

Preface

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.

"The Sixth International Conference on Flow Dynamics", from 4th to 6th of November in Sendai, is now 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.

The Conference is comprised of a General Session and 11 Organized Sessions as follows:

General Session

- Current Topics in Flow Dynamics; organized by N. Tomita, H. Yamashita and Z. Fuadi

Organized Sessions

- Hybrid Rocket Propulsion and Related Fluid Dynamics; organized by T. Shimada and K. Sawada
- Functionality Design of the Contact Dynamics; organized by T. Takagi, T. Uchimoto and H. Miki
- Advanced Control of Smart Fluids and Fluid Flows; organized by M. Nakano and Y. Fukunishi
- Energy and Environmental Systems over Nano/Meso/Macro Scales; organized by A. Miyamoto and N. Hatakeyama
- Supersonic Technology Workshop (AFI/TFI-2009); organized by S. Obayashi
- IFS Collaborative Research Forum (AFI/TFI-2009) & IFS Research Exhibition (AFI/TFI-2009) organized by J. Ishimoto, S. Jeong.
- The Fifth International Students/Young Birds Seminar on Multi-scale Flow Dynamics; organized by Y. Saito and H. Takeda, and is supervised by K. Sato, J. Mizusaki and Y. Iga
- The 10th Japan-Korea Students' Symposium—Fast Ion Transport in Solids and Through Interfaces—The Related Materials and Phenomena; organized by E. Niwa and H.S. Kwon, and is supervised by J. Mizusaki and H. I. Yoo
- GCOE, IFS-Tsinghua University Joint Workshop 2009; organized by S. Maruyama, X. Liang and J. Ishimoto
- Liaison Office Session
Topics: Possibility of International Joint Education for Higher Research; organized by T. Takagi and M. Ohta
- Alumni Session; organized by S. Maruyama

On behalf of the organizing committee of the Sixth 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 Program Leader
Tohoku University Global COE Program
"World Center of Education and Research for Trans-disciplinary Flow Dynamics"

Sixth International Conference on Flow Dynamics

Organized and Sponsored by:

The Global COE Program, "World Center of Education and Research for Trans-disciplinary Flow Dynamics"

In cooperation with:

- Aoba Foundation for the Promotion on Engineering
- Atomic Energy Agency of Japan
Computational Science and Engineering Division
- Brain korea 21, materials education and research division and WCU (world class university)
- Combustion Society of Japan
- Cryogenic Association of Japan
- The Japan Society of Applied Electromagnetics and Mechanics

SCOPE:

We, the people living in the 21st century are now 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 that reason, 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.

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"The Sixth International Conference on Flow Dynamics", from 4th to 6th of November in Sendai, is now 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 very competitive field of "Flow Dynamics".

We cordially invite you, the researchers and technologists, to participate in this conference.

Organizing Committee Members:

Shigenao Maruyama (General Chair)	Hideyuki Aoki	Keisuke Asai
Yu Fukunishi	Hidetoshi Hashizume	Nozomu Hatakeyama
Yuka Iga	Jun Ishimoto	Takatoshi Ito
Tetsuya Kodama	Atsuki Komiya	Kaoru Maruta
Goro Masuya	Hiroyuki Miki	Hideo Miura
Takatoshi 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
Toshiyuki Takagi	Yuriko Takeshima	Takashi Tokumasu
Michio Tokuyama	Shigeru Yonemura	Hiroo Yugami

Executive Committee Members:

Junichiro Mizusaki (6th ICFD chair), Shigeru Obayashi (AFI/TFI chair), Toshiyuki Takagi (CEO)
Toshiyuki Hayase (IFS Director)

Conference 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: icfd2009@gcoe.ifs.tohoku.ac.jp

Administrative Staff

Zahrul Fuadi, Natsuko Hatakeyama, Naoko Hosoyachi, Hisanori Masuda, Tomomi Nagayoshi, Fumio Saito, Yuko Sasaki, Yuko Shimokawara, Ryoko Suzuki, Aki Taguchi, Masashi Takeyama, Noriko Tomita, Naoto Wada, Yukie Yamakawa, Hiroshi Yamashita

Plenary Lectures



Rheology for Efficient Energy Production, Transportation, and Conservation

Rongjia Tao (Temple University)
(9:20-10:10, November 4, at Sendai East)



An Odyssey to Experimentally Verify the Onsager Reciprocity in Flow of Charged Particles in Solids

Han-Il Yoo (Seoul National University)
(10:15-11:05, November 4, at Sendai East)



Ultimate Nanofabrication Technology by Neutral Particle Beam

Seiji Samukawa (Tohoku University)
(11:10-12:00, November 4, at Sendai East)

Sessions

General Session

Current Topics in Flow Dynamics

Organizer: Noriko Tomita, Hiroshi Yamashita and Zahrul Fuadi

Organized Session

Hybrid Rocket Propulsion and Related Fluid Dynamics

Organizer: Toru Shimada, Keisuke Sawada

Functionality Design of the Contact Dynamics

Organizer: Toshiyuki Takagi, Tetsuya Uchimoto and Hiroyuki Miki

Advanced Control of Smart Fluids and Fluid Flows

Organizer: Masami Nakano, Yu Fukunishi

Energy and Environmental Systems over Nano/Meso/Macro Scales

Organizer: Akira Miyamoto, Nozomu Hatakeyama

Supersonic Technology Workshop (AFI/TFI-2009)

Organizer: Shigeru Obayashi

IFS Collaborative Research Forum (AFI/TFI-2009) & IFS Research Exhibition (AFI/TFI-2009)

Organizer: Jun Ishimoto, Shinkyu Jeong

The Fifth International Students/Young Birds Seminar on Multi-scale Flow Dynamics

Organizer: Yasuhiro Saito, Hiroki Takeda

Supervisor: Kazuhisa Sato, Junichiro Mizusaki, Yuka Iga

The 10th Japan-Korea Students' Symposium

–Fast Ion Transport in Solids and Through Interfaces –The Related materials and Phenomena –

Organizer: Eiki Niwa, Hyung-Soon Kwon

Supervisor: Junichiro Mizusaki, Han-Il Yoo

GCOE, IFS-Tsinghua University Joint Workshop 2009

Organizer: Shigenao Maruyama, X. Liang, Jun Ishimoto

Liaison Office Session

Topic: Possibility of International Joint Education for higher research

Organizer: Toshiyuki Takagi, Makoto Ohta

Alumni Session

Organizer: Shigenao Maruyama

General Information

Registration:

8:00 - , Wednesday, November 4

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 5

The conference registration desk is located in the lobby, 3rd floor.

8:00 - , Friday, November 6

The conference registration desk is located in the lobby, 3rd floor.

Opening: (at SENDAI (EAST))

9:00 - , Wednesday, November 4

Students/Young Birds Friendship Night: (at SAKURA Hall, Tohoku University)

18:00 – 20:00, Wednesday, November 4

All students and young researchers can attend to Students/Young Birds Friendship Night.

