

## AFI/TFI-2007 Program

### Overview

#### December 14, Friday

- 13:00-13:20            Opening Remarks (Sakura Hall, 2F)  
Chair: Toshiyuki Hayase (Tohoku University, Japan)  
Toshiaki Ikohagi (Chairperson, Director of IFS, Tohoku University, Japan)
- 13:20-14:10            Plenary lecture 1 (Sakura Hall, 2F)  
Chair: Kaoru Maruta  
Development of Small-Scale Internal Combustion Rotary Engines  
Carlos Fernandez-Pello (University of California Berkeley, USA)
- 14:10-14:20            Break
- 14:20-14:54            Short presentations 1 (Sakura Hall, 2F, Poster # 1-17) WS1, WS2, WS4  
Chair: Takatoshi Ito
- 15:00-15:30            Break
- 15:30-16:20            Plenary lecture 2 (Sakura Hall, 2F)  
Chair: Shigeru Obayashi  
Current Status and Future Perspective of Typhoon Forecasts  
Toshiki Iwasaki (Tohoku University, Japan)
- 16:30-17:00            Short presentations 2 (Sakura Hall, 2F, Poster # 18-32) WS5, WS6  
Chair: Atsushi Shirai
- 17:10-17:50            Fluid Science Foundation special session (Sakura Hall, 2F)  
Chair: Toshiaki Ikohagi  
Medical Application in Fluids Engineering  
Yoichiro Matsumoto (The University of Tokyo, Japan)
- 19:30-21:00            Banquet (Shozan-kan)

#### December 15, Saturday

- 9:00-9:50            Plenary lecture 3 (Sakura Hall, 2F)  
Chair: Shigenao Maruyama  
The Thermal Rectifier Effect in Nanoscale Heat Conduction  
Xin-Gang Liang (Tsinghua University, China)
- 9:50-10:00 Break
- 10:00-10:44            Short presentations 3 (Sakura Hall, 2F, Poster # 33-54) WS6  
Chair: Hiroto Ohtake
- 11:00-11:50            Plenary lecture 4 (Sakura Hall, 2F)  
Chair: Yasuaki Kohama  
Statistical Modelling of Turbulence and Applications to Large-Eddy Simulation  
Jean-Pierre Bertoglio (Ecole Centrale de Lyon, CNRS, France)
- 11:50-12:00            Semi-closing remarks (Sakura Hall, 2F)
- 12:00-13:30            Lunch and poster session (Sakura Hall, 1F)
- 14:00-18:00            Parallel workshops (Sakura Hall, 2F, IFS, 2F, COE building, 3F)

