sudarshan Kumar (Indian Institute of Technology Bombay, India) and Kaoru Maruta (Tohoku University, Japan)

OS13-9 **High Performance Flame Fuel Cell Using and Anode Supported SOFC**
16:20-16:40 Kang Wang, Pingying Zeng, James Schwartz and Jeongmin Ahn (Syracuse University, USA)

OS13-10 **Porous Oxide Particles Prepared by Flame Spray Pyrolysis**
16:40-17:00 Takeshi Yokomori, Kazuki Tsukuda and Toshihisa Ueda (Keio University, Japan)

17:00-17:10 BREAK

Chair: Shenqyang Steven Shy (National Central University, Taiwan)

OS13-11 **Combustion Characteristics of Polyethylene in Microgravity**
17:10-17:30 Mitsumasa Ikeda, Yudai Koshiro (Akashi National College of Technology, Japan)

OS13-12 **Transition from Laminar to Turbulent Flame Induced by Laser Irradiation Method in a Propagation Tube**
17:30-17:50 Osamu Fujita, June Sung Park and Yoshikazu Taniyama (Hokkaido University, Japan)

PS1: IFS Collaborative Research Forum (AFI/TFI-2011)

Please refer to separate proceedings.

SENDAI (WEST)
November 10, 2011

Chair: Yasuhiro Ogami (Tohoku University, Japan)
9:00-10:24 **Short Oral Presentation**
(3 min for Short Oral Presentation)

CRF-1 **Pressure Drop and Heat Transfer for Boiling Two-phase Flow of Liquid Nitrogen in a Horizontal Pipe**
Tadashi Nakayama, Takayoshi Nagai, Katsuhide Ohira, Koichi Takahashi (Tohoku University, Japan), Hiroaki Kobayashi, Hideyuki Taguchi, Ttakayuki Kojima and Motoyuki Hongo (Japan Aerospace Exploration Agency, Japan)

CRF-2 **Measurement Coupled Computation of Cooling and Wafer Cleaning Performance Using Micro-Solid Nitrogen**
U Oh, Jun Ishimoto (Tohoku University, Japan) and Kozo Saito (University of Kentucky, USA)

CRF-3 **Quantitative Visualization by using Background-Oriented Schlieren**
Toshiharu Mizukaki (Tokai University, Japan), Ardian Gojani and Shigeru Obayashi (Tohoku University, Japan)

CRF-4 **Direct Numerical Simulation on the Effects of Free-stream Turbulence on a Turbulent Boundary Layer with Heat Transfer**
Yasuhiko Sakai, Kouji Nagata, Hiroki Suzuki (Nagoya University, Japan) and Toshiyuki Hayase (Tohoku University, Japan)

CRF-5 **Aerodynamic Characteristics of a Badminton Shuttlecock at High Reynolds Numbers**
Seigo Kitta, Hiroaki Hasegawa (Akita University, Japan), Masahide Murakami (University of Tsukuba, Japan)and Shigeru Obayashi (Tohoku University, Japan)

CRF-6 **Numerical Simulation of the Aerodynamic Characteristics on a Detailed Motorcycle**
Chenguang Lai (Chongqing University of Technology, China), Shigeru Obayashi (Tohoku University, Japan), Yuting Zhou and Haibin Xing (Chongqing University of Technology, China)

CRF-7 **Analysis and Optimization for Multi-Hull Ship**
Hyunyul Kim (George Mason University, USA) and Shinkyu Jeong (Tohoku University, Japan / George Mason University, USA)

CRF-8 **Development of Efficient Hole Searching Algorithm of Overset Grid System for Helicopter Rotor Analysis and Design Framework**
Seonhyeong Lee, Sanghyun Chae (Pusan National University, Korea), Shinkyu Jeong (Tohoku University, Japan) and Kwanjung Yee (Pusan National University, Korea)

CRF-9 **Improvement of Reality of CG Motion Pictures by Hydrodynamic Effects**
Takashi Ishihara (Nagoya University, Japan), Yuji Hattori (Tohoku University, Japan)

CRF-10 **Investigation of Hypersonic Flows about Leading Edges of Small Bluntness**
Mikhail Ivanov (Khristianovich Institute of Theoretical and Applied Mechanics, Russia), Shigeru Yonemura (Tohoku University, Japan), Yevgeniy Bondar, Dmitry Khotyanovsky, Alexey Kudryavtsev (Khristianovich Institute of Theoretical and Applied Mechanics, Russia)

CRF-11 **Experimental Studies of Sonic Boom Using a Two-stage Light Gas Gun**
Kazuaki Hatanaka, Tsutomu Saito (Muroran Institute of Technology, Japan), Kiyonobu Ohtani, Toshihiro Ogawa, Shigeru Obayashi (Tohoku University, Japan) and Masahide Katayama (Itochu Techno-Solutions Corporation, Japan)

CRF-12 **Effect of Electron Behavior in front of Shock Wave on Thermo-Chemical Process behind the Shock Wave**
Gouji Yamada, Shota Ago, Shingo Otsuta, Takashi Matsuno, Hiromitsu Kawazoe (Tottori University, Japan) and Shigeru Obayashi (Tohoku University, Japan)

CRF-13 **Development of Force Balance for Its Application to a Silent Supersonic Biplane Model in the Low Speed Wind Tunnel**
Hiromitsu Kawazoe, Hiroshi Suemura, Gouji Yamada, Takashi Matsuno (Tottori University, Japan) and Shigeru Obayashi (Tohoku University, Japan)

CRF-14 **Shock Induced Temperature Measurement using Laser-Induced Thermal Acoustics**
Toshiharu Mizukaki (Tokai University, Japan) , Shigeru Obayashi (Tohoku University, Japan)

CRF-15 **Streamer Propagation Mechanism in Water**
Hidemasa Fujita (Tohoku University, Japan), Seiji Kanazawa (Oita University, Japan) and Takehiko Sato (Tohoku University, Japan)