Banquet: (at SENDAI (SOUTH WEST))

19:00 – 21:00, Thursday, November 5

Internet access corner

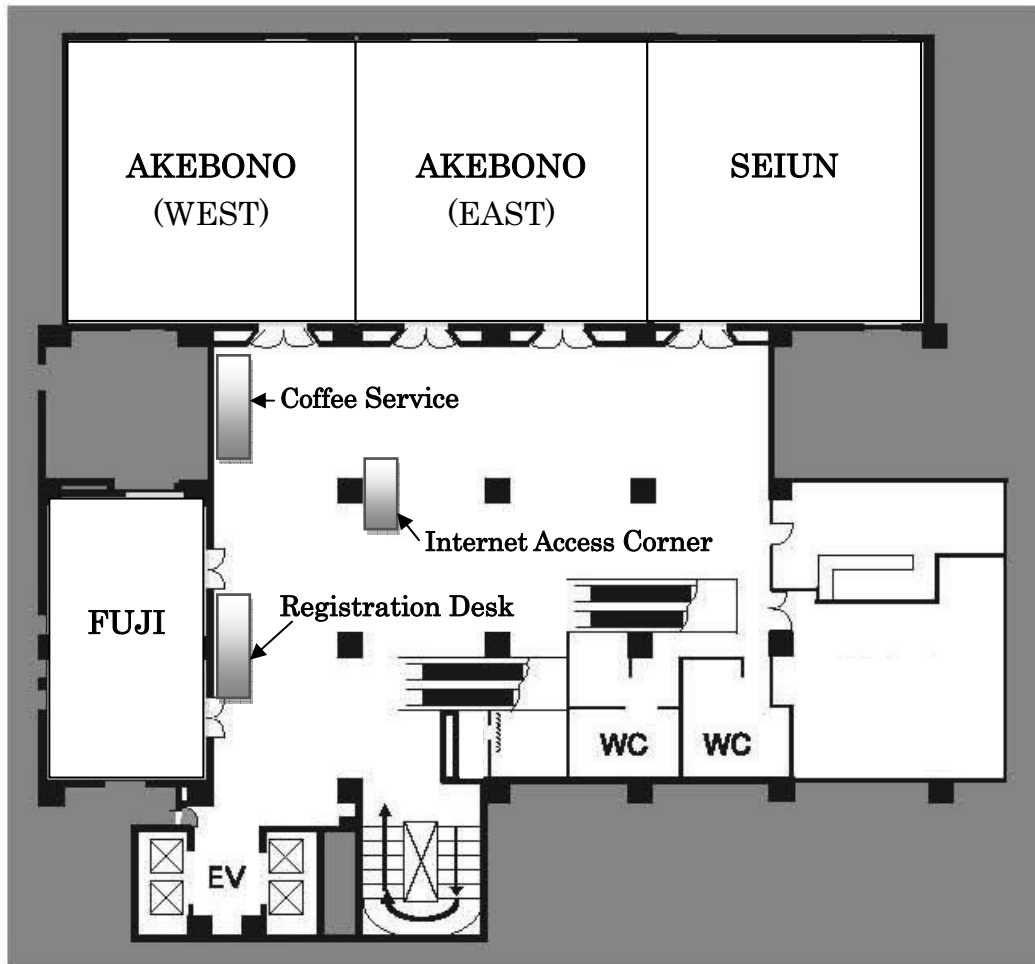
All conference attendees may use internet for free. Free Ethernet access will be possible during the conference at 3rd floor. Standard wired hubs (with RJ45 sockets) will be provided for networking.

Coffee service:

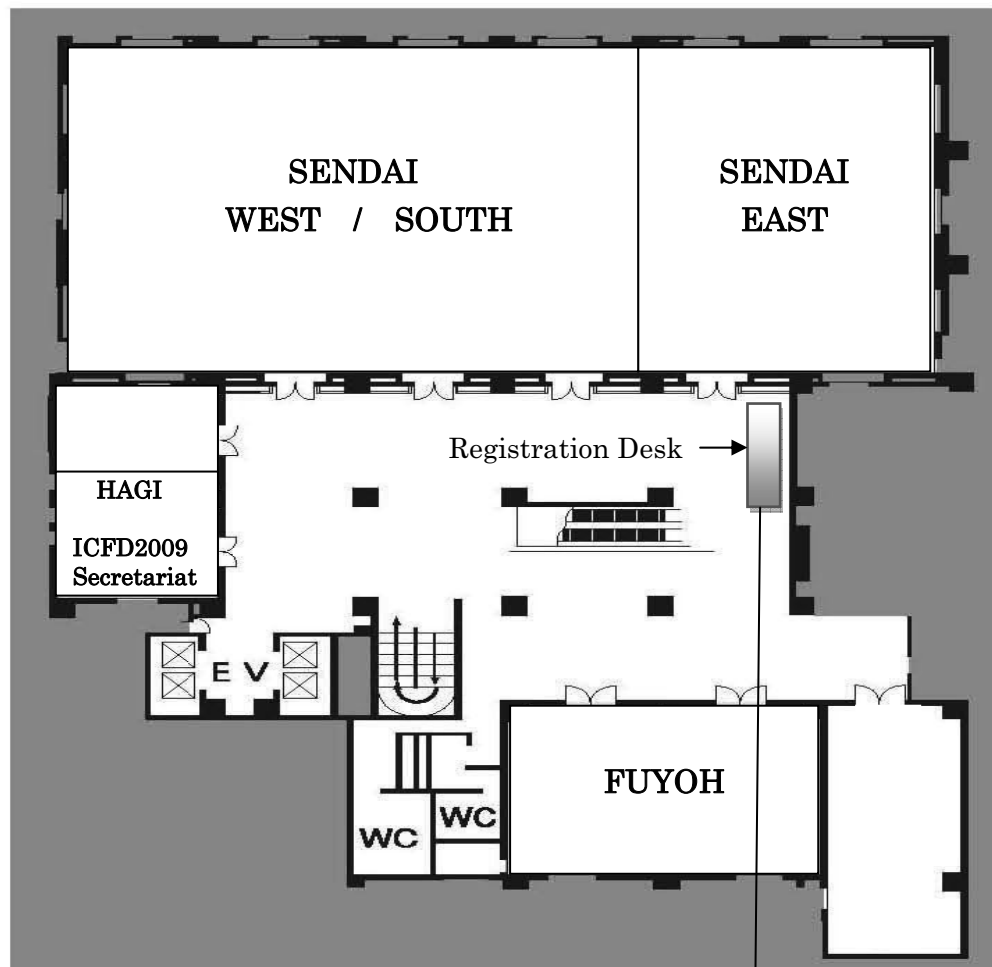
Coffee is served in the lobby, 3rd floor.

ICFD2009 Secretariat: (at Hagi, 4th floor)

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 4. Then, it will be moved to 3rd floor in the afternoon onwards.