## Detailed Program

December 14, Friday

- 13:00-13:20        Opening Remarks (Sakura Hall, 2F)  
Chair: Toshiyuki Hayase (Tohoku University, Japan)  
Toshiaki Ikohagi (Chairperson, Director of IFS, Tohoku University, Japan)
- 13:20-14:10        Plenary lecture 1 (Sakura Hall, 2F)  
Chair: Kaoru Maruta  
Development of Small-Scale Internal Combustion Rotary Engines  
Carlos Fernandez-Pello, Bennett Sprague (University of California Berkeley, USA)
- 14:10-14:20        Break
- 14:20-14:54        Short presentations 1 (Sakura Hall, 2F, Poster # 1-17, 2 min) WS1, WS2, WS4  
Chair: Takatoshi Ito
1. W1-03-O (5014)  
Dual-Doppler Lidar Measurements of Three-Dimensional Flow Over Sendai Airport  
Hironori Iwai, Shoken Ishii, Nobumitsu Tsunematsu, Kohei Mizutani, Yasuhiro Murayama (NICT),  
Izumi Yamada (ENRI), Ryouhei Yoshida, Sha Weiming, Takeshi Yamazaki, Toshiki Iwasaki (Tohoku  
University)
  2. W1-04-O (5044)  
Lidar Data Assimilation Experiment for Wake Turbulence  
Takashi Misaka, Takeshi Ogasawara, Shigeru Obayashi (Tohoku University), Izumi Yamada (ENRI),  
Yoshinori Okuno (JAXA)
  3. W1-05-O (5049)  
Measurement of Aircraft Wake Vortices Using Doppler LIDAR  
Takeshi Ogasawara, Takashi Misaka, Toshihiro Ogawa, Shigeru Obayashi (Tohoku University), Izumi  
Yamada (ENRI)
  4. W1-06-O (5062)  
High Resolution Simulation of Seabreeze and Its Validation with Doppler Lidar Observation in Sendai  
Airport  
Kazutaka Tamura, Sha Weiming, Takeshi Yamazaki, Toshiki Iwasaki (Tohoku University), Hironori  
Iwai, Shoken Ishii, Toshikazu Itabe, Kohei Mizutani, Nobumitsu Tsunematsu, Tetsuro Aoki (NICT),  
Izumi Yamada (ENRI)
  5. W2-02-O (5011)  
Micro-Computed Tomography Intracranial Angiography in Rat  
Chuan He, Makoto Ohta, Masayuki Ezura, Akira Takahashi (Tohoku University)
  6. W2-03-O (5031)  
Parameter Study of Hemodynamics Simulation at Internal Carotid Artery Stenosis  
Toshio Nakayama (Tohoku University), Hitoshi Hayase, Koji Tokunaga (Okayama University),  
Makoto Ohta (Tohoku University)
  7. W2-04-O (5043)  
Measurements of Mechanical Properties of Poly (vinyl alcohol) Hydrogel for Development of Blood  
Vessel Biomodeling  
Hiroyuki Kosukegawa, Keisuke Mamada, Kanju Kuroki, Lei Liu, Kosuke Inoue, Toshiyuki Hayase,  
Makoto Ohta (Tohoku University)
  8. W2-05-O (5048)  
Influence of Stent Implantation on Wall Shear Stress in the Aortic Arch  
Futoshi Mori, Teruo Matsuzawa (JAIST)
  9. W2-06-O (5051)  
Development of a Three-Dimensional Blood Vessel Image Acquisition System with Ultrasonic Diagnostic  
Equipment  
Kosuke Takeuchi, Kosuke Inoue, Toshiyuki Hayase (Tohoku University)
  10. W2-07-O (5066)  
Tracking of Red Blood Cells in Microchannel with Stenosis by Confocal Micro PTV System

Hiroki Fujiwara, Takuji Ishikawa (Tohoku University), Rui Lima (ESTiG Braganca Polytechnic Institute), Yohsuke Imai, Noriaki Matsuki, Hirokazu Kaji, Daisuke Mori, Matsuhiko Nishizawa, Takami Yamaguchi (Tohoku University)

11. W2-08-O (5079)  
MR-Measurement-Integrated Simulation of Blood Flow in a Cerebral Aneurysm  
Yoshitsugu Suzuki, Kenichi Funamoto, Toshiyuki Hayase (Tohoku University), Takashi Kosugi, Haruo Isoda (Hamamatsu University School of Medicine)
12. W2-09-P (5015)  
Three-Dimensional Flow Simulation Around a Deformed Red Blood Cell Moving on a Flat Plate  
Yuki Okuyama, Toshiyuki Hayase, and Kenichi Funamoto (Tohoku University)
13. W2-10-P (5029)  
Friction Characteristics of Red Blood Cells Under Physiological Temperature Condition Measured with an Inclined Centrifuge Microscope  
Tomomi Haganuma, Toshiyuki Hayase, Kosuke Inoue, Motohiro Takeda (Tohoku University)
14. W2-11-P (5032)  
Numerical Simulation of Blood Flow in Left Atrium Modeled with Magnetic Resonance Imaging  
Yusuke Kanke, Toshiyuki Hayase, Tomoyuki Yambe, Muneichi Shibata, Yasuyuki Shiraishi (Tohoku University)
15. W4-08-P (5070)  
Adhesion-Properties Evaluation of Diamond-Like Carbon Containing Metal on Metal Substrate  
Toshifumi Sugawara, Hiroyuki Miki, Takanori Takeno, Toshiyuki Takagi, Takeshi Sato (Tohoku University)
16. W4-09-P (5071)  
Humidity Dependence Evaluation of the Frictional Wear Property Between Metal and Partly Polished CVD Diamond Films which Have a Microscopic Structure on the Surface  
Kotaro Bando, Hiroyuki Miki, Takanori Takeno, Toshihiko Abe, Toshiyuki Takagi, Takeshi Sato (Tohoku University)
17. W4-10-P (5085)  
Effect of Sliding History on Friction and Wear Properties of Carbon Nitride Coatings Under Nitrogen Gas  
Koshi Adachi, Masakatsu Sugo and Koji Kato (Tohoku University)

