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Hong G. Im (General Co-Chair of ICFD2021, King Abdullah University of Science and Technology)
Kaoru Maruta (Director of IFS, Tohoku University)

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Jeongmin Ahn
Yiguang Ju
Kozo Saito
Rongjia Tao

Conference Venue

ICFD2021 will be held as an online virtual conference.

Registration Fee

	Without Banquet
Registration Fee	GENERAL 15,000JPY STUDENT 3,000JPY

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

Important Dates

- June 15, 2021:** Deadline for **Presentation Submission**
Please present your paper title / author name / keywords through Presentation Submission page of ICFD2021 website.
- July 15, 2021:** Deadline for **Short Paper (2 or more pages) Submission**
- Sep. 15, 2021:** Presenter: Deadline for Registration
- Oct. 22, 2021:** Audience: Deadline for Registration

Publication & Special Issues of International Journals

It will be available to download the proceedings through the ICFD2021 website. The URL and password will be informed the participants by e-mail in the morning on October 27, 2021. Special Issue of the Conference is being planned to be published in a journal. For more details, please visit ICFD2021 website.

ICFD Secretariat

For further details and related questions, please contact ICFD2021 Secretariat: icfd2021@grp.tohoku.ac.jp
ICFD2021 Secretariat, Institute of Fluid Science, Tohoku University
2-1-1, Katahira, Aoba-ku, Sendai, 980-8577, JAPAN
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<http://www.ifs.tohoku.ac.jp/icfd2021/>

The 18th International Conference on Flow Dynamics

Second Circular

As of February 16, 2021

<http://www.ifs.tohoku.ac.jp/icfd2021/index.html>

Organized by
Executive Committee of ICFD

Supported by
Institute of Fluid Science,
Tohoku University



October 27 - 29, 2021

ICFD2021 will be held as an online virtual conference.



SCOPE

The 18th International Conference on Flow Dynamics (ICFD2021), in the annual series since 2004, will be held from October 27th to 29th, 2021 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, ICFD2021 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 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 ICFD2021 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 are still in the middle of the COVID-19 pandemic and we are not sure if we can get together at Sendai in October 2021 or not. If so, we believe that you will enjoy beautiful and pleasant atmosphere of the autumn at Sendai, since late October is the best season of Sendai. If not, we will do our best to make ICFD2021 successful as the online conference.

Shigeru Obayashi, Professor,
Tohoku University &
Hong G. Im, Professor,

King Abdullah University of Science and Technology
General Co-Chairs, ICFD2021

Sessions

General Session:

GS1: General Session

Co-Organizers: S. Obayashi, K. Shimoyama

Symposium / Workshop / Organized Sessions:

OS1 The Ninth International Symposium on Innovative

& OS3: Energy Research I & III

OS1: Advanced Materials and its Energy Application

Organizer: S. Samukawa

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

Organizer: J. Ishimoto

OS2: The Ninth International Symposium on Innovative Energy Research II: Combustion Technology and Fundamentals

Co-Organizers: P. Dagaut, H. Im, N. I. Kim, K. Maruta

OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 13th Edition

Co-Organizers: T. Shimada, K. Sawada

OS5: Advanced Applications of Multi-functional Fluids

Co-Organizers: H. Takana, T. Fujino, K. Doi, N. Takeuchi, Y. Iwamoto

OS6: New Dimensions of Magnetic Suspension and Balance System

Co-Organizers: S. Obayashi, K. Asai

OS7: Smart Fluids & Soft Matters and Their Advanced Applications

Co-Organizers: M. Nakano, X. Gong, W. Li, G. Sebald

OS8: Advanced Physical Stimuli and Biological Responses

Co-Organizers: T. Sato, T. Ohashi, S. Kawano, R. Shirakashi

OS9: Biomedical Flow Dynamics

Co-Organizers: H. Anzai, M. Zhang, K. Takashima, T. Nakayama, A. Qiao, M. Ohta

OS10: Biomolecular Dynamics

Co-Organizers: Y. Mukai, K. Etchuya, M. Ohta

OS11: Microfluidics and Microphysiological Modeling

Co-Organizers: K. Funamoto, T. Fukui

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: Porous Media

Co-Organizers: A. Suzuki, S. Tupin, M. Ohta

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. Feng, J. Chen, A. Komiya

OS18: Flow Dynamics of Diffusion -reactive and Phase Transition Systems

Co-Organizers: J. Okajima, R. Fursenko, V. Guvernov, S. Minaev

OS19: Liaison Office Session

Co-Organizers: M. Ohta, T. Uchimoto, T. Tokumasu, A. Komiya

OS20: The 17th International Students / Young Birds Seminar on Multi-scale Flow Dynamics

Co-Organizers: T. Akiba, T. Ikami, S. Morita

Supervisors: A. Suzuki, S. Takeda, Y. Kanda, J. Okajima, A. Hayakawa

OS21: The 21st International Symposium on Advanced Fluid Information (AFI-2021)

➤ **IFS Collaborative Research Forum**

Co-Organizers: H. Masuda, S. Obayashi

OS22: AFI-2021 IFS Lyon Center Collaborative Research Forum

Organizer: T. Uchimoto