CRF-16 **Advancement of Numerical Method for Cavitating Flow around a Hydrofoil**
Yuka Iga, Naoya Ochiai (Tohoku University, Japan), Wang Guoyu, Zhang Mindi and Huang Biao (Beijing Institute of Technology, China)

CRF-17 **Effect of Neighboring Solid Wall on Generation of Residual Microbubbles after Collapse of Laser-Induced Bubble**
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-18 **Observation of Bubble Formation and Collapse Process by Generating a Plasma**
Takehiko Sato (Tohoku University, Japan), Takashi Miyahara (Shizuoka University, Japan) and Tatsuyuki Nakatani (Toyo Advanced Technologies Company, Ltd., Japan)

CRF-19 **Analysis of Plasma Flow at Gas-Liquid Interface for Biological Interaction**
Naoya Kishimoto (Tohoku University, Japan), Tetsuji Shimizu, Gregor E.Morfill (Max-Planck Institute for Extraterrestrial Physics, Germany) and Takehiko Sato (Tohoku University, Japan)

CRF-20 **Anti-bacterial Effect of a Dielectric Barrier Discharge Plasma against Biofilm-producing Gram Negative Bacilli**
Yoshihisa Nakano, Shigeru Fujimura and Takehiko Sato (Tohoku University, Japan)

CRF-21 **Computational Study on Atmospheric RF Discharge with Kinetic-Fluid Integrated Model**
Zhi-Bin Wang, Pei-Si Le, He-Ping Li, Cheng-Yu Bao (Tsinghua University, China), Hidemasa Takana and Hideya Nishiyama (Tohoku University, Japan)

CRF-22 **Radical Generation During Streamer Propagation in Methane/Air DBD Under High Pressure and High Temperature Conditions**
Hidemasa Takana (Tohoku University, Japan), Yasunori Tanaka (Kanazawa University, Japan) and Hideya Nishiyama (Tohoku University, Japan)

CRF-23 **Investigation of Supersonic Hybrid-Stabilized Argon-Water Arc for Biomass Gasification: The Role of Radiation Transfer Method Used in Computer Simulation**
Jiri Jeništa (Institute of Plasma Physics, Czech Republic), Hidemasa Takana, Hideya Nishiyama (Tohoku University, Japan) and Milan Hrabovskỳ (Institute of Plasma Physics, Czech Republic)

CRF-24 **Instability of High-Temperature Premixed Flames**
Satoshi Kadowaki, Takuya Oshima (Nagaoka University of Technology, Japan) and Hideaki Kobayashi (Tohoku University, Japan)

CRF-25 **Real Time Modeling of Flame Front Evolution by Kinematical Model**
Boris Mazurok, Alex Menschikov, Boris Dolgovesov (Institute of Automation and Electrometry SB RAS, Russia), Roman Fursenko, Sergey Minaev (ITAM SB RAS, Russia) and Kaoru Maruta (Tohoku University, Japan)

CRF-26 **GPU-based Parallel Computations of Low Lewis Number Stretched Premixed Flames**
Roman Fursenko, Sergey Minaev (Khristianovich Institute of Theoretical and Applied Mechanics, SB RAS, Russia), Kaoru Maruta and Hisashi Nakamura (Tohoku University, Japan)

CRF-27 **Numerical Studies of the Reacting Rarefied Flows in Tubes**
Yevgeniy Bondar, Georgy Shoev (Khristianovich Institute of Theoretical and Applied Mechanics, Russia), Kaoru Maruta (Tohoku University, Japan) and Mikhail Ivanov (Khristianovich Institute of Theoretical and Applied Mechanics, Russia)

Chair: Kaoru Maruta (Tohoku University, Japan)
10:40-11:30 **Progress in Transdisciplinary Collaborative Research Project**
Presenter: Jun Ishimoto, Kaoru Maruta, Takehiko Sato (Institute of Fluid Science, Tohoku University, Japan)

12:00-13:00 **Lunch and Poster Session**

Chair: Hidemasa Takana (Tohoku University, Japan)

13:00-14:00 **Short Oral Presentation**
(3 min for Short Oral Presentation)

CRF-28 **Rheological Analysis of the Mechanism of Fetal Brain Hemorrhage**
Takuya Ito, Kenichi Funamoto, Kiyoe Funamoto, Kaori Tanabe, Ai Nakamura, Toshiyuki Hayase and Yoshitaka Kimura (Tohoku University, Japan)

CRF-29 **Left Atrial Vortex**
Muneichi Shibata (Miyagi Cardiovascular and Respiratory Center /Tohoku University, Japan), Tomoyuki Yambe, Kenichi Funamoto and Toshiyuki Hayase (Tohoku University, Japan)

CRF-30 **Computational Simulation of Blood Flow in Intracranial Aneurysms under Patient-Specific Pulsatile Inlet Condition**
Shin-ichiro Sugiyama (Kohnan Hospital, Japan), Kenichi Funamoto, Toshiyuki Hayase (Tohoku University, Japan) and Teiji Tominaga (Tohoku University school of Medicine, Japan)

CRF-31 **Local Blood Flow Instability and Oscillatory Shear in Intracranial Aneurysms**
Shin-ichiro Sugiyama (Kohnan Hospital, Japan), Toshio Nakayama, Makoto Ohta (Tohoku University, Japan) and Teiji Tominaga (Tohoku University School of Medicine, Japan)

CRF-32 **Detection of Microcalcification in Soft Tissue Employing B-Flow "Twinkling" Sign**
Lei Liu (GE Healthcare Japan Corporation, Japan), Kei Ozawa, Kenichi Funamoto, Makoto Ohta, Toshiyuki Hayase (Tohoku University, Japan) and Masafumi Ogasawara (GE Healthcare Japan Corporation, Japan)