15:00-15:30 Break

15:30-16:20 Plenary lecture 2 (Sakura Hall, 2F)  
Chair: Shigeru Obayashi  
Current Status and Future Perspective of Typhoon Forecasts  
Toshiki Iwasaki (Tohoku University, Japan)

16:30-17:00 Short presentations 2 (Sakura Hall, 2F, Poster # 18-32, 2 min) WS5, WS6  
Chair: Atsushi Shirai

18. W5-09-P (5009)  
Semi-Automatic Placement of Light Sources for Volume Rendering  
Ryota Naraoka, Issei Fujishiro, Yuriko Takeshima (Tohoku University), Shigeo Takahashi (The University of Tokyo)
19. W5-10-P (5028)  
Geographical Feature-Based Visualization of 2D Time-Varying Datasets  
Ryosuke Arata, Yuriko Takeshima (Tohoku University), Shigeo Takahashi (The University of Tokyo), Issei Fujishiro, Toshiyuki Hayase (Tohoku University)
20. W5-11-P (5030)  
Flow Texture-Based Emotional Visualization of Music Performance  
Kazufumi Suenaga, Issei Fujishiro (Tohoku University)
21. W5-12-P (5045)  
Haptization of 3D Diffusion Tensor Fields  
Yuta Ogawa, Yasuko Suzuki, Issei Fujishiro, Yuriko Takeshima (Tohoku University)
22. W5-13-P (5063)  
Repository-Based Suggestive User Interface for Flow Visualization  
Hisanori Masuda, Issei Fujishiro, Yuriko Takeshima, Toshiyuki Hayase (Tohoku University)

23. W5-14-P (5077)  
Accuracy of MR Fluid Motion Estimation Scheme with Reference to Analytical Velocity Field Data  
Kelvin Kian Loong Wong, Shao-Ming Zhu, Richard Malcolm Kelso, Jagannath Mazumdar, Derek Abbott (The University of Adelaide)
24. W6-02-O (5035)  
The Mechanism of Response Time Delay to the Flow Oscillation in Unsteady Droplet Combustion Under Microgravity at High Pressure  
Mehdi Jangi, Shoichi Hasegawa (Tohoku University), Satoru Sakurai (IHI Aerospace Co., Ltd.), Yasuhiro Ogami, Kentaro Yoshinaga, Hisashi Nakamura, Hideaki Kobayashi (Tohoku University)
25. W6-03-O (5046)  
Low-Boom and Low-Drag Optimization of the Twin Engine Version of Silent Supersonic Business Jet  
Koma Sato, Takayasu Kumano, Masahito Yonezawa, Hiroshi Yamashita, Shinkyu Jeong, Shigeru Obayashi (Tohoku University)
26. W6-04-O (5050)  
Development and Application of a New Robust Optimization Framework for Real-World Engineering Design  
Koji Shimoyama, Shinkyu Jeong, Shigeru Obayashi (Tohoku University), Masataka Koishi (Yokohama Rubber Co., Ltd.)
27. W6-05-O (5061)  
LES on Plume Dispersion in the Convective Boundary Layer Capped by a Temperature Inversion  
Hiromasa Nakayama (JAEA), Tetsuro Tamura, Satoshi Abe (Tokyo Institute of Technology)
28. W6-06-O (5068)  
Numerical Analysis for the Characteristics of Heat and Fluid Flow Against the Pattern of Channel in PEFC  
Kohji Imuta, Takashi Tokumasu (Tohoku University)
29. W6-07-O (5075)  
Proton Transfer in Polyelectrolyte Membrane by Molecular Dynamics Simulation  
Satoshi Ito, Takashi Tokumasu (Tohoku University)
30. W6-08-O (5081)  
Effects of Number of Feedback Points in PIV Measurement-Integrated Simulation  
Takayuki Yamagata, Toshiyuki Hayase (Tohoku University), Hiroshi Higuchi (Syracuse University)
31. W6-09-O (5004)  
An Understanding of Fluid Behaviour in Centrifugal Casting [Part 1]  
Mukunda Porakattu Gopal (Nitte Meenakshi Institute of Technology), Srikantha Rao Sasihitlu, Kiran Aithal Subbanna, Shailesh Rao Agari (National Institute of Technology)
32. W6-10-P (5007)  
Chemical Flow Control Using Hydrophilic and Hydrophobic Coatings  
Katsuaki Morita, Hirotsuka Sakaue (JAXA), Tsuyoshi Hyakutake, Hiroyuki Nishide (Waseda University)