6th ICFD (2009) Time Table

Wednesday, November 4, 2009

OS	Opening Address Plenary Lectures	Hybrid Rocket Propulsion and Related Fluid Dynamics	Energy and Environmental Systems over Nano/Meso/Macro Scales	Supersonic Technology Workshop (AFI/TFI-2009)
ROOM	SENDAI (EAST)	FUJI	FUYOH	AKEBONO (EAST)
8:00				
9:00	9:00-9:20 Opening Address @SENDAI (EAST)			
10:00	9:20-10:10 Plenary Lecture @SENDAI (EAST) "Rheology for Efficient Energy Production, Transportation, and Conservation" Rongjia Tao (Temple University, USA)			
	BREAK			
11:00	10:15-11:05 Plenary Lecture @SENDAI (EAST) "An Odyssey to Experimentally Verify the Onsager Reciprocity in Flow of Charged Particles in Solids" Han-Il Yoo (Seoul National University, KOREA)			
	BREAK			
12:00	11:10-12:00 Plenary Lecture @SENDAI (EAST) "Ultimate Nanofabrication Technology by Neutral Particle Beam" Seiji Samukawa (Tohoku University, JAPAN)			
13:00		13:00-13:40 2-1 Keynote Lectures Daniele Barbagallo (Invited)		13:00-13:40 SST-1 Mikhail S. Ivanov (Invited)
14:00		13:40-14:20 2-2 Keynote Lectures Fulvio Stella (Invited)		13:45-14:05 SST-2 Shunsuke Shimizu 14:05-14:25 SST-3 Kazuaki Hatanaka
		BREAK		BREAK
15:00		14:30-14:50 2-3 Harunori Nagata 14:50-15:10 2-4 Ichiro Nakagawa 15:10-15:30 2-5 Seungwon Ha		14:45-15:30 SST-4 Domenico Quagliarella (Invited)
		15:30-15:50 2-6 Masami Tomita	15:30-15:45 5-1 Seigo Sakai (Invited)	15:30-15:50 SST-5 Yusuke Naka
16:00		BREAK	15:45-16:00 5-2 Sudarshan Kumar (Invited)	15:50-16:10 SST-6 Takeharu Sakai (Invited)
		16:00-16:20 2-7 Rajesh K. Sharma 16:20-16:40 2-8 Fulvio Stella (Invited)	16:00-16:15 5-3 Wenguang Zhang (Invited) 16:15-16:30 5-4 Jafar Ali 16:30-16:45 5-5 Yuko Aono	16:10-16:30 SST-7 Hiroshi Yamashita
17:00		16:40-17:00 2-9 Nobuyuki Tsuboi	BREAK	BREAK
		17:00-17:20 2-10 Keiichi Ishiko	17:00-17:15 5-6 Sergey Minaev	16:50-17:10 SST-8 Chae-hyoung Kim
		BREAK	17:15-17:30 5-7 Roman Fursenko	17:10-17:30 SST-9 Takashi Matsuno
		17:30-17:50 2-11 Kazuki Yoshimura	17:30-17:45 5-8 Nikolay A. Lutsenko	17:30-17:50 SST-10 Atsushi Matsuda (Invited)
18:00		17:50-18:10 2-12 Mikiro Motoe 18:10-18:30 2-13 Yuki Funami	17:45-18:00 5-9 Nikolay A. Lutsenko	17:50-18:10 SST-11 Atsushi Matsuda (Invited) 18:10-18:30 SST-12 Atsushi Tovoda
19:00				
20:00				

The Fifth International Students/Young Birds Seminar on Multi-scale Flow Dynamics	The 10th Japan-Korea Students' Symposium -Fast Ion Transport in Solids and Through Interfaces - The Related Materials and Phenomena -	Current Topics in Flow Dynamics	Students /Young Birds Friendship Night	OS
AKEBONO (WEST)	SEIUN	FUYOH	SAKURA HALL(Katahira, Tohoku Univ.)	ROOM
				8:00
9:00-9:20 Opening Address @SENDAI (EAST)				9:00
9:20-10:10 Plenary Lecture @SENDAI (EAST) "Rheology for Efficient Energy Production, Transportation, and Conservation" Rongjia Tao (Temple University, USA)				10:00
BREAK				
10:15-11:05 Plenary Lecture @SENDAI (EAST) "An Odyssey to Experimentally Verify the Onsager Reciprocity in Flow of Charged Particles in Solids" Han-Il Yoo (Seoul National University, KOREA)				11:00
BREAK				
11:10-12:00 Plenary Lecture @SENDAI (EAST) "Ultimate Nanofabrication Technology by Neutral Particle Beam" Seiji Samukawa (Tohoku University, JAPAN)				12:00
				13:00
13:00-13:05 Opening	13:00-13:20 10-1	13:00-13:20 11-1		
13:05-13:41 9-1 - 9-9	N. -J. Heo	Wu-Shung Fu (Invited)		
Session1 -Award Session-	13:20-13:40 10-2	13:20-13:40 11-2		
Short Oral Presentation	H. -S. Kwon	Koutaro Tsubaki (Invited)		
13:41-14:20 9-1 - 9-9	13:40-14:00 10-3	13:40-14:00 11-3		
Poster Presentation	E. Niwa	Gota Kikugawa		14:00
	14:00-14:20 10-4	14:00-14:20 11-4		
	H. Jang	Jongsoo Ha		
BREAK	BREAK	14:20-14:40 11-5		
	14:30-14:50 10-5	Jinhao Qiu (Invited)		
	S. Nakayama	14:40-15:00 11-6		
	14:50-15:10 10-6	Gabor Vértessy (Invited)		15:00
15:00-15:36 9-10 - 9-18	Y. Kim			
Session2 -Award Session-	15:10-15:30 10-7			
Short Oral Presentation	S. Yuyama			
15:36-16:16 9-10 - 9-18	15:30-15:50 10-8			
Poster Presentation	Mohd. Ashrol Bin Haji Ini			
	BREAK			
	16:00-16:20 10-9			16:00
	H. Watanabe			
	16:20-16:40 10-10			
	Y. Chen			
	16:40-17:00 10-11			
	S. Osugi			17:00
	17:00-17:20 10-12			
	L. Nakano			
	BREAK			
	17:30-17:50 10-13			
	C. -H. Kim			
	17:50-18:10 10-14			
	S. Nakagawa		18:00-20:00	18:00
	18:10-18:30 10-15		Students / Young Birds	
	S. Nam		Friendship Night	
	18:30-18:50 10-16		@SAKURA HALL, Katahira, Tohoku	
	A. Suzuki		University	19:00
				20:00

Thursday, November 5, 2009

OS	Functionality Design of the Contact Dynamics	Advanced Control of Smart Fluids and Fluid Flows	IFS Collaborative Research Forum (AFI/TFI-2009) & IFS Research Exhibition (AFI/TFI-2009)	The Fifth International Students/Young Birds Seminar on Multi-scale Flow Dynamics
ROOM	FUJI	FUJI	AKEBONO (EAST)	FUYOH
8:00				
			8:30-9:30 CRF-1 - CRF-16 <i>Short Oral Presentation</i>	
9:00	9:00-9:35 3-1 Keynote Lecture Staffan Jacobson (Invited)			9:00-9:36 9-19 - 9-27 Session3 <i>Short Oral Presentation</i>
	9:35-10:00 3-2 Boyko Stoimenov (Invited)		BREAK	
10:00	10:00-10:15 3-3 Zahrul Fuadi		9:40-11:00 CRF-17 - CRF-37 <i>Short Oral Presentation</i>	9:36-10:16 9-19 - 9-27 <i>Poster Presentation</i>
	BREAK			BREAK
	10:25-10:50 3-4 Julien Fontaine (Invited)			10:30-11:06 9-28 - 9-36 Session4 <i>Short Oral Presentation</i>
11:00	10:50-11:15 3-5 Koji Matsumoto (Invited)		BREAK	
	11:15-11:40 3-6 Minoru Goto (Invited)		11:10-12:00 CRF-38 - CRF-42 REX-1 - REX-9 <i>Short Oral Presentation</i>	11:06-11:46 9-28 - 9-36 <i>Poster Presentation</i>
	BREAK			
12:00	11:50-12:15 3-7 Sung-Jin Song (Invited)		BREAK	
	12:15-12:30 3-8 Hiroyuki Miki		12:20-14:30 CRF-1 - CRF-42 REX-1 - REX-9 <i>Poster Session</i>	
13:00		13:00-13:05 Opening Address Masami Nakano		13:00-13:40 9-37 - 9-46 Session5 <i>Short Oral Presentation</i>
		13:05-13:45 4-1 Keynote Lecture Seung-Bok Choi (Invited)		
14:00		13:45-14:15 4-2 Miklós Zrinyi (Invited)		13:40-14:20 9-37 - 9-46 <i>Poster Presentation</i>
		14:15-14:35 4-3 Takahiro Murakami		
		14:35-14:55 4-4 Hiroshi Kobayashi		BREAK
15:00		14:55-15:15 4-5 Xiao-Dong Niu		15:00-15:40 9-47 - 9-56 Session6 <i>Short Oral Presentation</i>
		15:20-15:50 4-6 Hitoshi Ishikawa (Invited)		
16:00		15:50-16:20 4-7 Hiroshi Higuchi (Invited)		15:40-16:20 9-47 - 9-56 <i>Poster Presentation</i>
		16:20-16:40 4-8 Tameo Nakanishi		
		16:40-17:00 4-9 Mikael A. Langthjem		
17:00	Liaison Office Session @ SENDAI (EAST)			
18:00	17:00-17:20 State and Plan of International Education in Tohoku University Goro Masuya (Tohoku University)			
	17:20-19:00 Part1: Panel Discussion Part2: Questions and Discussion			
19:00				
20:00	19:00-21:00 Banquet @SENDAI (SOUTH WEST)			
21:00				

