



# Ninth International Conference on Flow Dynamics

Second Circular

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Sponsored by

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



**September 19 – 21, 2012**

**Hotel Metropolitan Sendai  
Sendai, Japan**

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## Location

Hotel Metropolitan Sendai  
1-1-1, Chuo, Aoba-ku, Sendai-shi, 980-8477  
<http://www.s-metro.stbl.co.jp/english/index.html>

## Registration Fee

Advanced Registration Fee (on or before Aug.3):  
General 10,000 JPY, Student 3,000 JPY  
On-site Registration Fee :  
General 20,000 JPY, Student 7,000 JPY

## Important Dates

May 1, 2012:	Deadline for presentation submission.
<b>May 31, 2012 (extended!)</b>	Please present your paper title /author's name/ Keywords submission through PRESENTATION SUBMISSION page of ICFD2012 website.
<b>July 1, 2012:</b>	Deadline for short paper (A4, 2 pages) Submission Please submit your paper through PAPER SUBMISSION page of ICFD2012 website.
<b>Aug. 3, 2012:</b>	Deadline for Advanced registration.

## Publication in Special Issues of International Journals

Proceedings will be published. Selected papers are being planned to be published after the conference. Please visit ICFD2012 website for the details.

## ICFD Secretariat

For further details and related questions, please contact  
**ICFD2012 Secretariat: [icfd2012@gcoe.ifs.tohoku.ac.jp](mailto:icfd2012@gcoe.ifs.tohoku.ac.jp)**  
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<http://www.ifs.tohoku.ac.jp/gcoe/ICFD/ICFD2012/index.html>  
Regarding the Accommodation, please visit ICFD2012 website.

## SCOPE

One year has passed since the last Great East Japan Earthquake struck Tohoku area on March 11, 2011. Severe damages caused by the earthquake and tsunami, and the consequential disaster by the crippled Fukushima Dai-ichi Nuclear Power Plant, still leave some areas of Tohoku, as being overwhelmed and uninhabitable. Although the situation in Sendai now is perfectly normal as well as its radiation level is, we are still in a stage of preparation for the stabilized cooling of the nuclear power plant.

We appreciate the great support and help provided by the people of the world, our lives in Sendai have returned quickly to a stable and ordinary state. Actually for the last Eighth ICFD held in November 2011, contrary to our pessimistic forecast, six hundred (600) people, including over two hundred (200) from abroad, gathered together in Sendai. We are proud of what we have done in the past for the extension of the boundary of Flow Dynamics, and we will keep going for the future of Flow Dynamics and pursue finding out solutions for improved welfare of the people of the world.

Flow Dynamics is a comprehensive scientific field which deals with various flows and transport phenomena, ranging from nano-scale flows such as behavior of electrons, atoms, molecules and ions to gigantic scale flows such as solar radiation, air and water flows on the globe, volcanic activities, typhoon, tsunami etc. Theoretically, such phenomena are well covered by Newtonian, molecular and quantum dynamics.

The Ninth International Conference on Flow Dynamics (ICFD2012), in the annual series, which is supported by Tohoku University Global COE Program "World Center of Education and Research for Trans-disciplinary Flow Dynamics" will be held on September 19th through 21st, 2012 at Hotel Metropolitan Sendai, Sendai, Japan. The objectives of this conference are not only to explore new horizon by discussing matters in the most advanced academic fields, or exchanging information in cutting edge technologies in Flow Dynamics, but also to provide young researchers and students with unique opportunities of being educated and self-development through their proactive participation to the conference.

We cordially invite you scholars, researchers, engineers, educationists, students and planners, exploring and studying in the relevant research and development fields of bio-, nano-, material,

energy, environmental, planetary and earth sciences and technologies, particularly in the academic field of mechanical engineering, aerospace engineering, nuclear science and engineering, physics, medical science and engineering, chemistry, chemical engineering and so on, to join the conference.

Dr. Shigenao Maruyama, Professor  
Institute of Fluid Science, Tohoku University and  
Chairman of the Organizing Committee of Ninth International Conference on Flow Dynamics (ICFD2012)

## Plenary Lectures

**Dr. Richard A. Wahls** (NASA, USA)

Title: "Environmentally Responsible Aircraft Concepts and Enabling Technology Research at NASA"

**Prof. Zeng-Yuan Guo** (Tsinghua University, China)

Title: "HEAT --- a Weighty Compressive Fluid"

**Prof. Tomoyuki Higuchi** (Director-General, The Institute of Statistical Mathematics, Japan)

Title: "Data Assimilation: Challenge for Big Data through Numerical Simulation"

## Sessions

This conference consists of the following professional sessions. If you have questions and requests about the session of your interest, please contact the ICFD2012 secretariat ([icfd2012@gcoe.ifs.tohoku.ac.jp](mailto:icfd2012@gcoe.ifs.tohoku.ac.jp)).

### General Session:

GS1: General Session

### Organized Sessions:

OS1: Heat and Mass Transfer Issues in Materials

Organizer: P. Bourgin (INSA-Lyon)

OS2: Geometric and Probabilistic Methods in Flow Dynamics

Organizer: S. Ross (Virginia Tech)

OS3: Hybrid Rockets: A Quest for Next-Generation

Environmentally-Compatible Space Transportation  
Organizers: T. Shimada (JAXA), K. Sawada (Tohoku University)

OS4: Green Aviation: Prospects for Environmentally – Compatible Air Transportation

Organizers: S. Obayashi, K. Asai (Tohoku University)  
S. Watanabe (JAXA)

OS5: Advanced Control of Smart Fluids and Fluid Flows

Organizers: M. Nakano, Y. Fukunishi (Tohoku University)

OS6: Multiphase Science and Ultra Clean Technology

Organizer: J. Ishimoto (Tohoku University)

OS7: Blood Flow for Medical Equipment

Organizers: T. Nakayama, M. Ohta (Tohoku University)

OS8: Membrane Micro Channel for Health Care

Organizers: N. Tomita, M. Ohta (Tohoku University)

OS10: Thermal-Fluid Flows and Plasma Physics

Organizers: W. S. Fu, C. Y. Chen (National Chiao Tung University)

OS11: The Eighth International Students/Young Birds Seminar on Multi-Scale Flow

Organizer: H. Nagashima (Tohoku University)  
Co-Organizers: S. Eita, S. Uramoto (Tohoku University)  
Supervisors: K. Sato, Y. Iga, A. Komiya (Tohoku University)

### Planned Sessions: (General papers will not be accepted.)

PS1: IFS Collaborative Research Forum (AFI/TFI-2012)

Organizers: S. Obayashi, H. Takana (Tohoku University)

PS2: Transdisciplinary Fluid Integration (AFI/TFI-2012)

Organizers: S. Obayashi, S. Jeong (Tohoku University)

PS3: Functional Plasma Flow Dynamics and its Innovative Applications

Organizers: H. Nishiyama (Tohoku University), Y. Okuno, K. Yasuoka (Tokyo Institute of Technology), M. Tanaka (Osaka University), Y. Tanaka (Kanazawa University)  
H. Takana (Tohoku University)

PS4: Advanced Physical Stimuli and Biological Responses of Cells

Organizers: T. Sato (Tohoku University), T. Ohashi (Hokkaido University)

※General papers will be accepted.

PS5: 6th Functionality Design of the Contact Dynamics: (DECO2012)

Organizers: T. Takagi, H. Miki (Tohoku University)  
J. Fontaine (ECL, France)

### Special Session:

Liaison Office Session

