

## Preface

Welcome to Seventeenth International Conference on Flow Dynamics (ICFD2020) hosted by the Institute of Fluid Science, Tohoku University.

As you already know, the COVID-19 pandemic is emerging as a global threat. Therefore, regarding the ICFD holding in 2020, we decided to give priority to the safety of participants and decided to hold it as a web-based virtual meeting. Sorry for inconvenience.

Flow Dynamics is a comprehensive research field which deals with the flow and transport phenomena concerning electrons, molecules and nanoparticles, any continuum fluids and materials, energy, information and so forth. ICFD is expected to play significant roles in helping Flow Dynamics to be a major academic discipline which deals with various issues that human society is facing, such as new energy, environment, resource and diseases.

ICFD works as a platform of discussion to reach scientific truth and engineering solutions for all the flow-relevant problems. A wide variety of sessions are organized in ICFD to provide the seeds and to fulfill the needs from a viewpoint of flow. We would be very grateful if it contributes to initiate scientific and technical exchanges and international research collaboration.

Another significance of this conference is that it provides unique opportunities for young researchers and students to be educated and self-developed through participation and presentation in the Student Session and special events.

The technical program consists of 1 General Session, 20 Organized Sessions, starting in the morning on Wednesday, October 28. Approximately 365 papers will be presented. It is our great pleasure to meet a large number of participants during the conference.

On behalf of the organizing committee of the Seventeenth International Conference on Flow Dynamics, we wish you would enjoy fruitful discussions and exchanges of information, and we would like you to have the opportunities to strengthen your friendships, to meet new friends and to enjoy beautiful and pleasant atmosphere of the autumn in Sendai.

Jun Ishimoto, Professor  
Institute of Fluid Science, Tohoku University  
and  
Jong-Shinn Wu, Professor  
National Chiao Tung University  
General Co-Chairs, ICFD2020

## Seventeenth International Conference on Flow Dynamics

### Organized by:

- Executive Committee of International Conference Flow Dynamics

### Supported by:

- Institute of Fluid Science, Tohoku University

### Co-organized by:

- Graduate School of Information Sciences, Tohoku University

### In cooperation with:

- Combustion Society of Japan
- Computational Science and Engineering Division, Atomic Energy Society of Japan
- Japan Aerospace Exploration Agency
- Japan Foundry Engineering Society
- Japan Society of Maintenology
- The Electrochemical Society of Japan
- The Japan Society for Aeronautical and Space Sciences
- The Japan Society for Computational Engineering and Science
- The Japan Society of Applied Electromagnetics and Mechanics
- The Japan Society of Fluid Mechanics
- The Japan Society of Mechanical Engineers
- The Japan Society of Microgravity Application
- The Japanese Society for Non-Destructive Inspection

### Supported by a grant from:

- Intelligent Cosmos Academic Foundation

This event is being held as a part of the Tohoku University Global Webinar Series.

### SCOPE:

The 17th International Conference on Flow Dynamics (ICFD2020), in the annual series since 2004, will be held from October 28th to 30th, 2020 at Sendai, Japan.

As you already know, the COVID-19 pandemic is emerging as a global threat. Therefore, regarding the ICFD holding in 2020, we decided to give priority to the safety of participants and decided to hold it as a web-based virtual meeting. Sorry for inconvenience.

The objectives of this conference are to explore new horizons in science and technology in Flow Dynamics by discussing and exchanging information related to the most advanced scientific fields and to cutting edge technologies. ICFD is now recognized by the researchers and engineers all over the world as one of the largest and the most important international conferences in the field of Flow Dynamics. It has also been playing an important role in promoting international research collaborations. Especially, ICFD2020 focus on energy related topics, such as renewable energy, hydrogen energy, natural energy, and so on. In addition, it should be noted that ICFD provides young researchers and students with unique opportunities to develop themselves through proactive participation in the conference and young researches and students are encouraged by awards.

The first nine ICFDs were hosted by two Tohoku University COE Programs, “The 21st Century International COE on Fluid Dynamics (21COE, Year 2003 - Year 2007)” and its successor “Global COE Program World Center of Education and Research for Trans-disciplinary Flow Dynamics (GCOE, Year 2008 - Year 2012)”. Institute of Fluid Science (IFS), Tohoku University, was responsible for both 21COE and GCOE programs. GCOE ended in March of 2013. In 2018, on the occasion of its 75th anniversary, IFS was reorganized as an even more powerful research institute, particularly in energy-related research, with three new research divisions and an Innovative Energy Research Center. In this new movement, IFS decided to continue to support this conference series, and ICFDs have been held annually since 2013. We pledge to maintain ICFD's dynamism and spirit as a meeting for distinguished scientists in Flow Dynamics as well as for future generations of scientists and engineers.

Flow Dynamics is a comprehensive scientific field which deals with flow and transport phenomena concerning electrons, molecules, nanoscale particles,

any continuum fluid with and without chemical reaction, any material, energy, information, economic activity and so forth. It addresses multiscale, multiphysics and multidisciplinary problems and deals with all-natural phenomena including bio-processes, corrosion, weather, volcanic eruptions, earth magnetic field and tectonic motions, and in most human activities such as industrial processes, energy production & saving, and transportation. ICFD is expected to play a significant role in encouraging Flow Dynamics to become a major academic discipline, which deals with various difficult tasks that human society is facing, such as control of nuclear power generators, global warming, energy, resource and diseases. We expect all scientists and engineers who are working or are interested in such areas to participate in ICFD2020 and extend their research areas and international human networks.

ICFD serves as a platform of discussion to reach scientific truth and engineering solutions for all the flow-relevant problems. Participants will know when they come to Sendai that a wide variety of technical sessions are available to provide the seeds and to fulfill the needs from a viewpoint of flow dynamics. We cordially invite researchers, teachers, students and planners exploring and studying in the relevant research and development fields of energy, bio-, nano-, material, environmental, planetary and earth sciences and technologies, particularly in the academic fields of mechanical engineering, aerospace engineering, nuclear engineering, physics, medical science and engineering, chemistry, chemical engineering and all other areas. Late October is a beautiful season in Sendai. We believe that you will enjoy beautiful and pleasant atmosphere of the autumn in Sendai.

### CONFERENCE COMMITTEE:

#### **Executive Committee Members:**

Jun Ishimoto (General Co-Chair of ICFD2020, Tohoku University)

Jong-Shinn Wu (General Co-Chair of ICFD2020, National Chiao Tung University)

Kaoru Maruta (IFS Director, Tohoku University)

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Weihua Li (University of Wollongong)

Gary Rosengarten (RMIT University)

Victoria Timchenko (The University of NSW)

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XinGang Liang (Tsinghua University)

Jinhao Qiu (Nanjing University of Aeronautics and Astronautics)

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Philippe Kapsa (ECL)

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Christian Boller (Saarland University)

Gerd Dobmann (Saarland University)

##### Hungary

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Takatoshi Ito (Tohoku University)

Satoyuki Kawano (Osaka University)

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Kaoru Maruta (Tohoku University)

Hideo Miura (Tohoku University)

Junichiro Mizusaki (Tohoku University)

Masami Nakano (Tohoku University)

Hideya Nishiyama (Tohoku University)

Shigeru Obayashi (Tohoku University)

Taku Ohara (Tohoku University)

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Sung-Jin Kim (KAIST)  
Hyung Jin Sung (KAIST)

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(Observer) Tomohiro Okazaki

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Joon Sik Lee (Seoul National University)  
Taiwan Wu-Shung Fu (National Chiao Tung University)  
UK Yiannis Ventikos (University College of London)

## Sessions

### General Session

#### **GS1: General Session**

Co-Organizers: J. Ishimoto, Y. Iga (Tohoku University)

### Organized Session

#### **OS1 & OS3: The Eighth International Symposium on Innovative Energy Research I & III**

##### **OS1: Advanced Materials and its Energy Application**

Co-Organizers: S. Samukawa, S. Orimo (Tohoku University)

##### **OS3: Multiphase Energy Science and Technology (Combination of Monozukuri-Fluid Science / Engineering)**

Organizer: J. Ishimoto (Tohoku University)

#### **OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals**

Co-Organizers: P. Dagaut (CNRS-INSIS), H. Im (King Abdullah University of Science and Technology), N. I. Kim (KAIST), K. Maruta (Tohoku University), S. Minaev (Far Eastern Federal University)

#### **OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 12th Edition**

Co-Organizers: T. Shimada (JAXA), K. Sawada (Tohoku University)

#### **OS5: Advanced Applications of Multi-functional Fluids**

Co-Organizers: H. Takana (Tohoku University), T. Fujino (University of Tsukuba), K. Doi (Toyohashi University of Technology), N. Takeuchi (Tokyo Institute of Technology)

#### **OS6: New Dimensions of Magnetic Suspension and Balance System**

Co-Organizers: S. Obayashi, K. Asai (Tohoku University)

#### **OS7: Fluid and Seismicity**

Organizer: Y. Mukuhira, T. Ito (Tohoku University)

#### **OS8: Advanced Physical Stimuli and Biological Responses**

Co-Organizers: T. Sato (Tohoku University), T. Ohashi (Hokkaido University), S. Kawano (Osaka University), R. Shirakashi (The University of Tokyo)

#### **OS9: Biomedical Flow Dynamics**

Co-Organizers: H. Anzai, M. Zhang (Tohoku University), K. Takashima (Kyushu Institute of Technology), T. Nakayama (National Institute of Technology, Tsuruoka College), A. Qiao (Beijing University of Technology), M. Ohta (Tohoku University)

**OS10: Biomolecular Dynamics**

Co-Organizers: Y. Ikeda (Meiji University), K. Etchuya (Aoyama Gakuin University), M. Ohta (Tohoku University)

**OS11: Microfluidics and Microphysiological Systems**

Co-Organizers: K. Funamoto (Tohoku University), T. Fukui (Kyoto Institute of Technology)

**OS12: Supercritical Fluid**

Co-Organizers: Y. Kanda (Tohoku University), Y. Feng (Chinese Academy of Sciences), A. Komiya (Tohoku University)

**OS13: Flow Realization, Measurement and Visualization**

Co-Organizers: N. Fujisawa, T. Yamagata (Niigata University), T. Hayase (Tohoku University), S. Funatani (Yamanashi University), S. Iio (Shinshu University)

**OS14: Porous Media**

Co-Organizers: A. Suzuki, S. Tupin, M. Ohta (Tohoku University)

**OS15: Turbulence: from Fundamentals to Applications**

Co-Organizers: Y. Hattori (Tohoku University), T. Ishihara (Okayama University), Y. Tsuji (Nagoya University)

**OS16: Vortex Motion**

Co-Organizers: Y. Hattori (Tohoku University), S. Llewellyn Smith (UCSD)

**OS17: Liaison Office Session**

Co-Organizers: M. Ohta, T. Uchimoto, T. Tokumasu, A. Komiya (Tohoku University)

**OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics**

Co-Organizers: K. Akita, Y. Higuchi, R. Yoshimura (Tohoku University)

Supervisors: A. Hayakawa, A. Suzuki, J. Okajima (Tohoku University)

**OS19: The 20th International Symposium on Advanced Fluid Information (AFI-2020)**

**IFS Collaborative Research Forum**

Co-Organizers: H. Masuda, J. Ishimoto (Tohoku University)

**Fluid Science Research Award Lectures**

**OS20: AFI-2020 IFS Lyon Center Collaborative Research Forum**

Organizer: T. Uchimoto (Tohoku University)