CRF-33 **Preliminary Experiments for Investigation on Mechanism of Contra-Coup Injury in Blast-Induced Traumatic Brain Injury**
Atsuhiro Nakagawa, Kinonobu Ohtani (Tohoku University, Japan), Keisuke Goda (University of California, USA), 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-34 **Effect of Initial Conditions of Stent Geometry on Optimized Design of Flow Diverters**
Hitomi Anzai (Tohoku University, Japan), Jean-Luc Falzone, Bastien Chopard (University of Geneva, Switzerland) and Makoto Ohta (Tohoku University, Japan)

CRF-35 **Friction Analysis of Biometal on PVA Biomodel**
Hiroyuki Kosukegawa (Tohoku University, Japan), Vincent Fridrici, Philippe Kapsa, Boyko Stoimenov (Ecole Centrale de Lyon, France), Koshi Adachi and Makoto Ohta (Tohoku University, Japan)

CRF-36 **Study of Magnetic Stimulation for the Peripheral Nerve**
Hitoshi Mori (IFG CO., Ltd., Japan), Toshiyuki Takagi, Shinichi Izumi, Hiroyasu Kanetaka, Eizaburo Suzuki (Tohoku University, Japan) and Toshihiko Abe (IFG CO., Ltd., Japan)

CRF-37 **Springtail Jump on Water Surface**
Toshiya Kainuma, Seiichi Sudo (Akita Prefectural University, Japan), Atsushi Shirai and Toshiyuki Hayase (Tohoku University, Japan)

CRF-38 **Si Single-Electron Transistor with Single-Hole Trap Formed by Photo-Irradiation**
Michito Shinohara, Yuki Kato, Masashi Arita (Hokkaido University, Japan), Akira Fujiwara (NTT Corporation, Japan) and Yasuo Takahashi (Hokkaido University, Japan)

CRF-39 **Optical Properties of Quantum Dot Superlattices**
Takashi Kita, Osamu Kojima and Yuikihiro Harada (Kobe University, Japan)

CRF-40 **Neutral Beam Fabrication Technology for the Double Gate MOSFET**
Kazuhiko Endo (Advanced Industrial Science and Technology, Japan), Akira Wada and Seiji Samukawa (Tohoku University, Japan)

CRF-41 **Low Damage Fabrication of Si Photonic Devices by Neutral Beam Technology**
Jingnan Cai (The University of Tokyo, Japan), Seiji Samukawa (Tohoku University, Japan) and Kazumi Wada (The University of Tokyo, Japan)

CRF-42 **Consolidation of Ti-6Al-4V Powder by a Compression Rotation Shearing Method at Room Temperature**
Sou Kato, Noboru Nakayama (Shinshu University, Japan), Hiroyuki Miki (Tohoku University, Japan) and Hiroyuki Takeishi (Chiba Institute of Technology, Japan)

CRF-43 **Development of Structure-controllable Multi-disk Single-electron Transistors by Ultimate Etching Technique with Bio-templating**
Ichiro Yamashita (Nara Institute of Science and Technology, Japan), Seiji Samukawa (Tohoku University, Japan)

CRF-44 **Development of High Performance Strained-Ge Channel Device Utilizing Neutral-beam Oxidized Film**
Toru Kurebayashi, Yusuke Hoshi, Kentarou Sawano, Yasuhiro Shiraki (Tokyo City University, Japan), Akira Wada and Seiji Samukawa (Tohoku University, Japan)

CRF-45 **Fundamental Study on Spiking Neuron Devices**
Takashi Morie, Haichao Liang, Yilai Sun (Kyushu Institute of Technology, Japan), Makoto Igarashi and Seiji Samukawa (Tohoku University, Japan)

CRF-46 **Numerical Simulation of Electronic States of Regularly Arrayed Si Quantum Dot System**
Nurrul Syafawati Binti Humam, Nobuhiro Tsumori, Motoki Takahashi, Toshiharu Saiki (Keio University, Japan) and Seiji Samukawa (Tohoku University, Japan)

CRF-47 **Development and Flow Evaluation of Electro-Rheological Nano-Suspensions**
Katsufumi Tanaka, Takanobu Hira, Ryuichi Fukui, Haruki Kobayashi, Ryuichi Akiyama (Kyoto Institute of Technology, Japan), Masami Nakano and Shouta Enami (Tohoku University, Japan)

14:00-14:15 BREAK

Chair: Hiroyuki Miki (Tohoku University, Japan)

14:15-15:21 **Short Oral Presentation**
(3 min for Short Oral Presentation)

CRF-48 **Study of Contact Alignment for the Slider Specimen of Tribometer**
Minoru Goto (Ube National College of Technology, Japan), Kosuke Ito (Nihon University, Japan), Hiroyuki Miki and Takanori Takeno (Tohoku University, Japan)

CRF-49 **Tribological Behavior and Electrical Contact Resistance of Metal-containing DLC Coating for Electrically-Conductive Tribo-elements**
Julien Fontaine, Michel Belin, Sandrine Bec, Thierry Le Mogne (Ecole Centrale de Lyon, France), Toshiyuki Takagi, Takanori Takeno, Koshi Adachi and Hiroyuki Miki (Tohoku University, Japan)

CRF-50 **Optimization of Ink Viscosity of a Continuous Inkjet by Experiment and Numerical Simulation**
Masami Nakano (Tohoku University, Japan), Tameo Nakanishi and Hinoki Tsunokake (Yamagata University, Japan)

CRF-51 **Impact of Liquid Drops on Heated Grooved Surfaces**
Sivakumar Deivandren (Indian Institute of Science, India), Kazunari Katagiri, Tomoki Nakajima, Hidemasa Takana and Hideya Nishiyama (Tohoku University, Japan)

CRF-52 **Transport Phenomena at Nano-Structured Interfaces**
Masahiko Shibahara (Osaka University, Japan), Taku Ohara and Gota Kikugawa (Tohoku University, Japan)

