Special Lectures and Japan-Taiwan Collaboration Workshop on Integrated Flow Science

March 23, 2026

- **Venue:** Lecture Room, 5th Floor, Building 2, Institute of Fluid Science, Tohoku University [Access]
- **Format:** Session 1 (On-site & Online), Sessions 2–3 (On-site only)
- **Language:** English
- **Registration:** https://zoom.us/meeting/register/w7l6wDZiRmCQfW8ZiqeFTg

10:00–10:05	Opening Remarks	Kaoru Maruta (Director, Institute of Fluid Science, Tohoku University)
Session 1: Special Lectures on Advanced Plasma Applications **Chair: Takehiko Sato** (Tohoku University, Japan)		
10:05–10:10	Introduction	Takehiko Sato (Tohoku University, Japan)
10:10–10:55	Microfluidic Chip Integrated with Atmospheric Plasma as the Ion Source for Rapid Mass-Spectrometry Detection of Pesticides and Biomolecules	Che-Hsin Lin (National Sun Yat-sen University, Taiwan)
10:55–11:40	Toward Predictive Understanding of Reactive Species Dynamics in Atmospheric-Pressure Plasmas	Seiji Kanazawa (Oita University, Japan)
11:40–12:40	Lunch Break	
Session 2 Joint Laboratory Workshop Part 1 **Chair: Jun Ishimoto** (Tohoku University, Japan)		
12:45–13:00	Introduction of Japan-Taiwan International Joint Laboratory	Kazuhiko Endo (Tohoku University, Japan)
13:00–13:30	Low Temperature Plasma for Cancer Therapy, Transdermal, and Semiconductor	Yun-Chien Cheng (National Taiwan University, Taiwan; formerly National Yang Ming Chiao Tung University, Taiwan)
13:30–14:00	Self-Sustaining Smart Systems: Micro Sensors, Thermoelectrics, and IoT Integration	Takahito Ono (Tohoku University, Japan)
14:00–14:10	Break	
Session 2 Joint Laboratory Workshop Part II **Chair: Kazuhiko Endo** (Tohoku University, Japan)		
14:10–14:40	Coupling of Thermodynamic Phase Separation and Hydrodynamic Viscous Fingering	Ching-Yao Chen (National Yang Ming Chiao Tung University, Taiwan)
14:40–15:10	Tohoku-Taiwan Integrated Multiphase Hydrogen-Ammonia Energy Systems toward Carbon-Neutral Societies	Jun Ishimoto (Tohoku University, Japan)

15:10–15:30	Coffee Break	
Session 3	**Panel Discussion: Future Directions and Strategies for Japan–Taiwan Research Collaboration** **Moderator**: I-Ching Chen (Tohoku University, Japan)	
15:30–16:40	**Panelists** • Ching-Yao Chen (National Yang Ming Chiao Tung University, Taiwan) • Yun-Chien Cheng (National Taiwan University, Taiwan) • Tetsuya Uchimoto (Tohoku University, Japan) • Hsiang-Yu (Angie) Wang (National Tsing Hua University, Taiwan) • Chia-Wen (Kevin) Wu (Director of Science and Technology Division, Taipei Economic and Cultural Representative Office in Japan/ National Taiwan University, Taiwan)	
16:40–16:45	Closing Remarks	Kazuhiko Endo (Tohoku University, Japan)

Overview of the Special Lectures

■ **Microfluidic Chip Integrated with Atmospheric Plasma as the Ion Source for Rapid Mass-Spectrometry Detection of Pesticides and Biomolecules**
Prof. Che-Hsin Lin (National Sun Yat-sen University, Taiwan)

Mass spectrometer is one of the most powerful tools for rapid screening trace molecules in biomedical and food safety applications. Electrospray ionization and chemical ionization are two major categories for charging the target molecules for mass spectrometry detection. This talk adopts atmospheric plasma as the ion source and combined with novel microfluidic devices for rapid detection of various species in natural products for bio and chemical applications.

■ **Toward Predictive Understanding of Reactive Species Dynamics in Atmospheric-Pressure Plasmas**
Prof. Seiji Kanazawa (Oita University, Japan)

Atmospheric-pressure non-equilibrium plasmas produce reactive oxygen and nitrogen species (RONS) that govern performance in environmental, biomedical, and agricultural applications. Understanding their spatiotemporal formation and transport remains a fundamental challenge. This presentation introduces advanced optical diagnostics—including ICCD imaging, laser-induced fluorescence, near-infrared emission spectroscopy, and Schlieren visualization—to resolve streamer evolution, radical distributions, and electrohydrodynamic transport. These integrated measurements provide new insight into plasma chemistry and support the development of predictive plasma-chemical models and optimized reactor design.

Organizer

・Special Lecturers: Organized by the Institute of Fluid Science, Tohoku University and Co-Organized by the Local Branch of the Institute of Electrostatics Japan
・Workshop: Organized by Institute of Fluid Science, Tohoku University and Co-Organized by the NYCU and Tohoku University International Joint Laboratory

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