17:10-17:50 Fluid Science Foundation special session (Sakura Hall, 2F)  
Chair: Toshiaki Iko-hagi  
Medical Application in Fluids Engineering  
Yoichiro Matsumoto (The University of Tokyo, Japan)

19:30-21:00 Banquet (Shozan-kan)  
Shuttle bus is available at Sakura Hall

December 15, Saturday

9:00-9:50 Plenary lecture 3 (Sakura Hall, 2F)  
Chair: Shigenao Maruyama  
The Thermal Rectifier Effect in Nanoscale Heat Conduction  
Xin-Gang Liang and Shuai-Chuang Wang (Tsinghua University, China)

9:50-10:00 Break

10:00-10:44 Short presentations 3 (Sakura Hall, 2F, Poster # 33-54, 2 min ) WS6

Chair: Hiroto Ohtake

33. W6-11-P (5008)  
Evaluation of Sealing Characteristics in Magneto-Rheological Fluid Channel Flow  
Kotoe Mizuki, Tomoki Nakajima, Kazunari Katagiri, Hidemasa Takana, Hideya Nishiyama (Tohoku University)
34. W6-12-P (5010)  
Subharmonic Instability on Boundary-Layer Transition of Flow Around 2-Dimensional Airfoil  
Takashi Atobe, Takuji Kurotaki (JAXA), Takahiro Sumi (Space Service Co., Ltd.), Jun Hiyama (Sanko Aerospace Dept. Co., Ltd.)
35. W6-13-P (5013)  
Computational Simulation on Acceleration Characteristic of Micro/Nano Particle in Supersonic Micro Jet by Electrostatic Force for Advanced Dental Treatment  
Hidemasa Takana, Tsunemoto Kuriyagawa, Hideya Nishiyama (Tohoku University)
36. W6-14-P (5016)  
Propagating Behavior of Elastic Waves in Solid Caused by Bubble Collapse  
Kentaro Shinbo, Yuka Iga (Tohoku University), Motohiko Nohmi (EBARA Co., Ltd.), Toshiaki Ikohagi (Tohoku University)
37. W6-15-P (5017)  
Numerical Analysis of Internal Flow in Turbopump Inducer Using Gas-Liquid Homogeneous Model  
Makiko Onozawa, Yuka Iga (Tohoku University), Toshiya Kimura (JAXA), Toshiaki Ikohagi (Tohoku University)
38. W6-16-P (5018)  
Activated Air Flow by Dielectric Barrier Discharge for Combustion Assist  
Hirofumi Shimizu, Shota Niikura, Kazunari Katagiri, Hidemasa Takana, Yoshikatsu Nakano, Hideya Nishiyama (Tohoku University)
39. W6-17-P (5019)  
Experimental Investigation of Trailing-Edge Noise on Two Dimensional Airfoil  
Yasufumi Konishi, Shohei Takagi (JAXA), Yasuaki Kohama, Takuma Kato (Tohoku University)
40. W6-18-P (5023)  
Characteristics of Steam Plasma Flow at Atmospheric Pressure and Its Sterilization Efficacy  
Takeshi Furui, Takehiko Sato (Tohoku University)
41. W6-19-P (5024)  
Integrated Computation of the Effect of Micro-Cavitation on Atomization Process  
Jun Ishimoto (Tohoku University), Fuminori Sato, Gaku Sato (KEIHIN Co.)
42. W6-20-P (5026)  
Deformation of a Soft Capsule in a Uniform Flow  
Masao Yokoyama, Osamu Mochizuki (Toyo University)
43. W6-21-P (5027)  
The Effects of the Activation Energy on the Unstable Behavior of Premixed Flames  
Amornrat Kaewpradap, Satoshi Kadowaki (Nagoya University of Technology)
44. W6-22-P (5033)  
Effects of Flame Stretch and Heat Loss on Local Burning Velocities for Two-Dimensional Bunsen Flames  
Yasuhiro Ogami, Hisashi Nakamura, Hideaki Kobayashi (Tohoku University)
45. W6-23-P (5034)  
Precise Temperature Control and Heat Flux Measurement of the Radiation Heater for Thermal Therapy  
Naoya Ogasawara, Shigenao Maruyama, Shigeru Takashima, Atsuki Komiya, Takashi Seki, Tomoyuki Yambe (Tohoku University)
46. W6-24-P (5036)  
PTV Measurement and Numerical Simulation of Wall Injection Interacting with Incident Shock Wave in Supersonic Flow  
Shunsuke Ishida, Naoki Sato, Hisashi Nakamura, Yasuhiro Ogami, Hideaki Kobayashi (Tohoku University)
47. W6-25-P (5037)  
Pattern Transitions from Traveling Flames to Rotating Pelton-Like Flames in a Radial Microchannel  
Aiwu Fan (Tohoku University, Huazhong University), Sergey Minaev (Siberian Branch of Russian Academy of Science), Sudarshan Kumar (Indian Institute of Technology, Bombay), Wei Liu (Huazhong University), Kaoru Maruta (Tohoku University)