CRF-53 **A Classical Molecular Dynamics Study on Thermodynamic Properties of Cryogenic Hydrogen/Oxygen System**
Shin-ichi Tsuda (Shinshu University, Japan), Masato Tomi, Nobuyuki Tsuboi (Kyushu Institute of Technology, Japan), Hiroki Nagashima, Takashi Tokumasu (Tohoku University, Japan) and Mitsuo Koshi (The University of Tokyo, Japan)

CRF-54 **A Molecular Dynamics Study of Momentum Transport in a Nanoscale Liquid Bridge**
Takashi Tokumasu (Tohoku University, Japan), Marie-Hélène Meurisse, Nicolas Fillot and Philippe Vergne (INSA-Lyon, France)

CRF-55 **Proton Transport in Hydrogen Bond Network of Confined Water**
Nobuya Miyoshi, Ikuya Kinefuchi (The University of Tokyo, Japan), Takashi Tokumasu (Tohoku University, Japan), Shu Takagi and Yoichiro Matsumoto (The University of Tokyo, Japan)

CRF-56 **Oscillation Characteristics of Levitated Magnet-Magnetic Fluid System**
Michihiro Shinozaki, Seiichi Sudo (Akita Prefectural University, Japan), Hidemasa Takana and Hideya Nishiyama (Tohoku University, Japan)

CRF-57 **New Exact Solutions for Vortex Rings with Swirl and Magnetic Field**
Yuji Hattori (Tohoku University, Japan), Stefan G. Llewellyn Smith (UCSD, USA)

CRF-58 **A Numerical Study of the Effect of Large Deformations of a Trailing Vortex on Its Breakdown**
Naoya Takahashi (Tokyo Denki University, Japan), Takeshi Miyazaki (The University of Electro-Communications, Japan), Nozomu Hatakeyama, Yuji Hattori (Tohoku Univeresity, Japan)

CRF-59 **The Instability of a Helical Vortex Tube with Axial Flow**
Yasuhide Fukumoto (Kyushu University, Japan), Yuji Hattori (Tohoku University, Japan)

CRF-60 **Numerical and Experimental Research on Active Control of the Hole-Tone Feedback Problem**
Mikael A. Langthjem (Yamagata University, Japan), Masami Nakano (Tohoku University, Japan)

CRF-61 **Entropy Flow in Magnetically Ordered Heusler Alloys under Influence of Temperature or Magnetic Field**
Vladimir Khovaylo, Ekaterina Avilova (National University of Science and Technology, Russia), Hiroyuki Miki, Toshiyuki Takagi, Makoto Ohtsuka (Tohoku University, Japan), Vasiliy Buchelnikov (Chelyabinsk State University, Russia), Konstantin Skokov (Tver State University, Russia / Leibniz Institute for Solid State and Materials Research, Germany) and Oliver Gutfleisch (Leibniz Institute for Solid State and Materials Research, Germany)

CRF-62 **Simulation Analysis on the Change of B-H Curve Pattern for Sensitized Alloy 600**
Katsuhiko Yamaguchi, Kenji Suzuki (Fukushima University, Japan), Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan)

CRF-63 **Nondestructive Evaluation of Austenitic Stainless Steel Residual Strain with EMAT**
Liqiang Zhong (Tsinghua University, China), Tetsuya Uchimoto, Toshiyuki Takagi (Tohoku University, Japan), Naoki Chigusa (Kansai Electric Power Company, Inc., Japan) and Luming Li (Tsinghua University, China)

CRF-64 **Reconstruction of Wall Thinning from Pulse Eddy Current Signals**
Zhenmao Chen (Xi'an Jiaotong University, China), Shejuan Xie (Tohoku University, Japan), Xiaowei Wang, Yong Li (Xi'an Jiaotong University, China), Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan)

CRF-65 **Energy Transfer Simulation and Analysis on Mega-scale Environment**
Noboru Yamada (Nagaoka University of Technology, Japan), Atsushi Sakurai (Niigata University, Japan), Atsuki Komiya and Shigenao Maruyama (Tohoku University, Japan)

CRF-66 **Heat Transfer Analysis in a Biological Tissue Exposed to Laser Irradiation**
Atsushi Sakurai (Niigata University, Japan), Yoshiyuki Sato, Shigenao Maruyama, Junnosuke Okajima and Atsuki Komiya (Tohoku University, Japan)

CRF-67 **Usage of the Lattice Boltzmann Method Applied to the Analysis of Radiative Transfer in a Participating Medium Subjected to Collimated Loading**
Subhash C. Mishra, Rohan Ranganath Vernekar (Indian Institute of Technology Guwahati, Indai)

CRF-68 **Detection Accuracy Analysis of Several Eddy Current Probes on the Impact Damage of Carbon-Fibre Plastic Composite**
Jun Cheng, Jinhao Qiu (Nanjing University of Aeronautics & Astronautics, China), Toshiyuki Takagi, Tetsuya Uchimoto (Tohoku University, Japan), Fuqiang Wu (Nanjing University of Aeronautics & Astronautics, China) and Ning Hu (Chiba University, Japan)

CRF-69 **Evaluation of Thin Coating Layers using Non-Specular Reflection of Rayleigh Waves**
Hak-Joon Kim, Sung-Jin Song (Sungkyunkwan University, Korea), Sung-Duk Kwon (Andong National University, Korea), Toshiyuki Takagi, Hiroyuki Miki and Tetsuya Uchimoto (Tohoku University, Japan)

15:30-16:30 **Poster Session**

PS2: 5th Functionality DEsign of the COntact Dynamics:(DECO2011)

HAGI
November 11, 2011

Chair: Julien Fontaine (Ecole Centrale de Lyon, France)

PS2-1 12:30-13:00 **Geometrical Effects in Contact Mechanics: From Atomic Membranes to Evolving Asperities *(Invited)*** 642
Robert W. Carpick, Tevis D. B. Jacobs, Xin Z. Liu and Qunyang Li (University of Pennsylvania, USA)