8:00	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	8:00
<b>8:45-9:00 Opening Address</b>											
BREAK											
9:20	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	9:20
	<b>GS1: General Session</b>	<b>OS1&amp;OS3: The Eighth International Symposium on Innovative Energy Research I &amp; III</b>				<b>OS7: Fluid and Seismicity</b>			<b>OS19: Fluids Science Research Award Lecturers</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
BREAK											
11:10	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	11:10
	<b>GS1: General Session</b>	<b>OS1&amp;OS3: The Eighth International Symposium on Innovative Energy Research I &amp; III</b>				<b>OS7: Fluid and Seismicity</b>			<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
BREAK											
13:30	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	13:30
	<b>GS1: General Session</b>		<b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b>	<b>OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 12th Edition</b>					<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
BREAK											
15:20	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	15:20
			<b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b>	<b>OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 12th Edition</b>					<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
BREAK											
17:10	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	17:10
			<b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b>	<b>OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 12th Edition</b>					<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
BREAK											
19:00	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	19:00
			<b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b>							<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
20:00			<b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b>							<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	20:00

8:00	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	8:00
		<b>OS6: New Dimensions of Magnetic Suspension and Balance System</b>								<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
9:00	BREAK										9:00
9:20	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	9:20
	<b>GSI: General Session</b>	<b>OS6: New Dimensions of Magnetic Suspension and Balance System</b>		<b>OS10: Biomolecular Dynamics</b>			<b>OS13: Flow Realization, Measurement and Visualization</b>	<b>OS16: Vortex Motion</b>	<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
10:50	BREAK										10:50
11:10	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	11:10
	<b>GSI: General Session</b>					<b>OS12: Supercritical Fluid</b>	<b>OS13: Flow Realization, Measurement and Visualization</b>	<b>OS16: Vortex Motion</b>	<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
12:40	BREAK										12:40
13:30	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	13:30
			<b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b>			<b>OS12: Supercritical Fluid</b>	<b>OS13: Flow Realization, Measurement and Visualization</b>		<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
15:00	BREAK										15:00
15:20	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	15:20
			<b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b>	<b>OS9: Biomedical Flow Dynamics</b>		<b>OS12: Supercritical Fluid</b>	<b>OS13: Flow Realization, Measurement and Visualization</b>	<b>OS15: Turbulence: from Fundamentals to Applications</b>	<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
16:50	BREAK										16:50
17:10	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	17:10
		<b>OS14: Porous Media</b>	<b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b>	<b>OS9: Biomedical Flow Dynamics</b>	<b>OS20: AFI-2020 IFS Lyon Center Collaborative Research Forum</b>			<b>OS15: Turbulence: from Fundamentals to Applications</b>		<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
18:40	BREAK										18:40
19:00	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	19:00
					<b>OS20: AFI-2020 IFS Lyon Center Collaborative Research Forum</b>					<b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b>	
20:00	BREAK										20:00



8:00	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	8:00
									OS19: IFS Collaborative Research Forum (AFI-2020)	OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics	
9:00	BREAK										9:00
9:20	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	9:20
	OS8: Advanced Physical Stimuli and Biological Responses	OS5: Advanced Applications of Multi-functional Fluids							OS19: IFS Collaborative Research Forum (AFI-2020)	OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics	
10:50	BREAK										10:50
11:10	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	OS	ROOM 8	ROOM 9	ROOM 10	11:10
	OS8: Advanced Physical Stimuli and Biological Responses	OS5: Advanced Applications of Multi-functional Fluids							OS19: IFS Collaborative Research Forum (AFI-2020)	OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics	
12:40	BREAK										12:40
13:30	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	13:30
	OS8: Advanced Physical Stimuli and Biological Responses	OS5: Advanced Applications of Multi-functional Fluids	OS2:The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals	OS9: Biomedical Flow Dynamics		OS11: Microfluidics and Microphysiological Systems				OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics	
15:00	BREAK										15:00
15:20	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	15:20
	OS8: Advanced Physical Stimuli and Biological Responses	OS5: Advanced Applications of Multi-functional Fluids	OS2:The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals	OS9: Biomedical Flow Dynamics		OS11: Microfluidics and Microphysiological Systems		OS15: Turbulence: from Fundamentals to Applications		OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics	
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20:00	BREAK										20:00

ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	
8:45-9:00 Opening Address										
BREAK										
<p><b>GSI: General Session</b> Flow control, Jets Chair: M. Hirota</p> <p>9:20-9:40 GSI-1 Genetic Programming Control of a Hydrodynamically Self-excited Jet <i>Z. Yang, B. Yin, Y. Guan, S. Redonnet, Y. Zhu, V. Gupta, L. K. B. Li</i></p> <p>9:40-10:00 GSI-2 Control of a Flow at 30 m/s Using Supersonic Micro Ejectors <i>Y. Nakadazi, A. Urita, T. Handa</i></p> <p>10:00-10:20 GSI-3 Experimental Study on the Effect of High-Frequency Flapping Jets on Supersonic Boundary Layer <i>R. Aoki, I. Fujimura, T. Handa, C. Lee, Y. Ozawa, Y. Saito, T. Nonomura, K. Asai</i></p> <p>10:20-10:40 GSI-4 Comparison of Theoretical Models and Rainbow Schlieren Deflectometry for Slightly Underexpanded Microjets <i>M. M. Islam, R. Fukunaga, S. Nakao, Y. Miyazato</i></p>	<p><b>OS1&amp;OS3: The Eighth International Symposium on Innovative Energy Research I &amp; III</b> Chair: D. Ohori</p> <p>9:20-9:40 OS1/3-1 On Electron Energy Bands of Si/Si<sub>0.5</sub>Ge<sub>0.5</sub> Nanopillars <i>M.-H. Chuang, Y. Li, D. Ohori, S. Samukawa</i></p> <p>9:40-10:00 OS1/3-2 On a Rotating Hollow Cylinder in Flight <i>M. Naganata, H. Tanigawa, J. Ishimoto, M. Nakano, T. Noguchi, K. Hirata</i></p> <p>10:00-10:20 OS1/3-3 Visualization of Flow Pattern of Saturated Steam for Gas-Liquid Two-Phase Flow <i>S. Oki, Y. Tanzawa, J. Ishimoto</i></p> <p>10:20-10:40 OS1/3-4 Effect of Wood Species on the Hydrophobic Properties of Biofuel Obtained by Torrefaction <i>A. Korshunov, B. Kichatov, A. Kiverin</i></p>				<p><b>OS7: Fluid and Seismicity</b> Chairs: Y. Mukuhira &amp; T. Ito</p> <p>9:20-9:43 OS7-1 Case Studies on Worldwide Fluid-Induced Seismicity in Geothermal and Oil/Gas Field <i>T. Kumama, K. Tecuka, H. Asanuma, T. Ishibashi, K. Okamoto, K. Kiyono, Y. Mukuhira</i></p> <p>9:43-10:03 OS7-2 Tensile Dominant AE Activities during Hydraulic Fracturing in a Laboratory <i>M. Naoi, R. Tanaka, Y. Chen, Y. Arima</i></p> <p>10:03-10:26 OS7-3 Growing Seismicity in the Sichuan Basin and its Association with Industrial Activities. <i>X. Lei, Z. Wang, J. Su</i></p> <p>10:26-10:49 OS7-4 Fluid Flow and Permeable Path Inferred from Microseismic Events in Okuazu Geothermal Field, Japan <i>K. Okamoto, H. Asanuma, T. Okabe, Y. Abe, M. Tsuzuki</i></p>			<p><b>OS19: Fluids Science Research Award Lecturers</b> Chair: S. Obayashi</p> <p>9:20-9:50 FRA-1 On non-equilibrium, non-Kolmogorov turbulence <i>Koji Nagata</i> (Nagoya University, Japan)</p> <p>9:50-10:20 FRA-2 Particle Method for Incompressible Free-surface Flow <i>Saiichi Koshizuka</i> (The University of Tokyo, Japan)</p> <p>10:20-10:50 FRA-3 Synthesis of nano-materials by chemical vapor deposition technique <i>Shigeo Maruyama</i> (The University of Tokyo, Japan)</p>		
BREAK										
<p><b>GSI: General Session</b> Heat transfer, Cooling Chair: J. Okajima</p> <p>11:10-11:30 GSI-5 Numerical Investigation of Supercritical Hydrocarbon Flows with Pyrolysis <i>S. Yatsuyama, T. Furusawa, S. Yamamoto, S. Tomioka, T. Onodera</i></p> <p>11:30-11:50 GSI-6 Estimation of Heat Transfer Characteristics in Microduct Compressible Flow Based on Molecular Sensor and CFD <i>R. Uematsu, B. Han, Y. Matsuda, Y. Egami, T. Handa</i></p>	<p><b>OS1&amp;OS3: The Eighth International Symposium on Innovative Energy Research I &amp; III</b> Chair: D. Ohori</p> <p>11:10-11:30 OS1/3-5 Estimation of Multiple Coefficients to Express Longitudinal and Transverse Electrostriction in the PTMO Crystal <i>A. Suzuki, M. Miyano, R. Miura, G. Diquet, J.-Y. Cavaille, G. Sebald</i></p> <p>11:30-11:50 OS1/3-6 Inverse Magnetostrictive Properties for Magneto Stress-Impedance Characterization of Thin Films <i>G. Diquet, K. Makabe, H. Kurita, J. Froemel, F. Narita</i></p>				<p><b>OS7: Fluid and Seismicity</b> Chairs: Y. Mukuhira &amp; T. Ito</p> <p>11:10-11:33 OS7-5 Geologic Constraints on Fluid Flux in Subduction Zones <i>M. Ueno</i></p> <p>11:33-11:56 OS7-6 Aseismic Slip during the Earthquake Swarm in Hakone Volcano on May 2019 <i>Y. Yukutake, R. Honda</i></p>			<p><b>OS19: IFS Collaborative Research Forum (AFI-2020)</b></p> <p>11:10-12:40 CRF-1 to 9 Short Oral Presentation and Free Discussion 1</p>		

OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics

OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics

<p>11:50-12:10 GS1-7 Design Study of Cryogenic Loop Heat Pipe for Space Application <u>X. Chang</u>, <u>T. Adachi</u>, <u>K. Odagiri</u>, <u>H. Ogawa</u>, <u>H. Nagai</u></p>	<p>11:50-12:10 OS1/3-7 Numerical Simulation of H and CH<sub>4</sub> Distribution in the Deposition Chamber <u>Z. Y. Chi</u>, <u>S. Q. Hao</u>, <u>Q. H. Xuan</u>, <u>Z. Ming</u></p> <p>12:10-12:30 OS1/3-8 Numerical Simulation of Microwave Chemical Vapor Deposition Chamber Reaction Process <u>Z. Y. Chi</u>, <u>Q. H. Xuan</u>, <u>S. Q. Hao</u>, <u>Z. Ming</u></p>				<p>11:56-12:19 OS7-7 <i>Invited</i> Outstanding Geomechanical Issues for Enhanced Geothermal Systems and Induced Seismicity <u>K.-B. Min</u>, <u>K.-I. Kim</u>, <u>S. Park</u>, <u>H. Yoo</u>, <u>J. Yim</u>, <u>L. Xie</u></p>				
BREAK									
ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
<p><b>GS1: General Session</b> Solar energy, Power generation <i>Chair: Y. Kanda</i></p>		<p><b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b> <i>Chair: Y. Morii</i></p>	<p><b>OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 12th Edition</b> <i>Internal Ballistics</i> <i>Chair: T. Shimada</i></p>					<p><b>OS19: IFS Collaborative Research Forum (AFI-2020)</b></p>	
<p>13:30-13:50 GS1-8 Experiment on Steady-Flow-Type Particle Receiver for High-Temperature Solar Heat Absorption <u>J. Sakai</u>, <u>Y. Suzuki</u>, <u>K. Matsubara</u>, <u>S. Bellan</u>, <u>T. Kodama</u></p> <p>13:50-14:10 GS1-9 CANCELED</p> <p>14:10-14:30 GS1-10 CANCELED</p>		<p>13:30-13:50 OS2-1 Comparison of 0D with Two Constraints and 1D Analyses of CH<sub>4</sub>/air Mixture Ignition Using a Nanosecond Pulsed Discharge <u>M. Suzuki</u>, <u>Y. Morii</u>, <u>H. Nakamura</u>, <u>K. Maruta</u></p> <p>13:50-14:10 OS2-2 Study on the Development of Detailed C<sub>2</sub>H<sub>2</sub>/C<sub>2</sub>H<sub>4</sub> Surface Reaction Mechanism on Pt/Al<sub>2</sub>O<sub>3</sub> Monolith Catalyst using Gaseous and Surface Species Measurements <u>S. Naing</u>, <u>J.P.A. Kristyawan</u>, <u>D. Shimokuri</u>, <u>S. Hinokuma</u>, <u>H. Murakami</u>, <u>Y. Matsumoto</u>, <u>T. Omori</u>, <u>M. Kawano</u>, <u>M. Koutoku</u>, <u>H. Yokohata</u>, <u>A. Miyoshi</u></p> <p>14:10-14:30 OS2-3 Investigation on the Relationship between MIE Transition and Fuel Properties Part 1: Effect of Furan Addition to Base Fuel <u>T. Mukoyama</u>, <u>Y. Hirano</u>, <u>T. Tezuka</u>, <u>Y. Morii</u>, <u>H. Nakamura</u>, <u>K. Maruta</u></p>	<p>13:30-14:00 OS4-1 Entrainment Effect of Liquefying Fuels on Hybrid Rocket Combustion <u>L. Kim</u>, <u>C. Lee</u></p> <p>14:00-14:30 OS4-2 Accuracy of Reconstruction Techniques for Determination O/F in Hybrid Rockets <u>Y. Saito</u>, <u>L. Kamps</u>, <u>A. Tsuji</u>, <u>H. Nagata</u></p> <p>14:30-15:00 OS4-3 Numerical Analysis of Internal Flow of Hybrid Rocket Using TCUP Method <u>A. Takeshita</u>, <u>T. Shimada</u></p>					<p>13:30-15:00 CRF-10 to 17 Short Oral Presentation and Free Discussion 2</p>	<p>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</p>