The 10th Japan-Korea Students' Symposium -Fast Ion Transport in Solids and Through Interfaces - The Related Materials and Phenomena -	Current Topics in Flow Dynamics	GCOE, IFS-Tsinghua University Joint Workshop 2009	Liaison Office Session	OS
SEIUN	AKEBONO (WEST)	AKEBONO (WEST)	SENDAI (EAST)	ROOM
8:10-8:30 10-17 S. Jung		8:00-8:24 12-1 Xingang Liang (Invited)		
8:30-8:50 10-18 T. Lee		8:24-8:48 12-2 Li Luming (Invited)		
8:50-9:10 10-19 J. I. Yeon		8:48-9:12 12-3 Guo Yincheng (Invited)		9:00
BREAK		9:12-9:36 12-4 Xu Xianghua (Invited)		
9:30-9:50 10-20 Y. Mori		9:36-10:00 12-5 Ke-Qin Zhu (Invited)		
9:50-10:10 10-21 M. S. Lee		10:00-10:24 12-6 Zhang Huiqiang (Invited)		10:00
10:10-10:30 10-22 T. H. Kwon				
BREAK		10:30-10:43 12-7 Yuji Hattori		
10:40-11:00 10-23 Y. Park		10:43-10:56 12-8 Weiming Song		
11:00-11:20 10-24 Y. Oh		10:56-11:09 12-9 Hideaki Kobayashi		11:00
11:20-11:40 10-25 W. S. Chang		11:09-11:22 12-10 Hisashi Nakamura		
11:40-12:00 10-26 Y. Hwa		11:22-11:35 12-11 Quan-Wen Hou		
		11:35-11:48 12-12 Taku Ohara		12:00
		11:48-12:01 12-13 Takashi Tokumasu		
13:00-13:20 10-27 H. I. Ji		13:00-13:24 12-14 Bing Wang (Invited)		13:00
13:20-13:40 10-28 K. Nagao		13:24-13:37 12-15 Shigeru Yonemura		
13:40-14:00 10-29 Y. Gova		13:37-13:50 12-16 Jing-Bo Huang		
14:00-14:20 10-30 M. Y. Oh		13:50-14:03 12-17 Genki Yamamoto		14:00
14:20-14:40 10-31 T. Izumi		BREAK		
14:40-15:00 10-32 D. R. Jung		14:08-14:21 12-18 Atsuki Komiya		
15:00-15:20 10-33 Y. Nagara	15:00-15:20 11-7 Andrew J. Meade (Invited)	14:21-14:34 12-19 Xue-Wei Sun		
15:20-15:40 10-34 K. R. Lee	15:20-15:40 11-8 Viren Menezes	14:34-14:47 12-20 Kazuo Matsuura		
BREAK	15:40-16:00 11-9 Lucia Parussini (Invited)	14:47-15:00 12-21 Jun Ishimoto		15:00
16:00-16:20 10-35 Y. Takeyama	16:00-16:20 11-10 Chih-Yung Huang (Invited)			
16:20-16:40 10-36 H. Ito	16:20-16:40 11-11 Thilanka Munasinghe			
16:40-17:00 10-37 T. Kushi	16:40-17:00 11-12 James W. Gregory (Invited)			17:00
Liaison Office Session @ SENDAI (EAST)				
17:00-17:20 State and Plan of International Education in Tohoku University Goro Masuya (Tohoku University)				18:00
17:20-19:00 Part1: Panel Discussion Part2: Questions and Discussion				19:00
19:00-21:00 Banquet @SENDAI (SOUTH WEST)				20:00
				21:00

Friday, November 6, 2009

OS	Advanced Control of Smart Fluids and Fluid Flows		The Fifth International Students / Young Birds Seminar on Multi-scale Flow Dynamics	The 10th Japan-Korea Students' Symposium -Fast Ion Transport in Solids and Through Interfaces - The Related Materials and Phenomena -	Alumni Session	OS
ROOM	FUJI	FUYOH	FUYOH	SEIUN	AKEBONO (WEST)	ROOM
8:00						8:00
9:00	9:00-9:30 4-10 Deivandren Sivakumar (Invited)		9:00-9:40 9-57 - 9-66 Session7 Short Oral Presentation	9:00-9:20 10-38 Y. Fukuda	9:00-9:05 Opening Address	9:00
	9:30-10:00 4-11 Katsufumi Tanaka (Invited)		9:40-10:20 9-57 - 9-66 Poster Presentation	9:20-9:40 10-39 M. -B. Choi	9:05-10:45 Session1-1 Introduction of Institution and Research (14-1 - 14-15)	
10:00	10:00-10:20 4-12 Sanjeev Sharma		BREAK	9:40-10:00 10-40 M. Nagai		10:00
	10:25-10:55 4-13 Hyung Jin Sung (Invited)		10:30-11:10 9-67 - 9-76 Session8 Short Oral Presentation	10:00-10:20 10-41 S. -Y. Jeon		
11:00	10:55-11:25 4-14 Fredrik Lundell (Invited)		11:10-11:50 9-67 - 9-76 Poster Presentation	10:20-10:40 10-42 M. Shimizu	10:45-12:00 Session1-2 Poster Presentation (14-1 - 14-15)	11:00
	11:25-11:45 4-15 Yusuke Tokura			BREAK		
	11:45-12:05 4-16 Yusuke Suzuki			11:00-11:20 10-43 E. -C. Shin		
12:00				11:20-11:40 10-44 D. Kim		12:00
				11:40-12:00 10-45 Y. Iwai		
13:00		13:00-13:45 4-17 - 4-25 Short Oral Presentation		13:00-13:20 10-46 J. Chun	13:00-13:54 Session2-1 Introduction of Institution and Research (14-16 - 14-24)	13:00
				13:20-13:40 10-47 H. Takahashi		
14:00		13:50-14:40 4-26 - 4-35 Short Oral Presentation		13:40-14:00 10-48 T. Nakamura	13:54-15:00 Session2-2 Poster Presentation (14-16 - 14-24)	14:00
				14:00-14:20 10-49 H. -S. Kim		
				14:20-14:25 Closing Remark		
15:00		BREAK 14:50-15:50 4-17 - 4-35 Poster Presentation			15:00-16:00 Alumni Reunion Session	15:00
16:00						16:00
17:00						17:00
18:00						18:00
19:00						19:00
20:00						20:00
21:00						21:00