PS2-2 13:00-13:25 **Tribological Properties of Me-DLC Containing Ag and Cu *(Invited)*** 644
Minoru Goto (Ube National College of Technology, Japan), Julien Fontaine, Sandrine Bec, Michel Belin, Thierry Le Mogne (Ecole Cenrale de Lyon, France) Kosuke Ito (Nihon University, Japan), Takanori Takeno and Hiroyuki Miki (Tohoku University, Japan)

PS2-3 13:25-13:50 **Structural and Tribological Properties of DLC Films Prepared by Unbalanced Magnetron Sputtering (UBMS) *(Invited)*** 646
Hirotaka Ito, Kenji Yamamoto (Kobe Steel Ltd., Japan)

13:50-14:00 BREAK

Chair: Hiroyuki Miki (Tohoku University, Japan)

PS2-4 14:00-14:25 **Impact - Sliding of Solids: Effect of Contact Conditions *(Invited)*** 648
Philippe Kapsa, Maha Messaadi, Gaetan Bouvard and Vincent Fridrici (Ecole Centrale de Lyon, France)

PS2-5 14:25-14:45 **Improvement of Vacuum Boundary Lubrication Properties of Multiply Alkylated Cyclopentane Oil by the Concurrent use with Diamond-like Carbon Coating** 650
Masanori Iwaki (Tohoku University / Japan Aerospace Exploration Agency, Japan), Takanori Takeno, Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan)

PS2-6 14:45-15:05 **Deposition and Tribological Behavior of Amorphous Silicon-Carbon Coatings** 652
Takanori Takeno, Masaki Sawano, Pengfei Wang, Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan)

15:05-15:15 BREAK

Chair: Toshiyuki Takagi (Tohoku University, Japan)

PS2-7 15:15-15:35 **Preparation and Tribological Characterization of Carbon Nitride Coatings in a RF PECVD-DC PVD Hybrid Coating Process** 654
Pengfei Wang, Takanori Takeno, Koshi Adachi, Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan)

PS2-8 15:35-16:00 **Multiple Magnetization Reversal in $Cr_3(PO_4)_2$ *(Invited)*** 656
Alexander Vasiliev, Olga Volkova (Moscow State University, Russia), Andrea Schmidt, Robert Glaum (Giessen University, Germany), Marius Millot, Jean-Marc Broto (Toulouse University, France), Jiunn-Yuang Lin (National Chiao-Tung University, Taiwan), Rüdiger Klingeler, Mahmoud Abdel-Hafiez, Anja Wolter and Bernd Buechner (Leibniz Institute for Solid State and Materials Research, Germany)

PS3: Plasma Medicine and Cell Engineering

FUJI
November 10, 2011

13:00-13:05 **Opening**
Takehiko Sato (Tohoku University, Japan)

Chair: Takehiko Sato (Tohoku University, Japan)

PS3-1 13:05-13:45 **Nonthermal Plasma-mediated Cancer Cell Death; Targeted Cancer Treatment (*Keynote Lecture*)** 660
Byul-Bo Ra Choi, Uk-Kyu Kim, Hae-Jun Lee (Pusan National University, Korea), Jae-Koo Lee (Pohang University of Science and Technology, Korea) and Gyoo-Cheon Kim (Pusan National University, Korea)

Chair: Toshiro Ohashi (Hokkaido University, Japan)

PS3-2 13:45-14:25 **Enhancing Skin Repair through a 3D In-Vitro Human Skin Equivalent Model (*Keynote Lecture*)** 662
Kerry Manton, Rebecca Dawson, Yan Xie, Derek Van Lonkhuyzen, David Leavesley and Zee Upton (Queensland University of Technology, Australia)

14:25-14:45 BREAK

Chair: Takehiko Sato (Tohoku University, Japan)

PS3-3 14:45-15:15 **Experimental Studies of Plasma Medicine on Prevention for the Adhesion (*Invited*)** 664
Hajime Sakakita, Yuzuru Ikehara (National Institute of Advanced Industrial Science and Technology (AIST), Japan)

PS3-4 15:15-15:45 **Regenerative Medicine Using Novel Biomedical Plasma Techniques (*Invited*)** 666
Takamichi Hirata, Chihiro Tsutsui and Akira Mori (Tokyo City University, Japan)

15:45-16:00 BREAK

Chair: Toshiro Ohashi (Hokkaido University, Japan)

PS3-5 16:00-16:30 **Engineering Tissues From the Bottom up: Designing Microarchitectural Features of Tissues (*Invited*)** 668
Yukiko T. Matsunaga (The University of Tokyo / Japan Science and Technology Agency, Japan)

PS3-6 16:30-17:00 **Biomechanical Regulation of Actin Cytoskeleton Dynamics in Migrating Cells (*Invited*)** 670
Taiji Adachi, Kennedy O. Okeyo (Kyoto University, Japan)

17:00-17:15 BREAK

Chair: Takehiko Sato (Tohoku University, Japan)

PS3-7 17:15-17:45 **Biological and Medical Applications of Pulsed Power (*Invited*)** 672
Sunao Katsuki, Masahiko Yano, Kazunori Mitsutake, Keisuke Abe and Hidenori Akiyama (Kumamoto University, Japan)

PS3-8 17:45-18:15 **Advantages of Cascade Plasma Torches for APS and SPS of Bioactive Hydroxyapatite Coatings (*Invited*)** 674
Oleg P. Solonenko, Andrey V. Smirnov, Igor P. Gulyaev, Marina V., Chaikina, Andrey V. Pefiliev (Shiberian Branch of RAS, Russia)

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Chair: Takamichi Hirata (Tokyo City University, Japan)

PS3-9 9:00-9:40 **Atmospheric Plasma for Wound Treatment: Lab to Clinical Study (*Keynote Lecture*)** 676
Tetsuji Shimizu, Julia L Zimmermann, Gregor E Morfill (Max-Planck Institute for extraterrestrial physics, Germany), Georg Isbary and Wilhelm Stolz (Hospital Munich Schwabing, Germany)