15:00		14:30-14:50 OS2-4 Investigation on Relationship between MIE Transition and Fuel Properties Part 2: Lewis Number and Laminar Burning Velocity <i>Y. Hirano, T. Mukoyama, T. Tezuka, Y. Morii, H. Nakamura, K. Maruta</i>								15:00	
BREAK											
15:20	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	15:20
			OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals Chair: <i>M. Sarathy</i>	OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 12th Edition Regenerative Cooling Nozzle Chair: <i>R. Sawada</i> Fuel Characteristics Chair: <i>T. Shimada</i>					OS19: IFS Collaborative Research Forum (AFI-2020)		
			15:20-15:40 OS2-5 CFD Analysis on FREI with Low-Temperature Oxidation in a Micro Flow Reactor with a Controlled Temperature Profile for n-Heptane/air Mixture <i>K. Akita, Y. Morii, H. Nakamura, T. Tezuka, K. Maruta</i> 15:40-16:00 OS2-6 Fuel Sensitivity on End-gas Autoignition Behavior during Knocking Combustion <i>H. Terashima, H. Nakamura</i> 16:00-16:20 OS2-7 Two-dimensional Laboratory-scale DNS for Knocking Experiment using n-heptane Fuel <i>Y. Morii, A. K. Dube, H. Nakamura, K. Maruta</i> 16:20-16:50 OS2-8 <i>Invited</i> Solving the Population Balance Equation for Non-Inertial Particles Dynamics using PDF and Machine Learning: Application to a Sooting Flame <i>A. Seltz, L. Vervisch, P. Domingo</i>	15:20-15:50 OS4-4 Regenerative Cooling Concept for Thermal Management of Graphite Nozzle Throat <i>L. Kamps, S. Ito, H. Nagata</i> 15:50-16:20 OS4-5 Development of Experimental System to Measure Heat Transfer Characteristics of LOX <i>K. Kitagawa, G. Naka, T. Shimada</i> 16:20-16:50 OS4-6 Evaluation of Axial Fuel Regression Rate in Hybrid Rocket Fuels Using 3D Scanner <i>T. Okuda, L. Kamps, S. Ito, L. Kageyama, H. Ikeda, M. Wakita, H. Nagata</i>					15:20-16:50 CRF-18 to 28 Short Oral Presentation and Free Discussion 3		OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics
BREAK											
17:10	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	17:10
			OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals Ammonia and Hydrogen Combustion Chair: <i>H. G. Im</i>	OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 12th Edition Fuel Characteristics Chair: <i>T. Shimada</i>					OS19: IFS Collaborative Research Forum (AFI-2020)		
			17:10-17:20 Introduction <i>H.G. Im</i> 17:20-17:50 OS2-9 <i>Invited</i> Ammonia/Hydrogen for Zero-Carbon Power <i>A. Valera-Molina, S. Mashruk, H. Xiao, M.-C. Chiong, C.T. Chong</i>	17:10-17:40 OS4-7 The Fragmentation Test Results for Hybrid Rocket Fuels (Polypropylene) <i>A. Takahashi</i> 17:40-18:10 Wrap-up <i>T. Shimada</i>					17:10-18:40 CRF-29 to 31 Short Oral Presentation and Free Discussion 4		OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics

		<p>17:50-18:20 OS2-10  <i>Invited</i>                      Stability Limits and Exhaust NO Emissions from Ammonia-Hydrogen-Air Flames at Elevated Pressures  <i>A. A. Khateeb, T. F. Guiberti, W. L. Roberts</i></p> <p>18:20-18:50 OS2-11  <i>Invited</i>                      Laminar Flame Speeds of Ammonia Mixtures at High Pressure and Temperature Conditions: New Experimental Results and Performance of Different Kinetic Models  <i>A. Karan, G. Dayma, C. Chauveau, F. Halter</i></p>								
18:40	BREAK									18:40
19:00	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
			<p>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals  <i>Chair: F. Halter</i></p>							
		<p>19:00-19:20 OS2-12                      Development of a Novel Perforated Plate Based Microcombustor for Power Generation.  <i>B. Aravind, K. Hiranandani, S. Kumar</i></p> <p>19:20-19:40 OS2-13                      Mechanism of Low-Lewis-number and Near-limit Ball-like Flame Splitting in Low-speed Counterflow Field  <i>T. Akiba, T. Okano, H. Nakamura, Y. Morii, T. Tezuka, R. Fursenko, S. Minaev, M. Kikuchi, K. Maruta</i></p> <p>19:40-20:00 OS2-14                      Numerical Investigation on Flame Dynamics in Convergent-Divergent Microtube  <i>J. Singh, B. Aravind, V. V. Jyotibhai, H. Kolekar, S. Kumar</i></p>							<p>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</p>	
20:00										20:00

ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
	<p><b>OS6: New Dimensions of Magnetic Suspension and Balance System</b> Chair: <i>K. Asai</i></p>								
	<p>8:00-8:20 OS6-1 Uncertainty Analysis of the Pitch Damping Coefficient of Blunt Bodies, Measured from Magnetic Suspension Wind Tunnel Tests <i>Q. McKown, M. Schoenenberger, D. Cox</i></p> <p>8:20-8:40 OS6-2 Studies of Unsteady Aerodynamics of Axially Oriented Low Fineness Ratio Cylinders <i>F. Miller, C. P. Britcher</i></p> <p>8:40-9:00 OS6-3 Aerodynamic Characteristics of Circular Cylinders with Fineness Ratios Lower than 0.5 Measured by a Magnetic Suspension and Balance System <i>M. Kuwata, Y. Abe, S. Yokota, T. Nonomura, H. Sawada, A. Yakeno, K. Asai, S. Obayashi</i></p>								OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics
BREAK									
ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
<p><b>GS1: General Session</b> Airfoil, Fluid machinery Chair: <i>K. Fujita</i></p>	<p><b>OS6: New Dimensions of Magnetic Suspension and Balance System</b> Chair: <i>S. Obayashi</i></p>		<p><b>OS10: Biomolecular Dynamics</b> Chairs: <i>M. Ohta, Y. Mukai, K. Eichuya</i></p>			<p><b>OS13: Flow Realization, Measurement and Visualization</b> Chair: <i>T. Yamagata</i></p>	<p><b>OS16: Vortex Motion</b> boundary layers &amp; optimization Chair: <i>Y. Hattori</i></p>	<p><b>OS19: IFS Collaborative Research Forum (AFI-2020)</b></p>	
<p>9:20-9:40 GS1-11 Effect of Cutback Stator Blades on Flows through Three-Stage Blade Rows in Intermediate Pressure Steam Turbine <i>H. Miyazawa, S. Funahazama, T. Furusawa, S. Yamamoto, S. Umezawa, K. Yonezawa, S. Ohmori, T. Suzuki</i></p> <p>9:40-10:00 GS1-12 Extraction of Design Knowledge from a Robust Design Optimization of Supersonic Biplane Airfoil <i>S. Tabata, W. Yamazaki</i></p>	<p>9:20-9:40 OS6-4 A Magnetic Suspension System for a Wind-Tunnel Model Moving by Unsteady Aerodynamic Force <i>K. Ueno, R. Nagasaka, T. Sato, M. Kikuchi</i></p> <p>9:40-10:00 OS6-5 Investigation on Near-wake Structure of Magnetically Levitated Freestream-aligned Circular Cylinder with Fineness Ratio 0.5 – 2.0 in 0.3-m MSBS <i>S. Yokota, Y. Saito, T. Nonomura, K. Asai</i></p>		<p>9:20-10:00 OS10-1 <i>Invited</i> Artificial Cell Membrane Platform for Reconstituting Ion Channel Functions <i>A. Hirano-Iwata</i></p> <p>10:00-10:30 OS10-2 <i>Invited</i> Potential Analysis of the Hydration Layer around the Injured DNA <i>A. Suzuki, M. Miyano, R. Miura, M. Yasui</i></p>			<p>9:20-9:40 OS13-1 Impact of Conditions of Gas and Liquid on Marangoni Convection in Meniscus Region under IPA Vapor in Wafer Drying Process <i>S. Miura, T. Ishibashi, H. Matsuo, K. Watanabe, N. Ono</i></p> <p>9:40-10:00 OS13-2 Numerical Simulation on the Effects of Aspect Ratio of Small Swimming Object's Fin Fold on its Propulsion Performance <i>T. Bamba, T. Fukui, K. Morinishi</i></p>	<p>9:20-9:40 OS16-1 Modeling of Nonlinear Crossflow Instability in Three-dimensional Boundary Layer <i>M. Hirota, Y. Ide, Y. Hattori</i></p> <p>9:40-10:00 OS16-2 Control of Streamwise Vortices Developing in Compressible Boundary Layers <i>O. Es-Sahli, A. Sescu, M. Z. Afzar, Y. Hattori, M. Hirota</i></p>	<p>9:20-10:50 CRF-32 to 42 Short Oral Presentation and Free Discussion 5</p>	OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics

<p>10:00-10:20 GS1-13 Flexible Wing Fluid-Structure Interaction Model Coupling Unsteady Vortex Lattice Method and Absolute Nodal Coordinate Formulation <i>K. Otsuka, S. Dong, Y. Wang, K. Fujita, H. Nagai, K. Makihara</i></p> <p>10:20-10:40 GS1-14 Flow Dynamics and Flight of the Smallest Featherwing Beetles <i>D. Kolomenskiy, S. Farišenkov, T. Engels, N. Lapina, P. Petrov, F.-O. Lehmann, R. Onishi, H. Liu, A. Polilov</i></p>	<p>10:00-10:20 OS6-6 Wind-tunnel Experiment of Square-Cylinder Model in 1.0-m Magnetic Suspension and Balance System <i>M. Horiguchi, Y. Saito, T. Nonomura, K. Asai, Y. Konishi, H. Okuizumi, H. Sawada, S. Obayashi</i></p>		<p>10:30-10:50 OS10-3 HeLa Cells Change induced by the Body Fluid of <i>Turritopsis</i> sp. <i>K. Hoba, Y. Ichii, Y. Kitada, S. Kubota, Y. Mukai</i></p>			<p>10:00-10:20 OS13-3 Effect of the Meandering of Large-Scale Motions on Bursting Phenomenon in Turbulent Boundary Layer <i>X. Chen, K. Iwano, Y. Sakai, Y. Ito</i></p> <p>10:20-10:40 OS13-4 Preliminary Analysis of Balance System for a Small Cryogenic Wind Tunnel in NDA <i>T. D. Nguyen, M. Kashitani, M. Taguchi, H. Ono</i></p>	<p>10:00-10:20 OS16-3 Shape Optimization Problem for suppressing Time Fluctuation Part of Transient Non-Newtonian Fluid <i>T. Nakazawa, N. Hirofumi</i></p> <p>10:20-10:40 OS16-4 An Invariant Key Flow for Vortex Generation in Terms of Local Flow Geometry <i>K. Nakayama, S. Saeki, K. Kondoh, Y. Hattori</i></p>		
BREAK									
ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
<b>GS1: General Session</b> Boundary layer, Instability <i>Chair: Y. Abe</i>					<b>OS12: Supercritical Fluid</b> <i>Chair: Y. Kanda</i>	<b>OS13: Flow Realization, Measurement and Visualization</b> <i>Chair: S. Funatani</i>	<b>OS16: Vortex Motion</b> symmetry & sound <i>Chair: M. Hirota</i>	<b>OS19: IFS Collaborative Research Forum (AFI-2020)</b>	
<p>11:10-11:30 GS1-15 Preliminary Evaluation of Permeability Effect on Membrane Wing at Low Reynolds Number <i>K. Fujita, K. Takahashi, H. Nagai</i></p> <p>11:30-11:50 GS1-16 Study on the Frequency Selection Mechanism of Tonal Protuberance Noise in Laminar Boundary Layers <i>T. Abo, A. Inasawa, M. Asai</i></p> <p>11:50-12:10 GS1-17 Self-excited Chaotic Thermoacoustic Oscillations Via Type-II Intermittency <i>Y. Guan, V. Gupta, L. K. B. Li</i></p>					<p>11:40-12:05 OS12-1 <i>Invited</i> Thermodynamics Near the Critical Point of A Fluid: Critical Distance and Convection <i>L. Chen</i></p> <p>12:10-12:35 OS12-2 Molecular Dynamics Simulation of CO<sub>2</sub> Fluid Crossing the Pseudo-Critical Point <i>M. Sun, L. Chen</i></p>	<p>11:10-11:30 OS13-5 Application of MZI for Square Underexpanded Microjets <i>T. Sakanashi, S. Nakao, Y. Miyazato, Y. Ishino</i></p> <p>11:30-11:50 OS13-6 Application of High-Speed MZI for Transonic Diffuser Flows <i>T. Naka, S. Nakao, Y. Miyazato</i></p> <p>11:50-12:10 OS13-7 Application of RSD for Axisymmetric Underexpanded Microjets <i>R. Fukunaga, S. Nakao, Y. Miyazato, Y. Ishino</i></p> <p>12:10-12:30 OS13-8 POD-based Spatio-temporal Superresolution Measurement on a Supersonic Jet with a Mach Number of 2.0 using a PIV and a Near-field Acoustic Measurements <i>Y. Ozawa, T. Nonomura, K. Asai</i></p>	<p>11:10-11:30 OS16-5 Topological Invariants and Nambu Brackets in Fluid Mechanics and Magnetohydrodynamics <i>Y. Fukumoto, R. Zou</i></p> <p>11:30-11:50 OS16-6 Numerical Analysis of Air-Jet Instrument's Sound Sources by Compressible Direct Numerical Simulation <i>R. Tabata, S. Iwagami, T. Kobayashi, K. Takahashi, Y. Hattori</i></p> <p>11:50-12:10 OS16-7 Reduction of Aeroacoustic Sound using Porous Materials: Comparison between Macroscopic and Microscopic Models <i>Y. Hattori, Y. Sato</i></p>	<p>11:10-12:40 CRF-43 to 51 Short Oral Presentation and Free Discussion 6</p>	<p>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</p>
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ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
		<p><b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b> Chair: <i>A.K. Dubey</i></p> <p>13:30-13:50 OS2-15 Potential of Novel Fuel Blends with Varying Aromatic Content in a MILD Combustor <i>S. Sharma, P. Singh, S. Kumar, B. Khandelwal</i></p> <p>13:50-14:10 OS2-16 Gas-phase Reactivity Difference between Dimethyl Carbonate and Diethyl Carbonate in a Micro Flow Reactor with a Controlled Temperature Profile <i>K. Kanayama, S. Takahashi, S. Morikura, H. Nakamura, T. Tezuka, K. Maruta</i></p> <p>14:10-14:30 OS2-17 Study on Effects of F/H Ratios on the Reactivities of CH<sub>2</sub>F<sub>2</sub>/C<sub>2</sub>HF<sub>3</sub> Refrigerant Blends using a Micro Flow Reactor with a Controlled Temperature Profile <i>S. Takahashi, H. Nakamura, T. Tezuka, K. Maruta</i></p>			<p><b>OS12: Supercritical Fluid</b> Chair: <i>Y. Kanda</i></p> <p>13:30-13:55 OS12-3 Onset of Thermal Convection of Supercritical CO<sub>2</sub> Fluid in a Closed Cavity <i>D. Yang, L. Chen</i></p> <p>14:00-14:25 OS12-4 Numerical Study of Passive Thermal Control for Uniform Temperature Field of Supercritical Fluid <i>H. Ito, Y. Kanda, A. Komiya</i></p> <p>14:30-14:55 OS12-5 Lattice Boltzmann Simulation of Convection and Heat transfer in a Square Side-Heated Cavity Filled with Supercritical CO<sub>2</sub> <i>Y. Feng, L. Chen, Y. Kanda, A. Komiya</i></p>	<p><b>OS13: Flow Realization, Measurement and Visualization</b> Chair: <i>S. Ito</i></p> <p>13:30-13:50 OS13-9 Effect of Free Surface on Fluid Motion in Blade-Free Planetary Mixer <i>T. Yamagata, K. Sato, N. Fujisawa</i></p> <p>13:50-14:10 OS13-10 Measurement of Heat Transfer of a Sphere Moving on the Inclined Wall Using High-speed IR Thermography <i>T. Miyagawa, T. Okabe, H. Murata</i></p> <p>14:10-14:30 OS13-11 Development of Correction Method of Aliasing in Two-Dimensional Ultrasonic-Measurement-Integrated Blood Flow Analysis System based on Explicit Method <i>S. Kimura, S. Miyauchi, T. Hayase, K. Inoue</i></p> <p>14:30-14:50 OS13-12 Ultrasonic-Measurement-Integrated Blood Flow Analysis Based on Lagrange Multiplier Method: Application to an Unsteady Problem <i>S. Miyauchi, T. Hayase</i></p>		<p><b>OS19: IFS Collaborative Research Forum (AFI-2020)</b></p> <p>13:30-15:00 CRF-52 to 63 Short Oral Presentation and Free Discussion 7</p>	
BREAK									
		<p><b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b> Chair: <i>K.D.K.A. Samarathne</i></p> <p>15:20-15:40 OS2-18 Transition to Detonation upon Free Flame Propagation <i>A. Kiverin, I. Yakovneko</i></p> <p>15:40-16:00 OS2-19 Intrinsic Thermoacoustic Instability of Premixed Flame in a Tube: Combustion Theory Perspectives <i>A. K. Dubey, H. Nakamura, K. Maruta</i></p>	<p><b>OS9: Biomedical Flow Dynamics</b> Chair: <i>T. Nakayama</i></p> <p>15:20-16:00 OS9-1 <i>Invited</i> Numerical Simulation of the Hemodynamic Interaction between Bicuspid Aortic Valve and Aortic Dilatation <i>Q. Hou, A. Qiao, N. Liu, Y. Pan</i></p> <p>16:00-16:20 OS9-2 Construction of the Split-Tip Catheter Model of the Segmental Adrenal Venous Sampling Procedure using Computational Fluid Dynamics <i>L. Muliany, N. K. Putra, Nugraha, T. Kinoshita, M. Ohta, H. Anzai</i></p>		<p><b>OS12: Supercritical Fluid</b> Chair: <i>Y. Feng</i></p> <p>15:20-15:55 OS12-6 Effects of Critical Anomalies on the Two-component Rayleigh-Bénard Instability: Oscillation and Backward Bifurcation <i>Z.-C. Hu, X.-R. Zhang</i></p> <p>16:00-16:25 OS12-7 High Spatio-Temporal Visualization of Heat and Mass Transfer Phenomena During Gas Hydrate Decomposition <i>Y. Kanda, A. Komiya</i></p>	<p><b>OS13: Flow Realization, Measurement and Visualization</b> Chair: <i>T. Hayase</i></p> <p>15:20-15:40 OS13-13 Ultrasonic Doppler Velocity Profiler (UVP) Based Pressure Field Estimation in Shear-thinning Fluid Flows <i>N. Tiwari, Y. Tasaka, Y. Murai</i></p> <p>15:40-16:00 OS13-14 Improvement of Pressure Field Estimated from PIV Data by Irrotational Correction Schemes Based on Helmholtz Vector Decomposition <i>N. Tiwari, Y. Murai</i></p>	<p><b>OS15: Turbulence: from Fundamentals to Applications</b> statistical properties Chair: <i>Y. Hattori</i></p> <p>15:20-15:40 OS15-1 Quantification of the Intermittency Factor in Transitional Shear Flows Using Probability Density Function <i>T. Tsumura, T. Kikugawa, M. Matsubara</i></p> <p>15:40-16:00 OS15-2 Identification of Vortex Structures in Flow using Tomographic PIV <i>K. Bhatt, T. Tong, T. Tsuneyoshi, Y. Tsuji</i></p>	<p><b>OS19: IFS Collaborative Research Forum (AFI-2020)</b></p> <p>15:20-16:50 CRF-64 to 76 Short Oral Presentation and Free Discussion 8</p>	