Sixth International Conference on Flow Dynamics

Program

Plenary Lectures

SENDAI (EAST)

November 4, 2009

9:20-10:10	Rheology for Efficient Energy Production, Transportation, and Conservation <u>Rongjia Tao</u> (Temple University, USA)	56
10:15-11:05	An Odyssey to Experimentally Verify the Onsager Reciprocity in Flow of Charged Particles in Solids <u>Han-Il Yoo</u> and Woo-Seok Park (Seoul National University, Korea)	58
11:10-12:00	Ultimate Nanofabrication Technology by Neutral Particle Beam <u>Seiji Samukawa</u> (Tohoku University, Japan)	60

Hybrid Rocket Propulsion and Related Fluid Dynamics

FUJI

November 4, 2009

Keynote Lectures

Chair: Toru Shimada (Japan Aerospace Exploration Agency, Japan)

- 2-1 **Development of Throtttable Hybrid Rockets (*Invited*)** 66
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- 2-2 **Roll Torque Prediction in SRM; a Numerical Approach (*Invited*)** 68
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Regression Rate and Ablation

Chair: Keisuke Sawada (Tohoku University, Japan)

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- 2-4 **Study on the Regression Rate of Some Hybrid Rocket Fuels** 72
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- 2-5 **Application of Temperature-Sensitive Paint to Heat Flux Measurement in High Temperature Gas Flow** 74
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15:30-15:50 Masami Tomita, Mitsunobu Kuribayashi (Nagoya University, Japan), Toshiyuki Suzuki, Kazuhisa Fujita (Japan Aerospace Exploration Agency, Japan), Kazutaka Kitagawa (Aichi Institute of Technology, Japan), Kenichi Hirai (IHI Aerospace, Co., Ltd., Japan) and Takeharu Sakai (Nagoya University, Japan)

15:50-16:00 BREAK

Simulation I

Chair: Harunori Nagata (Hokkaido University, Japan)

- 2-7 **Element Free Galerkin Modeling of Unsteady Convection Flow and Heat Transfer Past a Semi-Infinite Vertical Porous Moving Plate with Viscous Heating** 78
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- 2-8 **Numerical Study of VEGA Third Stage Re-Entry Phase (*Invited*)** 80
16:20-16:40 Fulvio Stella, M. Giangi (University of Rome "La Sapienza", Italy), Daniele Barbagallo and A. Scaccia (ESA-ESRIN Frascati, Italy)

2-9 16:40-17:00	Numerical Simulation on Unsteady Compressible Low-Speed Flow Using Preconditioning Method: Re Effects on Drag for 2D Cylinder <u>Nobuyuki Tsuboi</u> (Kyushu Institute of Technology, Japan), Katsuyoshi Fukiba (Muroran Institute of Technology, Japan) and Toru Shimada (Japan Aerospace Exploration Agency, Japan)	82
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2-13 18:10-18:30	Quasi-1D Simulation of Hybrid Rocket Flow with a Fast Chemistry Nonpremixed Flame Model <u>Yuki Funami</u> (The University of Tokyo, Japan), Vasily Novozhilov and Toru Shimada (Japan Aerospace Exploration Agency, Japan)	90

Functionality Design of the Contact Dynamics

FUJI

November 5, 2009

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

- 3-1 **Keynote Lecture** 94
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Staffan Jacobson and Sture Hogmark (Uppsala University, Sweden)
- 3-2 **Dynamic Aspects of the Contact of Rough Surfaces (*Invited*)** 96
9:35-10:00 Boyko Stoimenov (Ecole Centrale de Lyon, France), Koshi Adachi (Tohoku University, Japan) and K. Kato (Nihon University, Japan)
- 3-3 **Effect of Surface Texture on Frictional Sound** 98
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Chair: Staffan Jacobson (Uppsala University, Sweden)

- 3-4 **Tribological Properties of Nanocomposite Metal-Containing DLC Coatings: the Key-Role of Metal Flow Between Sliding Surfaces (*Invited*)** 100
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- 3-5 **DLC Film for Space Application - Improvement of Tribological Properties by Metal Doping - (*Invited*)** 102
10:50-11:15 Koji Matsumoto (Japan Aerospace Exploration Agency, Japan), Takanori Takeno and Hiroyuki Miki (Tohoku University, Japan)
- 3-6 **Critical Thickness of Polycrystalline Ag Layers Yielding Friction Reduction due to Tribo-assisted Reorientation (*Invited*)** 104
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- 3-7 **Ultrasonic Nondestructive Evaluation of CVD Diamond Coating with Various Deposition Condition (*Invited*)** 106
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- 3-8 **Tribological Behavior of Partly Polished CVD Diamond Films Against Stainless Steel in Humid Environment** 108
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Advanced Control of Smart Fluids and Fluid Flows

FUJI

November 5, 2009

13:00-13:05	Opening Address Masami Nakano (Tohoku University, Japan)	
Chair: Masami Nakano (Tohoku University, Japan)		
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4-2 13:45-14:15	Development of Micro-motor for MEMS utilizing Novel Smart Polymers (<i>Invited</i>) <u>Miklós ZRÍNYI</u> (Semmelweis University, Hungary), Masami NAKANO and Teppei TSUJITA (Tohoku University, Japan)	114
4-3 14:15-14:35	Experimental and Analytical Evaluation of Passive Type MR Damper <u>Takahiro Murakami</u> , Michiya Sakai (CRIEPI, Japan) and Masami Nakano (Tohoku University, Japan)	116
4-4 14:35-14:55	Development of Passive Force Display and Rehabilitation System for Upper Limbs Using Redundant Number of ER Fluid Brakes <u>Hiroshi Kobayashi</u> , Junji Furusho and Makoto Haraguchi (Osaka University, Japan)	118
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FUJI

November 6, 2009

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Chair: Yu Fukunishi (Tohoku University, Japan)

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FUYOH

November 6, 2009

Chair: Kazuo Matsuura (Tohoku University, Japan)

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14:50-15:50	Poster Presentation	

Energy and Environmental Systems over Nano/Meso/Macro Scales

FUYOH

November 4, 2009

5-1 15:30-15:45	Numerical Analysis of Radiative Heat Transfer on Nocturnal Atmosphere in Consideration of Phase Transition (<i>Invited</i>) <u>Seigo Sakai</u> (Yokohama National University, Japan) and Shigenao Maruyama (Tohoku University, Japan)	184
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5-3 16:00-16:15	Reducing Wear of Biomimetic Designed Artificial Joints through Nanotechnology (<i>Invited</i>) <u>Wenguang Zhang</u> , Yun Luo, Chengtao Wang (Shanghai Jiao Tong University, China)	188
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Supersonic Technology Workshop (AFI/TFI-2009)

AKEBONO (EAST)