PS3-10 9:40-10:10 **Plasma Surface Treatment of Artificial Bones and its Application to Regenerative Medicine (*Invited*)** 678
Satoshi Hamaguchi, Dae-Sung Lee, Kazuto Masuda, Yu Moriguchi, Akira Myoui and Hideki Yoshikawa (Osaka University, Japan)

10:10-10:25 BREAK

Chair: Toshiro Ohashi (Hokkaido University, Japan)

PS3-11 10:25-10:55 **Control of Cell Adhesion and Functions Using 2D and 3D Biocompatible Surfaces (*Invited*)** 680
Masaru Tanaka (Yamagata University, Japan)

PS3-12 10:55-11:25 **Effect of Mechanical Loading on Chondrocyte Biosynthesis of Extracellular Matrix in Agarose Construct (*Invited*)** 682
Yoshinori Sawae (Kyushu University, Japan)

PS3-13 11:25-11:45 **Involvement of ERK in Morphological Response of Endothelial Cells to Spatial Gradient of Shear Stress** 684
Xiaobo Han, Naoya Sakamoto, Naoki Saito, Masaaki Sato, Makoto Ohta (Tohoku University, Japan)

11:45-13:00 LUNCH

Chair: Takamichi Hirata (Tokyo City University, Japan)

PS3-14 13:00-13:30 **Modeling and Simulation of Gas Plasma-assisted Wound Healing (*Invited*)** 686
Yukinori Sakiyama, Marat Orazov, David Graves (University of California at Berkeley, USA) and Gregor Morfill (Max Planck Institute for Extraterrestrial Physics, Germany)

PS3-15 13:30-14:00 **Traction Force Measurement During Cell Migration By Using Micropillar-Integrated Device (*Invited*)** 688
Toshiro Ohashi, Akito Sugawara (Hokkaido University, Japan), Justin J. Cooper-White (The University of Queensland, Australia) and Eijiro Maeda (Hokkaido University, Japan)

PS3-16
14:00-14:30

Effect of Chemical Species Generated by a Plasma Flow on Inactivation of HeLa Cell Viability (*Invited*) 690

Takehiko Sato, Mayo Yokoyama (Tohoku University, Japan) and Kohei Johkura (Shinshu University, Japan)

14:30

Closing

Toshiro Ohashi (Hokkaido University, Japan)

PS4: The 12th Japan-Korea Students' Symposium
New Energy Flow for Sustainable Society
-Properties and Applications of Energy Materials-

AKEBONO (EAST)
November 10, 2011

Session1
Chairs: Hyung-Soon Kwon and Riyan Achmad Budiman

PS4-1 8:50-9:10 — **Low-temperature Operating Micro–SOFC with Perovskite–type Proton Conductive Electrolytes** — 694
Yu Inagaki, Kensuke Kubota, Fumitada Iguchi, Syuji Tanaka, Noriko Sata, Masayoshi Esashi and Hiroo Yugami (Tohoku University, Japan)

PS4-2 9:10-9:30 — **Electrical Characterization of Ni-YSZ Supported Thin Film YSZ Electrolyte with GDC Top Buffer Layer** — 696
Eui-Chol Shin, Jung-Mo Jo (Chonnam National University, Korea), Pyung-An Ahn, Ho-Sung Noh, Ji-Won Sohn, Jong-Ho Lee (Korea Institute of Science and Technology, Korea) and Jong-Sook Lee (Chonnam National University, Korea)

PS4-3 9:30-9:50 — **Investigation on Oxygen Reduction Reaction on an $La_{1-x}Sr_xCo_{1-y}Fe_yO_{3-\delta}$ Thin Film Electrode** — 698
Li Xinxin, Atsushi Unemoto, Shin-Ichi Hashimoto, Koji Amezawa and Tatsuya Kawada (Tohoku University, Japan)

9:50-10:00 BREAK

Session2
Chairs: Jakyu Chun and Yusuke Kawamura

PS4-4 10:00-10:20 — **Effect of Nb Doping on the Properties of $SrCoO_{3-\delta}$ Based Cathode for Intermediate Temperature Solid Oxide Fuel Cells** — 702
Fang Wang, Keiji Yashiro, Kazuhisa Sato and Junichiro Mizusaki (Tohoku University, Japan)

PS4-5 10:20-10:40 — **Fabrication of Anode-Supported Type Protonic Ceramic Fuel Cells (PCFCs)** — 706
Sung Min Choi (Korea Institute of Science and Technology / Korea University, Korea), Jong-Heun Lee (Korea University, Korea), Jong-Ho Lee, Hae-Weon Lee, Ho Il Ji and Byung-Kook Kim (Korea Institute of Science and Technology, Korea)

PS4-6 10:40-11:00 — **Mass Transport in Perovskite Oxides (La,Sr)(Co,Fe)O_3** — 708
Honami Kudo, Keiji Yashiro and Junichiro Mizusaki (Tohoku University, Japan)

11:00-11:10 BREAK

Session3
Chairs: Dasari Hari Prasad and Tomohisa Masumitsu

PS4-7 11:10-11:30 — ***In-situ* Evaluation of Oxygen Chemical Potential in an SOFC Cathode** — 710
Yoshinobu Fujimaki, Hidetaka Watanabe, Koji Amezawa, Tatsuya Kawada (Tohoku University, Japan) and Yasuko Terada (JASRI, Japan)

PS4-8 11:30-11:50 — **Study on the Origin and Characteristics of Oxygen Storage Capacity for Pr doped Ceria** — 714
Kiyong Ahn (Korea Institute of Science and Technology / Hanyang University, Korea), Yong-Chae Chung (Hanyang University, Korea), Hae-Weon Lee and Jong-Ho Lee (Korea Institute of Science and Technology, Korea)

PS4-9 11:50-12:10 — **Effects of Redox Cycling on the Mechanical Properties of Ni-YSZ Cermets for SOFC Anodes** — 716
Taihei Miyasaka, Shinji Sukinou, Satoshi Watanabe, Kazuhisa Sato, Tatsuya Kawada, Junichiro Mizusaki and Toshiyuki Hashida (Tohoku University, Japan)

