

## *Executive Committee Members*

Takashi Tokumasu (General Co-Chair of ICFD2023,  
Tohoku University)  
Jeongmin Ahn (General Co-Chair of ICFD2023,  
Syracuse University)  
Kaoru Maruta (Director of IFS, Tohoku University)

## *International Scientific Committee Members*

Chair: Shigeru Obayashi

### **Australia**

Masud Behnia  
Weihua Li  
Gary Rosengarten  
Victoria Timchenko

### **Canada**

Javad Mostaghimi

### **China**

Zhenmao Chen  
XinGang Liang  
Jinhao Qiu

### **France**

Christophe Bogey  
Jean-Yves Cavaille  
Philippe Dagaut  
Vincent Fridrici  
Alexis Giauque  
Gael Sebald

### **Germany**

Christian Boller

### **Japan**

Debashish Biswas  
Kentaro Doi  
Yuji Hattori  
Jun Ishimoto  
Takatoshi Ito  
Satoyuki Kawano  
Hideaki Kobayashi  
Kazunori Kuwana  
Kaoru Maruta  
Hiroki Nagai  
Taku Ohara

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Takehiko Sato  
Masaya Shigeta  
Toru Shimada  
Toshiyuki Takagi

Michio Tokuyama

Satoru Yamamoto

Kazuya Yoshida

### **Korea**

Jinsoo Cho  
Nam Il Kim

Hyung Jin Sung

### **Russia**

Sergey S. Minaev

### **Saudi Arabia**

Hong G. Im

### **Sweden**

Fredrik Lundell

### **Switzerland**

Bastien Chopard

### **Taiwan**

Chingyao Chen  
Chih-Yung Huang  
Yao-Hsien Liu  
Jongshinn Wu

### **USA**

Igor V. Adamovich  
Jeongmin Ahn  
Yiguang Ju  
Kozo Saito  
Rongjia Tao

## *Conference Venue*

ICFD2023 will take place in a hybrid fashion  
-both in-person and online.

### **Sendai International Center**

Aobayama, Aoba-ku, Sendai, 980-0856  
TEL (81)22-265-2211  
<http://www.aobayama.jp/english/>

## *Registration Fee*

	Without Banquet
Registration Fee	General 15,000 JPY
	Student 3,000 JPY

All participants are required to make a registration  
through the website.

## *Important Dates*

- June 15, 2023:** Deadline for **Presentation Submission**.  
Please present your paper title / author's  
name / keywords through Presentation  
Submission page of ICFD2023 website.
- July 21, 2023:** Deadline for **Short Paper (2 to 4 pages)**  
**Submission**
- Aug. 24, 2023:** Deadline for Advanced Registration

## *Publication & Special Issues of International Journals*

It will be available to download the proceedings through the  
ICFD2023 website. The URL and password will be informed  
the participants by e-mail in the morning on November 6,  
2023. Special Issue of the Conference is being planned to be  
published in a journal.

For more details, please visit ICFD2023 website.

## *ICFD Secretariat*

For further details and related questions, please contact  
**ICFD2023 Secretariat:** [icfd2023@grp.tohoku.ac.jp](mailto:icfd2023@grp.tohoku.ac.jp)  
ICFD2023 Secretariat, Institute of Fluid Science,  
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2-1-1, Katahira, Aoba-ku, Sendai, 980-8577, JAPAN  
TEL&FAX: (81)22-217-5301  
<http://www.ifs.tohoku.ac.jp/icfd/2023/>

# The 20<sup>th</sup> International Conference on Flow Dynamics

Second Circular

As of March 2, 2023

<http://www.ifs.tohoku.ac.jp/icfd/2023/index.html>

Organized by  
Executive Committee of ICFD

Supported by  
Institute of Fluid Science,  
Tohoku University

## November 6 - 8, 2023



## SCOPE

The 20<sup>th</sup> International Conference on Flow Dynamics (ICFD2023), in the annual series since 2004, will be held from November 6<sup>th</sup> to 8<sup>th</sup>, 2023 at Sendai, Japan. The objective of this conference is 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, ICFD2023 focuses on energy related topics, such as clean energy, hydrogen energy, and natural energy. 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 researchers 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 2013, on the occasion of its 70th 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 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 an Integrated Flow Science 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 ICFD2023 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. 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.

We believe that you will enjoy beautiful and pleasant atmosphere of the autumn at Sendai, since the beginning November is the best season of Sendai.