16:50		<p>16:00-16:20 OS2-20 Investigation on Pyrolysis and Oxidation of Nitromethane using a Micro Flow Reactor with a Controlled Temperature Profile <u>Y. Yamamoto</u>, <u>H. Nakamura</u>, <u>T. Tezuka</u></p> <p>16:20-16:40 OS2-21 Effects of Nitric Oxide on Methane Oxidation in a Micro Flow Reactor with a Controlled Temperature Profile <u>Y. Murakami</u>, <u>H. Nakamura</u>, <u>T. Tezuka</u>, <u>K. Maruta</u></p>	<p>16:20-16:40 OS9-3 Accelerated Puncture into Kidney Phantom <u>K. Sugiyama</u>, <u>K. Kikuchi</u>, <u>K. Takase</u>, <u>T. Ishikawa</u></p>		<p>16:00-16:20 OS13-15 Two-phase Flow Regime Identification for a Circular Channel Using K-means Clustering Technique <u>Y.-M. Hsu</u>, <u>S.-W. Chen</u>, <u>M.-S. Lin</u>, <u>Y.-S. Cheng</u>, <u>P.-S. Ruan</u>, <u>J.-D. Lee</u>, <u>B.-S. Pei</u></p> <p>16:20-16:40 OS13-16 Flow Regime Classification for Upward Two-phase Flow in a Rectangular Tube under Vibration using K-means Clustering <u>L.-T. Wu</u>, <u>S.-W. Chen</u>, <u>Y.-H. Chang</u>, <u>M.-L. Chai</u>, <u>P.-S. Ruan</u>, <u>Y.-M. Hsu</u></p>	<p>16:00-16:20 OS15-3 Pre-multiplied Spectra of Low Reynolds Number Large Motions in Channel Flow <u>W. Yu</u>, <u>A. Nasuno</u>, <u>A. Meherz</u>, <u>T. Tsuneyoshi</u>, <u>Y. Tsuji</u></p> <p>16:20-16:40 OS15-4 Inviscid Limit Solution of 2D Navier-Stokes Equation on a Rotating Sphere With Hyper Viscosity <u>K. Obuse</u>, <u>M. Yamada</u></p>						16:50
BREAK												
17:10	ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10	17:10	
		<p><b>OS14: Porous Media</b> <i>Chairs: S. Tzipin, A. Suzuki</i></p>	<p><b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b> <i>Ammonia and Hydrogen Combustion</i> <i>Chair: A. Hayakawa</i></p>	<p><b>OS9: Biomedical Flow Dynamics</b> <i>Chair: A. Qiao</i></p>	<p><b>OS20: AFI-2020 IFS Lyon Center Collaborative Research Forum</b> <i>Chairs: J.-Y. Cavaille &amp; L. Joly-Pottuz</i></p>			<p><b>OS15: Turbulence: from Fundamentals to Applications</b> <i>statistical properties</i> <i>Chair: T. Ishihara</i></p>				
	<p>17:10-17:30 OS14-1 <i>Invited</i> Fully Resolved Simulations of Porous Media Flows on GPUs <u>J. Latt</u>, <u>J. Bény</u>, <u>C. Coreixas</u>, <u>B. Chopard</u></p> <p>17:30-17:45 OS14-2 Lattice-Boltzmann Intravascular Thrombolysis <u>R. Petkantchian</u>, <u>F. Raynaud</u>, <u>B. Chopard</u></p> <p>17:45-18:00 OS14-3 A Bespoke OpenFOAM Toolbox for Multiphysics Flow Simulations in Pore Structures <u>J. Maes</u>, <u>H. P. Menke</u></p> <p>18:00-18:15 OS14-4 Permeability-Microstructure Relationship in Cancellous Bone <u>S. Tzipin</u>, <u>M. Ito</u>, <u>M. Ohta</u></p> <p>18:15-18:30 OS14-5 Topological Data Analysis for Flow in Porous Media <u>A. Suzuki</u></p>	<p>17:10-17:40 OS2-22 <i>Invited</i> Solar Fuels Combustion for a Circular Carbon Economy <u>S.M. Sarathy</u></p> <p>17:40-18:10 OS2-23 <i>Invited</i> Liquid Ammonia Spray Combustion in Two-Stage Gas Turbine Combustors <u>E.C. Okafor</u>, <u>O. Kurata</u>, <u>H. Yamashita</u>, <u>T. Inoue</u>, <u>T. Tsujimura</u>, <u>N. Iki</u>, <u>A. Hayakawa</u>, <u>M. Uchidai</u>, <u>S. Ito</u>, <u>H. Kobayashi</u></p> <p>18:10-18:30 OS2-24 Stability and Emissions Characteristics of Liquid Ammonia Spray Flames Co-fired with Methane in a Swirling Flow <u>H. Yamashita</u>, <u>E. C. Okafor</u>, <u>A. Hayakawa</u>, <u>T. Tsujimura</u>, <u>S. Ito</u>, <u>M. Uchida</u>, <u>T. Kudo</u>, <u>H. Kobayashi</u></p>	<p>17:10-17:50 OS9-4 <i>Invited</i> Patient-Specific Hemodynamic Simulation for Stroke Lesion Prediction <u>N. Debs</u>, <u>M. Decroocq</u>, <u>T.-H. Cho</u>, <u>C. Frindel</u></p> <p>17:50-18:10 OS9-5 Numerical Modeling of Biofluid Dynamics in a Cavity with Applications to Laser Cyst Obliteration <u>V. Chudnovskii</u>, <u>M. Guzev</u>, <u>J. Okajima</u>, <u>D. Tereshko</u></p> <p>18:10-18:30 OS9-6 <i>Invited</i> 3D Velocity and Pressure field Prediction before and after CABG with Deep Learning <u>G. Li</u>, <u>H. Wang</u>, <u>M. Zhang</u>, <u>M. Ohta</u>, <u>H. Anzai</u></p>	<p>17:10-17:30 OS20-1 Computational Simulation on Particle Laden Flow during Polymer Cold-Spray Process <u>C. Bernard</u>, <u>H. Takana</u>, <u>O. Lame</u>, <u>K. Ogawa</u>, <u>J.-Y. Cavaille</u></p> <p>17:30-17:50 OS20-2 Response Characteristics of Cellulose Nanofibril under AC Electric Field during Flow Focusing <u>H. Takana</u>, <u>M. Guo</u></p> <p>17:50-18:10 OS20-3 Stochastic Fluid Dynamics Simulations of Velocity Distribution in Protoplasmic Streaming <u>V. Egorov</u>, <u>O. Maksimova</u>, <u>I. Andreeva</u>, <u>H. Koibuchi</u>, <u>S. Hongo</u>, <u>S. Nagahiro</u>, <u>T. Ikai</u>, <u>M. Nakayama</u>, <u>S. Noro</u>, <u>T. Uchimoto</u>, <u>J.-P. Rieu</u></p> <p>18:10-18:30 OS20-4 EMAR Measurements of a Carbon Steel Thinning in a Corrosive Environment <u>G. Diquet</u>, <u>H. Mitsuuchi</u>, <u>S. Takeda</u>, <u>T. Uchimoto</u>, <u>N. Mary</u>, <u>T. Takagi</u></p> <p>18:30-18:50 OS20-5 Low-Field Modeling of Heusler MultiPhysic Memory Alloys <u>M. Lallart</u>, <u>H. Miki</u>, <u>L. Yan</u>, <u>G. Diquet</u>, <u>M. Ohtsuka</u>, <u>G. Sebald</u></p>			<p>17:10-17:50 OS15-5 <i>Invited</i> Dissipation Extremes in High Reynolds Number Turbulence <u>G. E. Elsinga</u>, <u>T. Ishihara</u>, <u>J. C. R. Hunt</u></p> <p>17:50-18:10 OS15-6 Inter-scale Transfer of Turbulent Energy and Scalar in Grid Turbulence <u>Y. Ito</u>, <u>T. Yurikusa</u>, <u>Y. Sakai</u>, <u>K. Iwano</u>, <u>Y. Zhou</u></p> <p>18:10-18:30 OS15-7 The Diagnostic Plot - Diagnosing and Scaling Turbulence Data <u>R. Örlü</u>, <u>A. Segalini</u>, <u>P. H. Alfredsson</u></p>		<p><b>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</b></p>		17:40	
18:40											18:40	

				<p><b>18:50-19:10</b> OS20-6 Role of Charge Carrier Transport on the Understanding of Polyurethane Actuation <i>K. Yuse, G. Coativy, G. Diguët, V. Perrin, L. Seveyrat, S. Livi, J.-Y. Cavallé</i></p>					
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								OS19: IFS Collaborative Research Forum (AFI-2020)	
								8:00-9:00 CRF-77 to 82 Short Oral Presentation and Free Discussion 9	OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics
BREAK									
ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
<b>OS8: Advanced Physical Stimuli and Biological Responses</b> <i>Chair: T. Sato</i>	<b>OS8: Advanced Applications of Multi-functional Fluids</b> Thermal plasma <i>Chair: N. Takeuchi</i>							OS19: IFS Collaborative Research Forum (AFI-2020)	
9:45-9:50 Opening <i>T. Sato, T. Ohashi</i>	9:30-9:50 OSS-1 A Transferred/Non-transferred Hybrid Plasma Torch <i>S.-M. Leong, M.-G. Choi, D. Figueroa, D.-H. Lee, J. Nam, S.-Y. Yang, J.-H. Seo</i>							9:20-10:50 CRF-83 to 93 Short Oral Presentation and Free Discussion 10	
9:50-10:20 OSS-1 Invited Applications of Apatites Containing Electrospun Nanofibres for the Repair of Nerve Tissue <i>H.-F. Huang, Y. Shirosaki, M.-J. Wang</i>	9:50-10:10 OSS-2 Identification of Light Emitting Elements near Electrode During TIG Welding <i>K. Tanaka, M. Shigeta, M. Tanaka, A. B. Murphy</i>								
10:20-10:35 OSS-2 Identification of Leader Cell in Migration Using Deep Learning <i>B. Ogram, M. K. Lai, D. Ganbat, T. Ohashi</i>	10:10-10:30 OSS-3 Triple DC Plasma Torch System for Nanomaterial Synthesis <i>S. Chai, J.-H. Oh, S.-H. Hong, Y. H. Lee, M. Kim, T.-H. Kim</i>								
10:35-10:50 OSS-3 Droplet Manipulation using Plasma Treatment and Airflow <i>C.-Y. Peng, C.-H. D. Tsai</i>	10:30-10:50 OSS-4 Invited Modeling of Argon-Steam Thermal Plasma Flow for Abatement of Fluorinated Compounds <i>J. Jenitta, S.-W. Chau, H. Takana, H. Nishiyama, M. Barilová, V. Aubrecht, A. B. Murphy</i>								OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics
BREAK									
ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
<b>OS8: Advanced Physical Stimuli and Biological Responses</b> <i>Chair: S. Kawano</i>	<b>OS8: Advanced Applications of Multi-functional Fluids</b> Non-equilibrium plasma, Plasma chemistry <i>Chair: H. Takana</i>							OS19: IFS Collaborative Research Forum (AFI-2020)	
11:10-11:40 OSS-4 Invited Mechanical Characterization of Collective Cell Migration in Microchannels <i>T. Ohashi</i>	11:10-11:30 OSS-5 Numerical Study of Pre-ionized Inert Gas Plasma MHD Power Generator under Various Working Gases <i>K. Ozk, Y. Okuno</i>							11:10-12:40 CRF-94 to 100 Short Oral Presentation and Free Discussion 11	
11:40-11:55 OSS-5 Investigation of Cell Behavior on Plasma Polymerized Polypyrrole with Micro-pattern <i>J.-Y. Tung, C.-H. Kuo, M.-J. Wang</i>	11:30-11:50 OSS-6 Invited Kinetics of Metastable $N_2(A^2\Sigma_u^+, v)$ Molecules in High-Pressure Nonequilibrium Plasmas <i>E. R. Jans, S. Raskar, X. Yang, I. V. Adamovich</i>								
11:55-12:10 OSS-6 Development of Analyzing Method for Cancer Cell Migration Using Long-term Time-lapse <i>H. Tada, S. Uehara, C.-H. Chang, T. Sato</i>	11:50-12:10 OSS-7 Cavitation Flow to Generate Plasma in Organic Solvent for Carbon Particle Synthesis <i>N. Takeuchi, S. Yamazaki, S. Imazumi, H. Takana</i>								OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics

<p>12:10-12:25 OSS-7 Comparison of the Concentration of Reactive Chemical Species in Water by Plasma Jet and Plasma-activated Microbubbles Jet <i>M.-C. Wu, S. Uehara, T. Nakajima, T. Sato, J.-S. Wu</i></p> <p>12:25-12:40 OSS-8 Experimental Observations of Traveling Wave Propagation on Artificial Basilar Membranes <i>H. Yamasaki, K. Noda, S. Kawano</i></p>	<p>12:10-12:30 OSS-8 Exhaust Gas and Wastewater Treatment Using Wet-type Nonthermal Plasma Reactor <i>T. Kuraki, S. Nomura, H. Yamasaki, M. Okubo</i></p>								
BREAK									
<p>ROOM 1</p> <p><b>OS8: Advanced Physical Stimuli and Biological Responses</b> <i>Chair: R. Shirakashi</i></p> <p>13:30-14:00 OSS-9 <i>Invited</i> Atmospheric-Pressure Plasma Jet Applied to Draw Versatile Microfluidic Channels for Biomedical Applications <i>C.-H. D. Tsai, C.-Y. Peng</i></p> <p>14:00-14:15 OSS-10 Selective Destruction toward A375 Human Melanoma Cells by Atmospheric Pressure Plasma Jet Treatments <i>S. Muneokaev, M.-J. Wang</i></p> <p>14:15-14:30 OSS-11 Numerical Simulation of Water Distribution in Bio-protective Solution During Drying Process <i>L. Wei, R. Shirakashi</i></p> <p>14:30-14:45 OSS-12 Enhancing the •OH Generation by Mixing Water Aerosol with Plasma at Downstream Region for Biological Applications <i>T.-R. Lin, R.-Z. Zhang, Y.-C. Cheng</i></p> <p>14:45-15:00 OSS-13 Liquid Discharge Characteristics Under Exposure to Ultraviolet-rays for Observation of Hydrated Electron <i>S. Liu, Y. Xiao, S. Uehara, T. Nakajima, T. Sato</i></p>	<p>ROOM 2</p> <p><b>OS8: Advanced Applications of Multi-functional Fluids</b> MHD, Magnetic fluid, Ionic liquid <i>Chair: K. Doi</i></p> <p>13:30-13:50 OSS-9 Study on MHD Annular Flows Driven by Rotating Co-axial Cylinder <i>R. Sasaki, T. Fujino, H. Takana, H. Kobayashi</i></p> <p>13:50-14:10 OSS-10 Thermal Flow of Temperature-Sensitive Magnetic Fluid around Heating Circular Cylinders <i>Y. Iiyamoto, K. Odoi, G. Ichinose, Y. Ido</i></p> <p>14:10-14:30 OSS-11 Property Investigation of Imidazolium-Acetate Based Ionic Liquids Using Experimental Measurements and Machine Learning <i>M. Okura, H. Takana, X. Wang, Y. Huang, F. S. Ohuchi, R. Furukawa</i></p>	<p>ROOM 3</p> <p><b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b> <i>Chair: D. Shimokuri</i></p> <p>13:30-13:50 OSS-25 Effect of the Separating Distance on the Characteristics of Methane Flame in a Plate Slit Burner <i>O. Shea, Y. Zhang, H. Qi, L. Guo, M. Zhai, P. Dong</i></p> <p>13:50-14:10 OSS-26 Genetic Programming Control of a Laminar Premixed Combustor <i>B. Yin, Y. Guan, S. Redonnet, V. Gupta, L. K. B. Li</i></p> <p>14:10-14:30 OSS-27 Analysis of the Hydrogen Permeation in the Liquid Sodium with Titanium Layer by Accelerated Quantum Chemical Molecular Dynamics Study <i>A. Suzuki, M. Miyano, R. Miura, K. Ara</i></p>	<p>ROOM 4</p> <p><b>OS9: Biomedical Flow Dynamics</b> <i>Chair: K. Takashima</i></p> <p>13:30-13:50 OSS-7 <i>Invited</i> Importance of an Exit Strategy in Medical Device Development <i>K. Mamada</i></p> <p>13:50-14:10 OSS-8 Fundamental Study of the Blood Flow Field in the Left Ventricle with Aortic Regurgitation <i>R. Sugahara, S. Miyauchi, T. Hayase, K. Funamoto</i></p> <p>14:10-14:30 OSS-9 Improved Method of Estimating the Contact Force Acting on an Endovascular Treatment Device Using Image Processing <i>T. Onishi, K. Takashima</i></p> <p>14:30-14:50 OSS-10 Development of Wearable Device for Daily Continuous Blood Pressure Estimation Based on Pulse Rate Measurement: Effect of Pulse Rate Measurement Interval <i>S. Kurao, T. Hayase, S. Miyauchi, A. Sato, D. Ito, S. Pak, O. Iwamoto, R. Hirohata</i></p>		<p>ROOM 6</p> <p><b>OS11: Microfluidics and Microphysiological Systems</b> <i>Chair: T. Fukui</i></p> <p>13:30-14:15 OS11-1 <i>Invited</i> Investigation of Cancer Cell Migration in Microfluidic System <i>H. Nam, J. S. Jean</i></p> <p>14:15-14:30 OS11-2 Changes of Migration Speed of Breast Cancer Cells by Oxygen Sensing <i>S. Aratuke, D. Yoshino, K. Funamoto</i></p> <p>14:30-14:45 OS11-3 Evaluation of Dictyostelium Migration under Oxygen Concentration Gradient <i>S. Hirose, J.-P. Rieu, K. Funamoto</i></p> <p>14:45-15:00 OS11-4 Measurement of Oxygen Tension in Microfluidic Device by Using Oxygen-Sensing Film <i>N. Takahashi, S. Hirose, J.-P. Rieu, K. Funamoto</i></p>				<p>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</p>
BREAK									
<p>ROOM 1</p> <p><b>OS8: Advanced Physical Stimuli and Biological Responses</b> <i>Chair: T. Ohashi</i></p> <p>15:20-15:50 OSS-14 <i>Invited</i> Atmospheric-pressure Plasma Effects on Cancer Cells and Impedance Matching Circuit to Improve Plasma Power Conversion Efficiency <i>P. H. Niu, Y.-J. Cheng, Y.-C. Cheng</i></p>	<p>ROOM 2</p> <p><b>OS8: Advanced Applications of Multi-functional Fluids</b> Functional multiphase flow <i>Chair: T. Fujino</i></p> <p>15:20-15:40 OSS-12 Ionic Current Analysis of Tiny Particles Using Micro- and Nanofluidic Channels <i>K. Doi, S. Kawano</i></p>	<p>ROOM 3</p> <p><b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b> <i>Chair: E. C. Ojafo</i></p> <p>15:20-15:40 OSS-28 CANCELED</p>	<p>ROOM 4</p> <p><b>OS9: Biomedical Flow Dynamics</b> <i>Chair: H. Arcai</i></p> <p>15:20-16:00 OSS-11 <i>Invited</i> Association between Rupture of Multilobed Cerebral Aneurysm and Local Flow Stagnation and High Local Viscosity <i>T. Hassan, K. M. Saggi, D. Ibrahim, A. Abdelkerim, S. Abu-Seif</i></p>		<p>ROOM 6</p> <p>15:20-15:35 OS11-5 Numerical Simulation on the Effects of Non-Newtonian Fluidic Properties of the Power-law Fluid on the Suspension Rheology <i>M. Tamaki, T. Fukui, M. Kawaguchi, K. Morinishi</i></p>		<p>ROOM 8</p> <p><b>OS15: Turbulence: from Fundamentals to Applications</b> numerical simulation &amp; mixing <i>Chair: Y. Hattori</i></p> <p>15:20-15:40 OS15-8 Predicting Jet Noise With a Coupled LES-Synthetic Turbulence Method <i>J. Blake, A. Sescu, D. Thompson, Y. Hattori</i></p>		<p>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</p>

<p>15:50-16:20 OS8-15 <i>Invited</i> Nanosecond Pulsed Current Under Plasma-producing Conditions Induces Morphological Alterations in Human Fibrosarcoma Cells <i>C.-H. Chang, K. Yano, T. Sato</i></p> <p>16:20-16:25 Award Ceremony</p> <p>16:25-16:30 Closing <i>S. Kawano, R. Shirakashi</i></p>	<p>15:40-16:00 OS5-13 Aligned Conductive Composite Filaments using Field Assisted Flow Focusing System <i>H. Wisse, H. Takama, A. Dichiaro</i></p> <p>16:00-16:20 OS5-14 Theoretical Analysis of Orientation Order Profile in Nanocellulose Mono-fiber Creation Using Flow Focusing <i>Y. Ishimoto, A. Oooka</i></p> <p>16:20-16:40 OS5-15 Numerical Simulation on Orientation Control of Cellulose Nano Fibril by Electric Field during Flow Focusing <i>H. Takama, R. Sato</i></p>	<p>15:40-16:00 OS2-29 Laminar Burning Velocity Measurements of Ethyl Acetate-Air Mixtures at Elevated Temperatures <i>R. Kumar, S. Kumar</i></p> <p>16:00-16:20 OS2-30 Pressure and Temperature Dependence of the Power Exponents of Laminar Burning Velocity <i>R. J. Varghese, S. Kumar</i></p>	<p>16:00-16:20 OS9-12 Hydrodynamic Interaction of Two sperm <i>N. Taketoshi, T. Omori, T. Ishikawa</i></p> <p>16:20-16:40 OS9-13 Meshing Arterial Networks From Manually Extracted Centerlines <i>M. Decroocq, C. Frindel, M. Ohta, G. Lavoue</i></p>	<p>15:35-15:50 OS11-6 Fundamental Study on the Total Effective Viscosity of a Suspension Estimated from a Summation of Each Particle's Contribution by a Two-way Coupling Scheme <i>N. Okamura, T. Fukui, M. Kawaguchi, K. Morinishi</i></p> <p>15:50-16:05 OS11-7 Self-propulsion of an Object Placed Close to Heated Substrate with Surface Microstructure <i>C. J. C. Ong, S. Yonemura</i></p> <p>16:05-16:20 OS11-8 Mass Transport Analysis in a Tumor Microenvironment Using Finite Element Method <i>M. Nikaide, S. Miyachi, K. Funamoto, T. Hayase</i></p> <p>16:20-16:35 OS11-9 Capsule-connected Microswimmer Driven by an Oscillating Shear Flow <i>A. Doi, T. Omori, T. Ishikawa</i></p> <p>16:35-16:50 OS11-10 Flagellar Driven Flow in the Choanocyte Chamber of Sponges <i>T. Ogawa, T. Omori, T. Ishikawa</i></p>			<p>15:40-16:00 OS15-9 Very-large Eddy Simulation of Turbulent Flow and Heat Transfer Around Turbine with Swirling Hot Streak <i>J. Zhou, P. Wan, X. Han, J. Mao</i></p> <p>16:00-16:20 OS15-10 Measurement of High Schmidt Number Scalar Mixing <i>K. Iwano, M. Suzuki, Y. Sakai, Y. Ito</i></p> <p>16:20-16:40 OS15-11 DNS Study of Annular Couette Flow for Low-High Radius Ratio in Subcritical Transition <i>K. Takeeda, Y. Duguet, T. Tsukahara</i></p>		
BREAK									
ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9	ROOM 10
		<p><b>OS2: The Eighth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals</b> Ammonia and Hydrogen Combustion Chair: H. Nakamura</p>	<p><b>OS9: Biomedical Flow Dynamics</b> Chair: M. Zhang</p>	<p><b>OS20: AFI-2020 IFS Lyon Center Collaborative Research Forum</b> Chairs: C. Frindel &amp; T. Uchimoto</p>			<p><b>OS15: Turbulence: from Fundamentals to Applications</b> transition Chair: M. Hirota</p>		
		<p>17:10-17:40 OS2-31 <i>Invited</i> Experimental Investigation of Laminar Burning Velocity of Ammonia/air Premixed Flames Under Elevated Temperature Conditions <i>A. Hayakawa, H. Kobayashi</i></p> <p>17:40-18:10 OS2-32 <i>Invited</i> Heat Release Characteristics of Ammonia/Hydrogen Flames in MILD Combustion Conditions <i>R. Khamedov, W. Song, F. E. Hernandez Pérez, H. G. Im</i></p> <p>18:10-18:30 OS2-33 Study of Dynamic Behavior of NH3-H2 Premixed Flame at Elevated Pressures <i>S. Tabakamat, S. Kadwaki, K.D.K.A. Somarathne, A. Hayakawa, H. Kobayashi</i></p>	<p>17:10-17:50 OS9-14 <i>Invited</i> Anomalous Platelet Transport &amp; Fat-Tailed Distributions <i>C. Kotalos, K. Z. Boudjeltil, R. Dutta, J. Lätt, B. Charari</i></p> <p>17:50-18:10 OS9-15 Enhancement of Nanoparticles Permeation by Mechanical Skin Extension <i>R. Yasuda, K. Kikuchi, K. Numayama-Tsuruta, T. Ishikawa</i></p> <p>18:10-18:30 OS9-16 CFD Analysis of the Effect of Flush Flow Conditions on Angioscopy Visibility <i>K. Mizuguchi, Y. Li, T. Nakayama, H. Anzai, W. Haoran, M. Ohta, S. Tapan</i></p>	<p>17:10-17:30 OS20-7 <i>Invited</i> Hypoxia Triggers Collective Acrotactic Migration in <i>Dictyostelium discoideum</i> <i>O. Cochet-Escartin, S. Hirose, K. Funamoto, C. Anjard, J.-P. Rieu</i></p> <p>17:30-17:50 OS20-8 Elucidation of the Pathophysiology of Skin Sodium and Water Metabolism <i>A. Rahman, A. Nishiyama, T. Elgwedi, J. Ishimoto</i></p> <p>17:50-18:10 OS20-9 Effect of Micropores Patterning in Separated Plate on Protein Hindered Diffusion Phenomena <i>A. Komiva, R. Watanabe, Y. Kanda, J. F. Torres, S. Livi</i></p>			<p>17:10-17:30 OS15-12 Perturbation Induced in a Boundary Layer by a Vortex Ring Hitting the Leading Edge of a Flat Plate <i>K. Naito, M. Matsubara</i></p> <p>17:30-17:50 OS15-13 Boundary Layers on Broad and Sharp Rotating Cones – a Comparison of Instability and Transition Scenarios <i>K. Kata, A. Segalini, P. H. Alfredsson, R. J. Lingwood</i></p> <p>17:50-18:10 OS15-14 Large-Eddy Simulation of Non-Homogeneous Turbulence Subjected to Sudden Distortion <i>M. Afsar, I. Kokkinakis, S. Stirrat</i></p> <p>18:10-18:30 OS15-15 Using Optimisation Techniques within a Rapid Distortion Theory Framework to Improve Trailing Edge Noise Predictions <i>S. Stirrat, M. Afsar, E. Minisci, I. Kokkinakis</i></p>		<p>OS18: The 16th International Students / Young Birds Seminar on Multi-scale Flow Dynamics</p>