PS4-10 12:10-12:30 — **Thermo-Mechanical Analysis of Cyclic Reduction and Oxidation Behavior of SOFC Ni-YSZ Cermets** — 718
Shinji Sukino, Taihei Miyasaka, Satoshi Watanabe, Kazuhisa Sato Tatsuya Kawada, Junichiro Mizusaki and Toshiyuki Hashida (Tohoku University, Japan)

12:30-13:30 LUNCH

Tutorial1
Chairs: Taewon Lee and Hidetaka Watanabe

13:30-14:15 — **Tutorial Lecture**
Kisuk Kang (Seoul National University, Korea)

14:15-14:30 BREAK

Session4
Chairs: Dae-Hee Kim and Yu Cheol Shin

PS4-11 14:30-14:50 — **Investigation of Fracture Mechanism in Carbon Nanotube Reinforced Alumina Composites and Its Relation with Nanostructure** — 720
Keiichi Shirasu, Go Yamamoto, You Nozaka, Mamoru Omori, Toshiyuki Takagi and Toshiyuki Hashida (Tohoku University, Japan)

PS4-12 14:50-15:10 — **Gradient Structure Modification of LSC Cathode for Performance Improvement of Thin Film SOFCT** — 724
Jaeyeon Hwang (Korea Institute of Science and Technology / Korea University, Korea), Doo-Hwan Myung (Korea Institute of Science and Technology / Yonsei University, Korea), Hae-Weon Lee, Byung-Kook Kim, Jong-Ho Lee and Ji-Won Son (Korea Institute of Science and Technology, Korea)

PS4-13 15:10-15:30 — **Evaluation Method of Stress Conditions in Operated SOFC by In-Situ Raman Scattering Spectroscopy** — 726
Syo Onodera, Masafumi Nagai, Fumitada Iguchi, Noriko Sata, Tatsuya Kawada and Hiroo Yugami (Tohoku University, Japan)

PS4-14 **Study of Alcohol Fueled Single Chamber Solid Oxide Fuel Cells** 730
15:30-15:50 Ryusuke Mihara, Noriko Sata, Kohei Oba, Yuu Sugawara (Tohoku University, Japan), Yuki Nagao (Kyoto University, Japan), Fumitada Iguchi and Hiroo Yugami (Tohoku University, Japan)

PS4-15 **Nonstoichiometry and Thermoelectric Efficiency of β-$Ag_{2+\delta}Te$** 732
15:50-16:10 Wonhyo Joo (Seoul National University, Korea)

16:10-16:25 BREAK

Session5
Chairs: Ji-Hyun Kim and Tetsuya Hori

PS4-16 **Effects of Temperature and Oxygen Partial Pressure on Mechanical Properties of $La_{0.6}Sr_{0.4}Co_{1-y}Fe_yO_{3-\delta}$** 734
16:25-16:45 Yuta Kimura, Takuto Kushi, Shin-Ichi Hashimoto, Satoshi Watanabe, Koji Amezawa, Tatsuya Kawada, Yasuhiro Fukuda, Atsushi Unemoto, Keiji Yashiro, Junichiro Mizusaki, Kazuhisa Sato and Toshiyuki Hashida (Tohoku University, Japan)

PS4-17 **Evaluation of High Temperature Mechanical Properties of $La_{1-x}Sr_xMnO_{3+\delta}$ under Controlled Atmosphere** 738
16:45-17:05 Yoshikazu Shirai, Yuta Kimura, Takuto Kushi, Shin-Ichi Hashimoto, Kazuhisa Sato, Keiji Yashiro, Koji Amezawa, Junichiro Mizusaki and Tatsuya Kawada (Tohoku University, Japan)

PS4-18 **Electrical Conductivity of La-doped $BaTiO_3$ Thin Film via Pulsed Laser Deposition** 742
17:05-17:25 Hannah Cho (Seoul National University, Korea)

PS4-19 **Oxygen Potential Measurement in Oxygen Nonstoichiometric Oxides under the Stress** 744
17:25-17:45 Tomohisa Masumitsu, Satoshi Watanabe, Shin-Ichi Hashimoto, Koji Amezawa and Tatsuya Kawada (Tohoku University, Japan)

PS4-20 **Insulation Resistance Degradation of $BaTiO_3$ under D.C Bias** 746
17:45-18:05 Hyung-Soon Kwon (Seoul National University, Korea)

AKEBONO (EAST)
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Session6
Chairs: Eui-Chol Shin and Li Xinxin

PS4-21 **Development of Evaluation Techniques of the Electrochemically Active Zone in a Ni-GDC Cermet Anode for SOFC** 748
8:50-9:10 Hidetaka Watanabe, Shin-ichi Hashimoto, Koji Amezawa and Tatsuya Kawada (Tohoku University, Japan)

PS4-22 **A Correct Access to Hydration Phenomenon of the Proton Conductor, Barium Zirconate, and Effects of NiO as a Sintering Aid.** 752
9:10-9:30 Euisung Kim (Seoul National University, Korea)

PS4-23 **Electrochemical Oxygen Reduction Process on $LaNi_{0.6}Fe_{0.4}O_3$ Electrode** 754
9:30-9:50 Riyan Achmad Budiman, Shin-Ichi Hashimoto, Koji Amezawa and Tatsuya Kawada (Tohoku University, Japan)

9:50-10:00 BREAK

Session7
Chairs: Sung Min Choi and Fang Wang

PS4-24 **Stress Effect for Conductivity Characteristics of Functional Ceramics** 758
10:00-10:20 Yusuke Kawamura, Kazuhisa Sato, Keiji Yashiro and Junichiro Mizusaki (Tohoku University, Japan)

PS4-25 **The Effect of Electric Field on Ternary Oxides – Electrotransport and Decomposition in Model System $NiTiO_3$** 762
10:20-10:40 Jakyu Chun (Seoul National University, Korea)