November 4, 2009

- SST-1
13:00-13:40 **Hysteresis of the Transition between Regular and Mach Reflections of Steady Shock Waves** (*Invited*)
Mikhail S. Ivanov, Dmitry V. Khotyanovsky and Alexey N. Kudryavtsev (Siberian Branch of the Russian Academy of Sciences, Russia)
- 13:40-13:45 BREAK
- SST-2
13:45-14:05 **A Study based on Shock Dynamics for the Generation of Secondary Shock Wave in Shock-Vortex Interaction**
Shunsuke SHIMIZU (Private, Japan)
- SST-3
14:05-14:25 **Computations of Unsteady Flow Field around an Accelerating Sphere in the Transonic Flow Velocity Region**
Kazuaki Hatanaka, Tsutomu Saito (Muroran Institute of Technology, Japan), Hiroshi Yamashita, Toshihiro Ogawa, Shigeru Obayashi and Kazuyoshi Takayama (Tohoku University, Japan)
- 14:25-14:45 BREAK
- SST-4
14:45-15:30 **Evolutionary Optimization of Natural Laminar Flow Wing in Supersonic Regime** (*Invited*)
E. Iuliano and Domenico Quagliarella (CIRA, Italy)
- SST-5
15:30-15:50 **Fundamental Finite Element Analysis of Building Vibration Induced by Sonic Boom**
Yusuke Naka (Japan Aerospace Exploration Agency, Japan)
- SST-6
15:50-16:10 **CFD Simulation of Weak Shock Wave Propagation in an Atmosphere** (*Invited*)
Takeharu Sakai (Nagoya University, Japan)
- SST-7
16:10-16:30 **Global Sonic Boom Overpressure Variation under Realistic Meteorological Condition**
Hiroshi Yamashita and Shigeru Obayashi (Tohoku University, Japan)
- 16:30-16:50 BREAK
- SST-8
16:50-17:10 **Development of New Supersonic Mixer for Enhancement of Scramjet Engine**
Chae-hyoung Kim, In-Seuck Jeung (Seoul National University, Korea), Byungil Choi, Yoshinori Matsubara, Toshinori Kouchi and Goro Masuya (Tohoku University, Japan)
- SST-9
17:10-17:30 **An Application of DBD Plasma Actuator to Shock Wave Mitigation**
Takashi Matsuno, Takashi Kanatani, Hiromitsu Kawazoe (Tottori University, Japan) and Shigeru Obayashi (Tohoku University, Japan)

- SST-10
17:30-17:50 **Preliminary Study of Interaction between Weak Shock Wave and Turbulent Flow (*Invited*)**
Atsushi Matsuda, Daisuke Takagi, J. Kim, Akihiro Sasoh, Shigeyoshi Ito, Koji Nagata and Yasuhiko Sakai (Nagoya University, Japan)
- SST-11
17:50-18:10 **Three Dimensional Free Flight Experiment Using Square Bore Ballistic Range (*Invited*)**
Atsushi Matsuda, Katsuya Shimizu, Kosuke Kikuchi, Kakuei Suzuki and Akihiro Sasoh (Nagoya University, Japan)
- SST-12
18:10-18:30 **Numerical and Experimental Analysis on Shock Wave Interaction of the Supersonic Biplane Model**
Atsushi Toyoda, Masayuki Okubo and Shigeru Obayashi (Tohoku University, Japan), Katsuya Shimizu, Atsushi Matsuda and Akihiro Sasoh (Nagoya University, Japan)

**IFS Collaborative Research Forum (AFI/TFI-2009)
& IFS Research Exhibition (AFI/TFI-2009)**

AKEBONO (EAST)

November 5, 2009

Chair: Shinkyu Jeong (Tohoku University, Japan)

8:30-9:30

Short Oral Presentation

(3 min for Short Oral Presentation)

- CRF-1 **Blade Shape Optimization and Data mining for HSI Noise and Aerodynamics Performances of Helicopter**
Shinkyu Jeong, Toru Sasaki (Tohoku University, Japan), Sanghyun Chae, Kwanjung Yee (Pusan National University, Korea), and Takashi Aoyama (Japan Aerospace Exploration Agency, Japan)
- CRF-2 **Thermo-Fluid Characteristics of Boiling Liquid Nitrogen Flowing in a Horizontal Pipe**
Ryo Shimizu, Katsuhide Ohira, Koichi Takahashi (Tohoku University, Japan), Hiroaki Kobayashi, Hideyuki Taguchi, Takayuki Kojima and Motoyuki Hongo (Japan Aerospace Exploration Agency, Japan)
- CRF-3 **Experimental Study on Aerodynamic Characteristics of a Silent Supersonic Aircraft in Low Speed Flight**
Hikomitsu Kawazoe, Takashi Matsuno (Tottori University, Japan), Shigeru Obayashi and Shinkyu Jeong (Tohoku University, Japan)
- CRF-4 **Numerical Simulations of Flow Field Around an Object Decelerating from Supersonic to Subsonic Velocity**
Kazuaki Hatanaka, Tsutomu Saito (Muroran Institute of Technology, Japan) and Hiroshi Yamashita, Toshihiro Ogawa, Shigeru Obayashi, Kazuyoshi Takayama (Tohoku University, Japan)
- CRF-5 **Investigation of Hypersonic Flows about Leading Edges of Small Bluntness (*Invited*)**
Mikhail Ivanov (ITAM, Russia), Shigeru Yonemura (Tohoku University, Japan), Yevgeniy Bondar and Dmitry Khotyanovsky (ITAM, Russia)
- CRF-6 **Study of Unstable Phenomena of Film Boiling in Superfluid Helium**
Masakazu Nozawa (Tohoku University, Japan), Nobuhiro Kimura (High Energy Accelerator Research Organization, Japan), Shinichi Chiba and Katsuhide Ohira (Tohoku University, Japan)
- CRF-7 **Modelling of Supersonic and Turbulent Hybrid Arc for Biomass Gasification (*Invited*)**
Jiri Jeništa (Institute of Plasma Physics AS CR, Czech Republic), Hidemasa Takana, Hideya Nishiyama (Tohoku University, Japan) and Milan Hrabovský (Institute of Plasma Physics AS CR, Czech Republic)

- CRF-8 **Computational Simulation of Highly Reactive Air Plasma Jet under High Pressure Conditions**
Hidemasa Takana (Tohoku University, Japan), Yasunori Tanaka (Kanazawa University, Japan) and Hideya Nishiyama (Tohoku University, Japan)
- CRF-9 **Dynamics of Premixed Flames Propagating in Non-Uniform Velocity Fields: Combined Effects of Intrinsic Instability and Radiation**
Satoshi Kadowaki, Hidekazu Takahashi (Nagaoka University of Technology, Japan) and Hideaki Kobayashi (Tohoku University, Japan)
- CRF-10 **Investigations of Reacting Flow in Micro Channels Directed to Development of Eco-Friendly Technologies of Energy Conversion**
Sergey Minaev (ITAM SB RAS, Russia), Kaoru Maruta (Tohoku University, Japan)
- CRF-11 **Use of Fluid Inclusions in Sludge Sample for the Estimation of Thermal History of Geothermal Fields**
Kotaro Sekine (Tohoku University, Japan), Masaho Adachi, Hitoshi Ozeki (Okuaizu Geothermal Co., Ltd., Japan), and Brian Rusk (James Cook University, Australia)
- CRF-12 **Distinct Element Modeling for Hydraulic Fracturing in Unconsolidated Sands**
Hiroyuki Shimizu, Sumihiko Murata (Kyoto University, Japan), Takatoshi Ito (Tohoku University, Japan), Tsuyoshi Ishida (Kyoto University, Japan)
- CRF-13 **The Effects of Radiative Heat Transfer in a Turbulent Channel Flow (*Invited*)**
Atsushi Sakurai, Kenji Takakuwa, Koji Matsubara (Niigata University, Japan) and Shigenao Maruyama (Tohoku University, Japan)
- CRF-14 **Magnetic Dynamic Process of Magnetic Layers in Grain Boundary due to Fatigue for Material Degradation**
Katsuhiko Yamaguchi, Kenji Suzuki, Osamu Nittono (Fukushima University, Japan), Tetsuya Uchimoto and Toshiyuki Takagi (Tohoku University, Japan)
- CRF-15 **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-16 **Development of Nondestructive Evaluation Method for Characterization of Surface/Sub-surface Material Properties (*Invited*)**
Hak-Joon Kim (Sungkyunkwan University, Korea), Ho-Sang Shin (Korea Institute of Nuclear Safety, Korea), Dong-Yeol Kim, Sung-Jin Song (Sungkyunkwan University, Korea), Sung-Duk Kwon (Andong National University, Korea), Toshiyuki Takagi and Tetsuya Uchimoto (Tohoku University, Japan)
- 9:30-9:40 BREAK