Prof. Takashi Tokumasu  
 Tohoku University  
 and

Prof. Jeongmin Ahn  
 Syracuse University

General Co-Chairs, ICFD2023

## Plenary Lectures

Professor Christine Rousselle (University of Orleans, France)

Professor Hai Wang (Stanford University, USA)

TBD

## Sessions

### General Session:

#### GS1: General Session

Co-Organizers: T. Tokumasu, J. Okajima

### Symposium / Workshop / Organized Sessions:

- OS1** The First International Symposium on Integrated Flow Science I & III  
 Advanced Materials and its Energy Application  
 Organizer: S. Samukawa  
 Multiphase Energy Science and Technology (Combination of Monozukuri-Fluid Science / Engineering)  
 Organizer: J. Ishimoto
- OS2: The First International Symposium on Integrated Flow Science II**  
 Combustion Technology and Fundamentals  
 Co-Organizers: P. Dagaut, H. Im, K. Maruta
- OS3: The First International Symposium on Integrated Flow Science IV**  
 Advanced Semiconductor and Digital Transformation  
 Organizer: K. Endo

- OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 15th Edition**  
 Co-Organizers: Y. Saito, L. Kamps
- OS5: Advanced Applications of Multi-functional Fluids**  
 Co-Organizers: H. Takana, T. Fujino, K. Doi, N. Takeuchi, Y. Iwamoto
- OS6: Free Flight Experiment with MSBS and Ballistic Range**  
 Co-Organizers: S. Obayashi, K. Seo, H. Nagai
- OS7: Advances in Simulation Techniques for the Computational Aerosciences**  
 Co-Organizers: Y. Abe, F. Witherden, B. Vermeire, T. Haga, K. Otsuka, N. Tsushima
- OS8: Advanced Physical Stimuli and Biological Responses**  
 Co-Organizers: T. Sato, T. Ohashi, S. Kawano, R. Shirakashi, Y.-C. Cheng
- OS9: Biomedical Flow Dynamics**  
 Co-Organizers: H. Anzai, M. Zhang, K. Takashima, T. Nakayama, A. Qiao, M. Ohta
- OS10: Two-Phase Thermal Control for Spacecraft**  
 Co-Organizers: K. Odagiri, H. Nagai
- OS11: Microfluidics and Microphysiological Modeling**  
 Co-Organizers: K. Funamoto, T. Fukui, T. Omori, E. Corvera Poiré
- OS12: Complex Thermofluid System**  
 Co-Organizers: C.-Y. Chen, Y.-H. Liu, Y.-H. Liao
- OS13: Flow Realization, Measurement and Visualization**  
 Co-Organizers: T. Yamagata, S. Funatani, S. Iio, K. Funamoto
- OS14: Flow in Geoscience / Geoenergy**  
 Co-Organizers: A. Suzuki, A. Patsoukis-dimou, J. Maes
- OS15: Turbulence: from Fundamentals to Applications**  
 Co-Organizers: Y. Hattori, T. Ishihara, Y. Tsuji
- OS16: Vortex Motion**  
 Co-Organizers: Y. Hattori, S. Llewellyn Smith
- OS17: Supercritical Fluid**  
 Co-Organizers: Y. Kanda, Y. Hu, K. Ragui, A. Komiya
- OS18: Flow Measurements using PSP/TSP Technique**  
 Co-Organizers: C.-Y. Huang, Y. Egami, Y. Matsuda, H. Nagai
- OS20: Liaison Office Session**  
 Co-Organizers: M. Ohta, T. Uchimoto, T. Tokumasu, A. Komiya
- OS21: The 19th International Students / Young Birds Seminar on Multi-scale Flow Dynamics**  
 Co-Organizers: H. Kosada, K. Tamaoki, R. Zhu  
 Supervisors: A. Suzuki, S. Takeda, Y. Kanda
- OS22: The 23rd International Symposium on Advanced Fluid Information (AFI-2023)**  
 > **IFS Collaborative Research Forum**  
 Co-Organizers: H. Masuda, T. Tokumasu
- OS23: IFS Lyon Center Collaborative Research Forum**  
 Organizer: T. Uchimoto
- OS24: JSPS Core to Core program workshop**  
 -Construction of an international research exchange center for ammonia combustion and materials toward the realization of a low-carbon society-  
 Co-Organizers: TBD