PS4-26 **Conductivity Variation in Mixed Ions Electric Conductor under Uniaxial Stress** 766
10:40-11:00 Shusaku Nakakawaji, Kazuhisa Sato, Keiji Yashiro and Junichiro Mizusaki (Tohoku University, Japan)

11:00-11:10 BREAK

Session8
Chairs: Kiyong Ahn and Shinji Sukino

PS4-27 **Design of Surface Periodic Microstructure on Refractory Metals for Solar Selective Absorbers** 768
11:10-11:30 Kiyotaka Konno, Makoto Shimizu, Hiroaki Kobayashi, Fumitada Iguchi and Hiroo Yugami (Tohoku University, Japan)

PS4-28 **Structural Characterization and CO Oxidation of $Ce_{0.65}Zr_{0.25}RE_{0.1}O_2$ Nano-composite Oxides Synthesized By Glycine-nitrate-process** 770
11:30-11:50 D.Hari Prasad, S.Y.Park, H. Ji, H.-R. Kim, J.-W. Son, B.-K.Kim, H.-W. Lee and J.-H. Lee (Korea Institute of Science and Technology, Korea)

PS4-29 **The Evaluation of Solar Selective Absorbers Using Refractory Metal in Concentrated Solar Power System** 774
11:50-12:10 Hiroaki Kobayashi, Kiyotaka Konno, Makoto Shimizu, Fumitada Iguchi and Hiroo Yugami (Tohoku University, Japan)

PS4-30 **Development of High Temperature Solar Selective Absorber Using Refractory Material with Surface Microstructures** 776
12:10-12:30 Makoto Shimizu, Kiyotaka Konno, Fumitada Iguchi and Hiroo Yugami (Tohoku University, Japan)

12:30-13:30 LUNCH

Tutorial2
Chairs: Wonhyo Joo and Makoto Shimizu

13:30-14:15 **Tutorial Lecture**
Noriko Sata (Tohoku University, Japan)

14:15-14:30 BREAK

Session9
Chairs: Jaeyeon Hwang and Keiichi Shirasu

PS4-31 14:30-14:50 **Influence of Oxygen Nonstoichiometry Change on Thermal Properties of $La_{0.6}Sr_{0.4}Co_{1-x}Fe_xO_{3-\delta}$** 780
Yu Cheol Shin, Atsushi Unemoto, Shin-ichi Hashimoto, Koji Amezawa and Tatsuya Kawada (Tohoku University, Japan)

PS4-32 14:50-15:10 **Partial Conductivities and Onsager Transport Coefficient Matrix of $BaCo_{0.7}Fe_{0.22}Nb_{0.08}O_{3-\delta}$** 782
Taewon Lee (Seoul National University, Korea)

PS4-33 15:10-15:30 **Ionic Conductivity in Electrolyte Thin Films Fabricated by Pulsed Laser Deposition** 786
Yuta Fujiwara, Yoshikazu Shibata, Fumitada Iguchi, Noriko Sata and Hiroo Yugami (Tohoku University, Japan)

PS4-34 15:30-15:50 **Multi-Protons Migration in Barium Zirconate Using Density Functional Theory** 788
Dae-Hee Kim, Yong-Chan Jeong (Korea University of Technology and Education, Korea), Byung-Kook Kim (Korea Institute of Science and Technology, Korea) and Yeong-Cheol Kim (Korea University of Technology and Education, Korea)

PS4-35 15:50-16:10 **Stability of $La_{0.6}Sr_{0.4}Co_{0.2}Fe_{0.8}O_{3-\delta}$ under SOFC Operating Conditions** 790
Mi-Young Oh, Atsushi Unemoto, Shin-ichi Hashimoto, Koji Amezawa and Tatsuya Kawada (Tohoku University, Japan)

Session10
Chairs: Hannah Cho and Yuta Kimura

PS4-36 16:25-16:45 **Fabrication of Proton Conducting Ceramic Target for Physical Vapor Deposition (PVD)** 794
Kiho Bae (Korea University/ Korea Institute of Science and Technology, Korea), Ji Won Son (Korea Institute of Science and Technology, Korea) and Joon Hyung Shim (Korea University, Korea)

PS4-37 16:45-17:05 **Protonic Conduction and Defect Structures in Rare Earth Phosphate** 796
Hiroaki Matsuo, Hayato Takahashi (Tohoku University, Japan), Akihide Kuwabara (Japan Fine Ceramics Center, Japan), Shinichi Hashimoyo, Koji Amezawa and Tatsuya Kawada (Tohoku University, Japan)

PS4-38 17:05-17:25 **Effects of Powder Synthesis Process on the Conductivity of Doped Ceria Electrolytes** 798
Ji-Hyun Kim, Jun-Young Park (Sejong University, Korea)

PS4-39 17:25-17:45 **Electrochemical Properties and Thermochemical Stabilities of $Pr_{2-x}Sr_xNiO_{4+\delta}$ Cathodes** 800
Tetsuya Hori, Keiji Yashiro and Junichiro Mizusaki (Tohoku University, Japan)

PS4-40 17:45-18:05 **Highly Laminated Electrospun ZnO Nanofibrous Film on Transparent Conducting Oxide for Photovoltaic Device** 804
Jinsoo Kim (Seoul National University, Korea), Sanghoon Yoon, Jung-Keun Yoo (KAIST, Korea), Jongsoon Kim, Haegyeom Kim and Kisuk Kang (Seoul National University, Korea)

Special Session:
Memorial Session for the Late Professor Hiroshi Higuchi

SEIUN
November 10, 2011

Chair: Toshiyuki Hayase (Tohoku University, Japan)
17:00-18:30
Presenter;

Mark Glauser (Syracuse University, USA)

Yasuaki Kohama (Tohoku University, Japan)

Yoshiya Nakamura (INC Engineering Co., Ltd Japan)