- 9:40-11:00 **Short Oral Presentation**
(3 min for Short Oral Presentation)
- CRF-17 **Mechanism of Radical Generation and Sterilization by a Plasma Flow at Atmospheric Pressure**
Takashi Miyahara (Shizuoka University, Japan), Shiroh Ochiai and Takehiko Sato (Tohoku University, Japan)
- CRF-18 **Research on Deep Brain Magnetic Stimulation**
Toshihiko Abe, Toshiaki Ichihara, Kazumi Yashima (IFG., Ltd., Japan) and Toshiyuki Takagi (Tohoku University, Japan)
- CRF-19 **Atrial Vortex**
Muneichi Shibata, Hisao Ito (Miyagi Cardiovascular and Respiratory Center, Japan), Tomoyuki Yambe, Ryo Koizumi, Kenichi Funamoto and Toshiyuki Hayase (Tohoku University, Japan)
- CRF-20 **Analysis of Reactive Species in a Plasma Flow for Medical Treatment**
Tetsuji Shimizu (Max-Planck Institute for Extraterrestrial Physics, Germany), Takehiko Sato (Tohoku University, Japan), Gregor E. Morfill (Max-Planck Institute for Extraterrestrial Physics, Germany)
- CRF-21 **Development of Stent for Cerebral Aneurysm**
Toshio Nakayama (Tohoku University, Japan), Karkenahalli Srinivas (The University of Sydney, Australia), Makoto Ohta (Tohoku University, Japan)
- CRF-22 **Fundamental Study of Convection-Enhanced Delivery Simulation in Rat Brain**
Joshua H. Smith (Lafayette College, USA), Kenichi Funamoto (Tohoku University, Japan), Martin V. Racenis (Lafayette College, USA), and Toshiyuki Hayase (Tohoku University, Japan)
- CRF-23 **Convection-enhanced Delivery of ACNU Under MRI Monitoring Against Recurrent Gliomas-Development of Computational Simulation of Drug Distribution**
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- CRF-24 **Impact and Solidification of Molten Metal Droplets on Stainless Steel Surfaces Patterned with Unidirectional Parallel Microgrooves (*Invited*)**
Deivandren Sivakumar (Indian Institute of Science, India), Kazunari Katagiri, Tomoki Nakajima, Hidemasa Takana and Hideya Nishiyama (Tohoku University, Japan)
- CRF-25 **Bio-templated Nanostructure Fabrication with Neutral Beam**
Ichiro Yamashita (Nara Institute of Science and Technology, Japan), Seiji Samukawa and Tomohiro Kubota (Tohoku University, Japan)

- CRF-26 **Impact and Formation Mechanism of Line Edge Roughness(LER) for Advanced Interconnect**
Shuichi Saito, Eiichi Soda (Semiconductor Leading Edge Technologies, Inc., Japan), Butsurin Jinnai, Koji Koyama and Seiji Samukawa (Tohoku University, Japan)
- CRF-27 **Development and Flow Evaluation of Electro-Rheological Nano-Suspensions**
Katsufumi Tanaka, Masashi Komeda, Nozomi Nakagawa, Ryuichi Akiyama (Kyoto Institute of Technology, Japan), Masami Nakano and Teppei Tsujita (Tohoku University, Japan)
- CRF-28 **Transport Phenomena at Nano-Structured Interfaces**
Taku Ohara (Tohoku University, Japan), Masahiko Shibahara (Osaka University, Japan), and Gota Kikugawa (Tohoku University, Japan)
- CRF-29 **Numerical Studies of the Reacting Rarefied Flows in Tubes**
Yevgeniy Bondar (ITAM, Russia), Kaoru Maruta (Tohoku University, Japan), and Mikhail Ivanov (ITAM, Russia)
- CRF-30 **Fabrication of Composite Material by Compression Shearing Method under Room Temperature**
Noboru Nakayama (Shinshu University, Japan), Hiroyuki Miki (Tohoku University, Japan) and Hiroyuku Takeishi (Chiba Institute of Technology, Japan)
- CRF-31 **Molecular Dynamics Study about Lubrication Phenomena of Liquid Bridges**
Takashi Tokumasu (Tohoku University, Japan), Marie-Helene Meurisse, Nicolas Fillot and Philippe Vergne (INSA-Lyon, France)
- CRF-32 **Mechanism of Bubble Generation and Disappearance by Plasma**
Takehiko Sato, Masanobu Oizumi (Tohoku University, Japan), Marc Tinguely, Mohamed Farhat (EPFL, Switzerland)
- CRF-33 **Production of Complex Plasma at Atmospheric Pressure**
Takehiko Sato, Yutaka Iwafuchi (Tohoku University, Japan), Tetsuji Shimizu and Gregor E. Morfill (Max Planck Institute for Extraterrestrial Physics, Germany)
- CRF-34 **Optimization of Droplet Formation of Continuous Inkjet**
Masami NAKANO (Tohoku University, Japan), Tameo NAKANISHI and Masafumi YOKOYAMA (Yamagata University, Japan)
- CRF-35 **A Molecular Study on the Thermodynamic and Transport Properties of Liquid Hydrogen**
Hiroki Nagashima (Aoyama Gakuin University, Japan), Takashi Tokumasu (Tohoku University, Japan), Shinichi Tsuda (Japan Aerospace Exploration Agency, Japan), Nobuyuki Tsuboi (Kyusyu Institute of Technology, Japan) and K. A. Hayashi (Aoyama Gakuin University, Japan)