			<p>18:30-18:50 OS9-17                  An Approach to Solve the Problem of Nonuniform Corrosion of Biodegradable Stent  <i>H. Zhang, S. Liu, A. Qiao, H. Song, W. Fu, H. Anzai, M. Ohna</i></p>	<p>18:10-18:30 OS20-10                  Stability and Transition to Turbulence of Taylor Vortex in a Gap between Rotating Two Cones  <i>L. Adachi, W. Toshihara, K. Akinaga, A. Komiya, D. Henry, V. Botton</i></p> <p>18:30-18:50 OS20-11                  Study of the Effect of Ammonia Addition on the Stabilization of a Non-premixed Methane Jet Flame in an Air Coflow.  <i>S. Colson, M. Kuhn, C. Galizzi, D. Escudé, H. Kobayashi</i></p> <p>18:50-19:10 OS20-12                  Coupled Computing of Fluid-Structure Interaction Problems for Multiphase Energy Systems  <i>J. Ishimoto, T. Elguedj</i></p>					
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20:00

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## OS18: The 16<sup>th</sup> International Students / Young Birds Seminar on Multi-scale Flow Dynamics

- OS18-1: **System Analysis of a Two-Phase Mechanically Pumped Fluid Loop with a Heat Pump for Spacecraft**  
*R. Asato, T. Adachi, X. Chang, K. Fujita, H. Nagai*
- OS18-2: **Applicability of Eddy Current Testing Using the Directional Magnetic Flux for Inspection of Fiber Misorientation in Cross-ply CFRP**  
*J. Horibe, H. Kosukegawa, T. Uchimoto, M. Hashimoto, T. Takagi*
- OS18-3: **Unsteady Aerodynamic Characteristics of AR=1 Wing with Heaving Motion at Low Reynolds Number**  
*K. Mizumoto, S. Fukatsu, M. Okamoto*
- OS18-4: **A Convolution Neural Network Model for Automatic Signal Analysis in Eddy Current Testing**  
*X. Zhou, R. Urayama, S. Takeda, T. Uchimoto, T. Takagi*
- OS18-5: **Development of Three-dimensional Probability of Detection Model for Monitoring Local Wall Thinning in Pipes**  
*H. Song, N. Yusa*
- OS18-6: **The Effect of Surface Treatment on Evaluation of Plastic Deformation of Carbon Steels by Eddy Current Magnetic Signature**  
*A. Kita, S. Takeda, T. Uchimoto*
- OS18-7: **Effect of Warming Process on Mechanical Strength and Microstructure in Consolidated Copper Powder by Compression Shearing Method**  
*Y. Koshihara, H. Miki, S. Takeda, N. Nakayama*
- OS18-8: **Investigation of the Factors Determining Spectrum of Electromagnetic Acoustic Resonance on Thickness Measurement of Corroded Carbon Steel Specimen**  
*D. Iwata, T. Uchimoto, S. Takeda, D. G. A. Erwan, Y. Hirose*
- OS18-9: **Effects of Shear Deformation on Mechanical Properties of Cu-Zn Alloy Thin Plate Formed by Compression Shearing Method**  
*T. Takahashi, H. Miki, S. Takeda, N. Nakayama, H. Takeishi*
- OS18-10: **Evaluation of the Work of Adhesion at Organic-modified Al<sub>2</sub>O<sub>3</sub>/Organic Solvent Interface by Molecular Dynamics Simulation**  
*T. Saito, E. Shoji, M. Kubo, T. Tsukada, G. Kikugawa, D. Surblyls*
- OS18-11: **Analysis and Experiment about Absorption Performance for Thermal Switching Coating**  
*M. Yano, G. Jin, H. Gonome*
- OS18-12: **Extension of the Mass Center MTHINC Method to Generalized Coordinate System**  
*S. Kato, T. Nakanishi*

- OS18-13: **Length Sizing of Cracks in Ferromagnetic Structural Materials by Eddy Current Testing Using Directivity of TR Probe**  
*S. Zhang, S. Takeda, T. Uchimoto, T. Takagi, M. Hashimoto*
- OS18-14: **Numerical Analysis for Pipe Wall Thinning Detection using Electrical Impedance Tomography**  
*P. Pengcheng, N. Yusa*
- OS18-15: **Numerical Study of Slit Position for Suppression Effect on Cavitation Instabilities in Inducers**  
*M. Kanamaru, A. Kowata, S. Kawasaki, Y. Iga*
- OS18-16: **Gravity Effect on Operating Characteristics of CEOHP by Numerical Simulation**  
*K. Sone, K. Fujita, H. Nagai*
- OS18-17: **Reactive Force-Field Molecular Dynamics Simulations of the Silicon-Germanium Deposition Process for the Semiconductor Manufacturing**  
*N. Uene, T. Mabuchi, M. Zaitso, S. Yasuhara, T. Tokumasu*
- OS18-18: **Application of Electrowetting Technique to Wettability Improvement in a Heat Pipe**  
*K. Suzuki, M. Wada, N. Ono*
- OS18-19: **Sensitivity Analysis of Observation Point for Data Assimilation: Application to Thermal Analysis of Pseudo Small Satellite**  
*H. Tanaka, H. Nagai*
- OS18-20: **Evaluation of Boundary Layer Transition Positions on Pitching Airfoil for Unsteady cmtTSP Measurement**  
*T. Ikami, K. Fujita, H. Nagai*
- OS18-21: **Towards the Application of OH(2,0) PLIF to High-pressure Mixed Phase Combustion**  
*Y. Higuchi, Y. Nunome, S. Tomioka, T. Tomita, T. Kudo, A. Hayakawa, H. Kobayashi*
- OS18-22: **A Reconstruction Scheme for Pitting Corrosion Defects in Steam Generator Tubes from Eddy Current Testing Signals**  
*Y. Zhao, L. Wang, P. Qi, Z. Wang, J. Han, W. Cai, Z. Chen*
- OS18-23: **Effect of Dynamic Contact Angle on Critical Air Velocity for Droplet Displacement in Shear Air Flow**  
*T. Kimura, K. Sato, M. Shiota*
- OS18-24: **Experimental Investigation on Rotor Performance of Mars Helicopter for Pit Crater Exploration**  
*A. Yamaguchi, K. Fujita, H. Nagai*
- OS18-25: **CANCELED**



- OS18-26: **Nano-scale Observation of Precursor Film Dynamic by Phase-shifting Ellipsometer**  
*S. Okazawa, N. Qinxue, Y. Kanda, A. Komiya*
- OS18-27: **Influence of Phase Differences between Periodic Flow and Angle of Pitching Wing on Lift Coefficient**  
*Y. Isoda, Y. Tanaka, T. Sadanaga, S. Murata*
- OS18-28: **Influence of Tire Thread Patterns on Flows around a Tire with Wheelhouse**  
*K. Yokoyama, S. Murata, H. Yogou, Y. Tanaka*
- OS18-29: **Influence of Liquid Flow on Evaporation in Drying Process for Coating Materials and Estimation of the Evaporation Rate**  
*T. Ono, Y. Asanuma, N. Ono*
- OS18-30: **Effect of Wettability on Start-up Characteristic of OHP**  
*K. Watanabe, T. Adachi, K. Fujita, H. Nagai*
- OS18-31: **Numerical Investigation on Three-Dimensional Flow Structure over Fixed Wing within Propeller Slipstream**  
*Y. Furusawa, K. Kitamura, H. Nagai, A. Oyama*
- OS18-32: **Aerodynamic Performance Augmentation on Supersonic Transport by High Lift Configurations for Fuselage**  
*Y. Ishikawa, K. Kamiyama, Y. Yamazaki*
- OS18-33: **Computational Analysis of Supersonic Flow Around Two Circular Cylinders**  
*S. Miyazaki, D. Sasaki*
- OS18-34: **A Study on Thinning of Metal Plate by Applying Electromagnetic Pressure in Solidification Process**  
*T. Ideguchi, T. Machida, N. Ono*
- OS18-35: **Numerical Study of Compressibility of Airfoil Characteristics in Low Reynolds Number Flow**  
*Y. Yoshizane, K. Fujita, H. Nagai*
- OS18-36: **Investigation of the Effect of Propeller Thickness-wise Position on Aerodynamic Performance in Fixed Wing at Low Reynolds Number**  
*K. Havashi, K. Takahashi, K. Fujita, H. Nagai*
- OS18-37: **Experimental Investigation Rotor/Wing Aerodynamic Interaction at High Speed Flight**  
*Y. Hamamoto, T. Akasaka, Y. Tanabe*
- OS18-38: **Visualization of Shock Wave Structures on Wedge Model Using Anodized-Titanium Pressure-Sensitive Paint**  
*S. Kawazoe, D. Numata*