- CRF-36 **Tribological Behavior and Electrical Contact Resistance of Metal-Containing DLC Coating for Electrically Conductive Tribo-elements**
Julien Fontaine (Ecole Centrale de Lyon, France), Hiroyuki Miki ,
Takanori Takeno (Tohoku University, Japan), Kosuke Ito (Nihon
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France), Koshi Adachi and Toshiyuki Takagi (Tohoku University, Japan)
- CRF-37 **Fundamental Study on Spiking Neuron Devices**
T. Morie, Y. Sun, H. Liang (Kyushu Institute of Technology, Japan), M.
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- 11:00-11:10 BREAK
- 11:10-12:00 **Short Oral Presentation**
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Takehiko Sato, Masanobu Oizumi (Tohoku University, Japan), Takashi
Miyahara (Shizuoka University, Japan) and Tatsuyuki Nakatani (Toyo
Advanced Technologies Company, Ltd., Japan)
- CRF-39 **Kinetic Force Method for Rarefied Gas flows**
Vladimir L. Saveliev (NCSRT, Institute of Ionosphere, Kazakhstan), S.A.
Filko (Zhetysu State University, Kazakhstan), K. Tomarikawa and S.
Yonemura (Tohoku University, Japan)
- CRF-40 **Realizing Scalable Visualization Through Hierarchical Provenance
Management**
Issei Fujishiro (Keio University, Japan), Yuriko Takeshima, Shigeru
Obayashi and Toshiyuki Hayase (Tohoku University, Japan)
- CRF-41 **Numerical and Experimental Analysis of the Hole-Tone Feedback
Problem**
Mikael A. Langthjem (Yamagata University, Japan) and Masami Nakano
(Tohoku University, Japan)
- CRF-42 **Direct Numerical Simulation on the Effects of Free-stream Turbulence
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Kouji Nagata, Yasuhiko Sakai, Hiroki Suzuki (Nagoya University, Japan)
and Toshiyuki Hayase (Tohoku University, Japan)
- REX-1 **Meteorological Influence on Sonic Boom**
Hiroshi Yamashita, Shinkyu Jeong and Shigeru Obayashi (Tohoku
University, Japan)
- REX-2 **In Situ Observation and Remote Sensing during Ocean Experiments
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Takashi Yabuki, Shigenao Maruyama, Mikihiro Watanabe and Atsuki
Komiya (Tohoku University, Japan)

- REX-3 **Assessment of Volume Penalization Method for Direct Numerical Simulation of Incompressible Flows**
Yuji Hattori (Tohoku University, Japan)
- REX-4 **Chemistry Validation Using Simplified Modeling of Autoignition in Micro Flowreactor with Controlled Temperature Profile**
Hisashi Nakamura, Hiroshi Oshibe, Kaoru Maruta (Tohoku University, Japan)
- REX-5 **Blood Flow Analysis by Measurement-Integrated Simulation**
Kenichi Funamoto and Toshiyuki Hayase (Tohoku University, Japan)
- REX-6 **Computational and Experimental Studies on Supersonic Particulate Jet Process for Cavity Filling**
Hidemasa Takana, HongYang Li, Kazuhiro Ogawa, Tsunemoto Kuriyagawa and Hideya Nishiyama (Tohoku University, Japan)
- REX-7 **Mechanism of a Molecular Gas-Film Lubrication of Micro-Structured Surface**
Shigeru Yonemura, Susumu Isono, Masashi Yamaguchi, Takanori Takeno, Hiroyuki Miki and Toshiyuki Takagi (Tohoku University, Japan)
- REX-8 **Influence of Inlet and Outlet Pipe Lengths on Cavitation Surge**
Yuka Iga (Tohoku University, Japan), Yoshiki Yoshida (Japan Aerospace Exploration Agency, Japan) and Toshiaki Ikohagi (Tohoku University, Japan)
- REX-9 **Topologically-Accentuated Realization of Wake Turbulence Datasets**
Yuriko Takeshima, Yosuke Hoshi, Yuichi Maki (Tohoku University, Japan), Issei Fujishiro (Keio University, Japan), Shigeo Takahashi (The University of Tokyo, Japan), Takashi Misaka and Shigeru Obayashi (Tohoku University, Japan)
- 12:00-12:20 BREAK
- 12:20-14:30 **Poster Session**

**The Fifth International Students/ Young Birds Seminar
on Multi-scale Flow Dynamics**

AKEBONO (WEST)

November 4, 2009

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FUYOH

November 5, 2009

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FUYOH

November 6, 2009

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FUYOH

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**Integrated Computation of Primary Atomization with Micro-Cavitation in
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Jun Ishimoto (Tohoku University, Japan), Fuminori Sato and Gaku Sato
(KEIHIN Co., Japan)

Liaison Office Session

SENDAI (EAST)

November 5, 2008

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Goro Masuya (Tohoku University, Japan) Chair: Toshiyuki Takagi
- 17:20-19:00 Part 1: Panel Discussion on Education System to Joint Education and
International Summer School, Chair: Toshiyuki Takagi
Masud Behnia (The University of Sydney)
Alexander Vasiliev (Moscow State University)
Hyung jin Sung (KAIST)
Hiroshi Higuchi (Syracuse University)
Joël Courbon (INSA-Lyon)
Fredrik Lundell (KTH Royal Institute of Technology)
Shigenao Maruyama (Tohoku University)

Part 2: Questions and Discussion

Alumni Session

AKEBONO (WEST)

November 6, 2009

Chair: Shigenao Maruyama (Tohoku University, Japan)

9:00~9:05 **Opening Address**
Shigenao Maruyama (Tohoku University, Japan)

*9:05~10:45 **Session1-1 Introduction of Institution and Research(14-1~14-15)***

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(Nagoya University, Japan) *(Invited)*

14-2
9:11~9:17 Wu-Shung Fu
(National Chiao Tung University, Taiwan) *(Invited)*

14-3
9:17~9:23 Shigeo Fujikawa
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14-4
9:23~9:29 Hideyuki Tanno
(Japan Aerospace Exploration Agency, Japan) *(Invited)*

14-5
9:29~9:35 Yasuhiro Egami
(Nagoya University, Japan) *(Invited)*

14-6
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14-7
9:41~9:47 Satoyuki Kawano
(Osaka Univeristy, Japan) *(Invited)*

14-8
9:47~9:53 Xing-Rong Zhang
(Peking University, China) *(Invited)*

9:53~10:03 BREAK

14-9
10:03~10:09 Seigo Sakai
(Yokohama National University, Japan) *(Invited)*

14-10
10:09~10:15 Tsutomu Saito
(Muroran Institute of Technology, Japan) *(Invited)*

14-11
10:15~10:21 Yun Luo
(Shanghai Jiao Tong University, China) *(Invited)*

14-12
10:21~10:27 James W. Gregory
(Ohio State University, USA) *(Invited)*

14-13
10:27~10:33 Deivandren Sivakumar
(Indian Institute of Science, India) *(Invited)*

14-14
10:33~10:39 Nam Il Kim
(Chung-Ang University, Korea) *(Invited)*

14-15
10:39~10:45 Chih-Yung Huang
(National Tsing Hua University, Taiwan) *(Invited)*

10:45~12:00 ***Session1-2 Poster presentation (14-1~14-15)***

12:00~13:00 LUNCH

13:00~13:54 ***Session2-1 Introduction of Institution and Research(14-16~14-24)***

14-16
13:00~13:06 Mikhail Ivanov
(Siberian Branch of the Russian Academy of Sciences, Russia) *(Invited)*

14-17
13:06~13:12 Sudarshan Kumar
(Indian Institute of Technology Bombay, India) *(Invited)*

14-18
13:12~13:18 Hamid Hosseini
(Kumamoto University, Japan) *(Invited)*

14-19
13:18~13:24 Atsushi Sakurai
(Niigata University, Japan) *(Invited)*

14-20
13:24~13:30 Yoshio Wakamatsu
(Japan Aerospace Exploration Agency, Japan) *(Invited)*

14-21
13:30~13:36 Jinhao Qiu
(Nanjing University of Aeronautics and Astronautics, China) *(Invited)*

14-22
13:36~13:40 Kosuke Ito
(Nihon University, Japan) *(Invited)*

14-23
13:42~13:48 Takeshi Yokomori
(Keio University, Japan) *(Invited)*

14-24
13:48~13:54 Koutaro Tsubaki
(Saga University, Japan) *(Invited)*

13:54~15:00 ***Session2-2 Poster presentation(14-16~14-24)***

15:00~16:00 ***Alumni Reunion Session***