- OS18-39: **An Attempt to Measure Pressure Distribution on a Free-Flight Object**  
*N. Tanaka, H. Nagai, K. Fujita*
- OS18-40: **Estimation of a Wake Drag Distribution for Wake Integral Method by Convolutional Neural Network**  
*Y. Natsume, Y. Takahashi, D. Sasaki, K. Matsushima*
- OS18-41: **Molecular Dynamics Study of Proton Transport in Water Filled Carbon Nanotubes**  
*R. Tanaka, T. Mabuchi, T. Tokumasu*
- OS18-42: **Visualization Measurement of Transient Heat Transfer Characteristics of Rayleigh-Bénard Convection using Infrared Thermography**  
*K. Nishiyama, T. Okabe, T. Miyagawa, H. Murata*
- OS18-43: **A Parametric Study for Avoiding Temperature Oscillation of a Loop Heat Pipe**  
*T. Adachi, K. Fujita, H. Nagai, S. Takahashi*
- OS18-44: **Clarification of Flow Structure Using DMD for Aeroacoustics of a Subsonic Jet Related Flow Instability**  
*S. Morita, A. Yakeno, C. Bogey, S. Obayashi*
- OS18-45: **Evaluation of the Predictive Accuracy of Aerodynamic Characteristics on Roadable Aircraft Using OpenVSP**  
*D. Yamabata, S. Morizawa*
- OS18-46: **Characteristics of Flexible Membrane Wing for Micro Mars Airplane**  
*B. Lee, K. Fujita, H. Nagai*
- OS18-47: **Coherence in the Stabilization of Foam and Emulsion with Fine Particles**  
*M. Ono, H. Gonome*
- OS18-48: **Effects of Airflow Boundary Layer Control on Flameholding Performance in Supersonic Flow**  
*Y. Wakita, T. Yamaguchi, M. Hasegawa, Y. Yugami, T. Kudo, A. Hayakawa, H. Kobayashi*
- OS18-49: **Investigation of the Effect of the Forcing Function on the Burgers Equation**  
*G. T. Jamaat, Y. Hattori*
- OS18-50: **Quantitative Evaluation of Contact Line Instability of Impacting Drops**  
*Y. Akiyama, T. Okabe, M. Shirota, M. Daikoku, Y. Sato, Y. Matsushita, H. Aoki, J. Fukuno*
- OS18-51: **Prediction of Spray Field Using Data Assimilation of Schlieren Image Velocimetry**  
*R. Inamura, A. Yakeno, S. Obayashi, N. Watanabe, N. Kurimoto, S. Skeen*

- OS18-52: **Evaluation of Dynamic and Static Characteristics of PSP for Unsteady Measurement**  
*A. Wakayama, D. Numata*
- OS18-53: **Frequency Analysis of Liquid Atomization in a Jet Nebulizer**  
*T. Monori, M. Nikaido, M. Shirota*
- OS18-54: **Experimental Observation on Characteristics of High-Speed Mist**  
*Y. Xiao, S. Liu, T. Nakajima, T. Sato*
- OS18-55: **Influence of Sound Pressure Level to 2D Acoustic Liner Model under Grazing Flow**  
*T. Nomura, D. Sasaki*
- OS18-56: **Spreading and Wetting Diameters of Impacting Drops on Flat Surfaces**  
*Y. Fuchisawa, T. Okawa, M. Shirota*
- OS18-57: **Flow Visualization of a NACA0012 Airfoil with Changing Angle of Attack in a Periodic Flow using Stereo PIV**  
*T. Sadanaga, Y. Tanaka, Y. Isoda, S. Murata*
- OS18-58: **Multibody Dynamic Analysis Based on Canonical Theory**  
*S. Dong, K. Otsuka, K. Makihara*
- OS18-59: **Semi-Active Vibration Control using Magnetostrictive Transducer**  
*A. Li, Y. Hara, K. Makihara*
- OS18-60: **Three-dimensional SPH Simulation of Droplet Transfer with Flux Column During Flux Cored Arc Welding**  
*R. Ueno, M. Shigeta, M. Tanaka*
- OS18-61: **Experimental Analysis of Natural Convection from A Small Heating Sphere in Water Using A Two-directional Near-infrared Imaging Method**  
*T. A. Nguyen, Z. Wang, V. C. Han, N. Kakuta, K. Kondo*
- OS18-62: **Near-field Dynamics and Plume Dispersion After an On-road Truck: Large-eddy Simulation**  
*J. Xie, C. Liu, Z. Mo, Y. Huang, W. Mok*
- OS18-63: **Experimental Study on Spatial-temporal Thermal-fluid Behaviors and Boiling Sound of Micro-bubble Emission Boiling (MEB)**  
*H. Kobayashi, K. Kurose, I. Ueno*
- OS18-64: **Water Uptake Monitoring in Epoxy-amine Polymer by Combining Dielectric and Gravimetric Analysis**  
*L. Ollivier-Lamarque, T. Uchimoto, M. Lallart, N. Mary, S. Livi*

OS18-65: **2D Numerical Analysis of Propeller-Wing Interaction with Morphing Flap**  
*D. Yariwake, Y. Kamiyama, E. Dzieminska, A. Yakeno, Y. Abe, S. Obayashi*

**OS19: The 20<sup>th</sup> International Symposium on Advanced Fluid Information  
(AFI-2020)  
IFS Collaborative Research Forum**

- CRF-1: **Optimization of Blood Mimicking Fluids Optical and Rheological Properties**  
*S. Tupin, K. Mazeau*
- CRF-2: **Development of Averaged Geometries for CFD Benchmarking of Intracranial Aneurysmal Flow**  
*S. Tupin, K. M. Saqr*
- CRF-3: **New Index for the Evaluation of Coupling between Stent Degradation and Vessel Remodeling**  
*A. Qiao, H. Zhang, S. Liu, H. Song, W. Fu, H. Anzai, M. Ohta*
- CRF-4: **Computational Simulation on Improving Intravascular Treatment Device's Performance**  
*N. K. Putra, J. Muliany, B. Nainggolan, T. Kinoshita, M. Ohta, Suprijanto, H. Anzai*
- CRF-5: **Hemodynamics of Full-Scale Patient-Specific Aneurysm Model in Cerebral Artery**  
*G. Tanaka, R. Yamaguchi, T. Yamazaki, N. S. Shafii, H. Anzai, K. Osman, M. Ohta*
- CRF-6: **Development of Sugar Type Distribution by Glycosylation Based on Protein Subcellular Localization**  
*K. Etchuya, M. Ohta, Y. Mukai*
- CRF-7: **Mathematical Modeling of the Glycocalyx Based on the Molecular Dynamics for Blood Flow Analysis Considering Microstructures on Blood Vessel Walls: Fundamental Analysis for a Couette Flow between Lipid Membranes**  
*S. Miyauchi, T. Hayase, X. Z. Jiang, Y. Ventikos*
- CRF-8: **A Machine-learning Approach for Computation of Cardiovascular Function Parameters from Pulse Wave of Limbs**  
*X. Song, X. Wang, S. Wang, C. Zhu, G. Li, A. Hitomi, A. Qiao, M. Ohta*
- CRF-9: **The Role of Signal-anchor Region of Type II Transmembrane Protein in Subcellular Localization**  
*Y. Mukai, T. Kikegawa, M. Ohta, K. Etchuya*
- CRF-10: **Endothelial Cell Migration under Oscillatory Flow**  
*K. Funamoto, E. C. Poire*
- CRF-11: **3D Human Blood-Brain Barrier Chip for Central Nervous System Drug Development**  
*M. Sato, Y. Sakamaki, M. Inagaki, K. Funamoto, M. Tachikawa*

- CRF-12: **Concentration Enhancement of Reactive Chemical Species by Plasma-activated Microbubbles Jet in a Water Recirculation System**  
*M. C. Wu, S. Uehara, T. Nakajima, T. Sato, J. S. Wu*
- CRF-13: **The Effects of Atmospheric-pressure Cold Plasma Generated Electrical Field, Short-life Species, and Long-life Species on Cancer Cells**  
*P. C. Chien, C. Y. Chen, T. Sato, Y. C. Cheng*
- CRF-14: **Numerical Analyses of Transport Characteristics of Discharge Species Generated by Cold Atmospheric Plasma on Cell Membrane using Fluid Model and Molecular Dynamics**  
*S. Yamauchi, K. Abe, Y. Oishi, I. Yagi, S. Uchida, T. Sato*
- CRF-15: **Characteristics of Jetting from Micro Cavitation Bubbles**  
*S. Uehara, T. Akimura, T. Nakajima, K. Ohtani, O. Supponen, M. Farhat, T. Sato*
- CRF-16: **Improvement of Pressure Measurement Method in a Laser-Induced Cavitation Bubble**  
*S. Uehara, S. Kamata, T. Nakajima, Y. Iga, S. Kanazawa, T. Sato*
- CRF-17: **Science of Ultrafine Drop and High Speed Impact**  
*T. Sato, M. Watanabe, T. Yano, Y. Iga, K. Kobayashi, T. Hayase, J. Ishimoto, M. Ohta, A. Komiya, H. Takana, K. Ohtani, J. Okajima, S. Uehara, S. Miyauchi, H. Anzai*
- CRF-18: **Progress in Development of an Efficient Uncertainty Quantification Method via Combination of POD and Compressed Sensing**  
*A. Mohammadi, M. Raisee, K. Shimoyama*
- CRF-19: **Prediction of the Flutter Boundary in Aeroelasticity via a Support Vector Machine**  
*P. S. Palar, F. Izzaturahman, L. R. Zuhail, K. Shimoyama*
- CRF-20: **Multi-objective Optimization of Multiscale Grid Using Deep Learning**  
*T. Kitamura, K. Shimoyama*
- CRF-21: **Development of Multi-Color Pressure-Sensitive Paint for Ballistic Range Experiment**  
*D. Numata, K. Ohtani*
- CRF-22: **Flight Attitude Stabilizing by Side-jet Generated by Detached Shock Pulsation**  
*F. Wang, Y. Yoshitomi, F. Iwasaki, T. Mizukaki, K. Ohtani*
- CRF-23: **Ballistic Range Experiment of a Hypersonic Free Flight Cylinder in Argon**  
*G. Yamada, S. Takahashi, K. Ohtani*
- CRF-24: **Centreline Reflection of Axisymmetric Shock Waves in Supersonic Ring Wedge Intakes**  
*H. Ogawa, C. Fujio, B. Shoemith, S. Mölder, E. Timofeev, G. Shoen, K. Ohtani*

- CRF-25: **Damage Assessment for Twisted Tape Tether on Space Debris**  
*H. Tomizaki, R. Kobayashi, M. Suzuki, N. Karasawa, K. Ohtani, K. Makihara*
- CRF-26: **Study on Improvement of Washing Effect for Textile Using the Underwater Explosion**  
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- CRF-32: **A Numerical Investigation of the Turbulence Effect on Pressure Rise Time**  
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- CRF-44: **Geothermal Onsen Seminar**  
*A. Suzuki, R. Horne*
- CRF-45: **New Parameterization Methods for Uncertainty Quantification of Geothermal Models**  
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*S. Choi, H. Takana*



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- CRF-53: **Establishment of High-accuracy Analysis Method of Spacecraft Thermal System using Data Assimilation (2)**  
*H. Nagai, H. Tanaka, T. Misaka*
- CRF-54: **Study of Coaxial Inversion Rotor Aimed at Realizing Mars Helicopter (3)**  
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- CRF-60: **Numerical Study on Transonic Flow Characteristics over Return Capsules**  
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- CRF-66: **Electrical Characteristics of Double Barrier AlInGaN/GaN HEMTs**  
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- CRF-80: **Thermodynamic Model of a Self-Sustained Microcombustion Power Generation System**  
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- CRF-82: **Vortex-current Filaments with Buoyancy**  
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- CRF-89: **Analysis of Transport Phenomena of Oxygen Ion in Dual-phase Electrolyte Material**  
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- CRF-90: **MD Analysis of Formation Process of PEFC's Catalyst Layer**  
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- CRF-94: **Performance of 2D Nanomaterials as an Additive in Fatty Acid Methyl Ester (FAME) based Biolubricant: Molecular Dynamic Simulation**  
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- CRF-95: **Numerical Investigation of Pressure Distribution in a Microchannel by the DSMC Method**  
*P. Vashchenkov, Y. Bondar, S. Yonemura*
- CRF-96: **Experimental Study on the Radial Particle Distributions of Neutrally Buoyant Spheres in a Dilute Suspension Flow through a Circular Microchannel**  
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- CRF-98: **Analysis of a Vortical Axis based on Local Axis Geometry**  
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- CRF-99: **Instability and Wave Interactions in Helical Vortices**  
*Y. Hattori, I. Delbende, M. Rossi*
- CRF-100: **Fluid Dynamics and Energy/scalar Transport in Coexisting Flows of Turbulence and Non-turbulence: Cases of Dual-wake Flow and Plane Jet**  
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