48. W6-26-P (5039)  
 Characteristics of Pressure Drop and Solid Particle Behavior in Slush Nitrogen Pipe Flow  
 Masakazu Nozawa, Katsuhide Ohira, Naoto Okazaki, Jun Ishimoto, Koichi Takahashi (Tohoku University), Takanobu Kamiya (Mitsubishi Heavy Industries, Ltd.)
49. W6-27-P (5040)  
 Cavitation Instability in Subcooled Liquid Nitrogen Nozzle Flows  
 Kazuki Niiyama, Masakazu Nozawa, Katsuhide Ohira (Tohoku University), Mamoru Oike (Ishinomaki Senshu University)
50. W6-28-P (5041)  
 Numerical Study on Solid Particle Behavior of Slush Nitrogen Two-Phase Flow in a Horizontal Pipe  
 Yasuaki Mukai, Katsuhide Ohira, Jun Ishimoto, Masakazu Nozawa (Tohoku University), Takashi Maemura, Takanobu Kamiya (Mitsubishi Heavy Industries, Ltd.)
51. W6-29-P (5042)  
 Experimental Study of Heat Transfer in Slush Nitrogen Pipe Flow  
 Norifumi Takahashi, Noriaki Kumagai, Katsuhide Ohira, Jun Ishimoto, Masakazu Nozawa (Tohoku University)
52. W6-30-P (5047)  
 Experimental and Numerical Study on Weak Flame in Heated Meso-Scale Channel  
 Yosuke Tsuboi (Tohoku University), Takeshi Yokomori (Keo University), Kaoru Maruta (Tohoku University)
53. W6-31-P (5069)  
 Molecular Dynamics Study About Dissociation Phenomena of H<sub>2</sub> on Pt(111) Surface  
 Daigo Ito, Takashi Tokumasu (Tohoku University)
54. W6-32-P (5076)  
 Numerical Analysis of DC Magnetron Sputtering  
 Toshihiko Iwao, Shigeru Yonemura (Tohoku University)

11:00-11:50 Plenary lecture 4 (Sakura Hall, 2F)  
 Chair: Yasuaki Kohama  
 Statistical Modelling of Turbulence and Applications to Large-Eddy Simulation  
 Jean-Pierre Bertoglio (Ecole Centrale de Lyon, CNRS, France)

11:50-12:00 Semi-closing remarks (Sakura Hall, 2F)

12:00-13:30 Lunch and poster session (Sakura Hall, 1F)

14:00-18:00 Parallel workshops (Sakura Hall, 2F, IFS, 2F, COE building, 3F)

WS1: Aviation Weather and Safety (Meeting room, IFS, 2F)

Organizers: Shigeru Obayashi (IFS) and Toshiki Iwasaki ( Tohoku Univ. )

14:00-14:40

W1-01-K (Keynote) (5003)

Improving NWP Forecasts with Airborne Wind and Water Vapor Lidar Observations: Impact Studies with Targeted Observations and Future Outlook

Martin Weissmann (DLR Oberpfaffenhofen), Carla Cardinali (European Centre for medium-Range Weather Forecasts), Andreas Döernbrack (DLR Oberpfaffenhofen), Elias Holm (European Centre for Medium-Range Weather Forecasts), Christoph Kiemle, Martin Wirth (DLR Oberpfaffenhofen)

14:40-15:00

W1-02-I (Invited) (5078)

Interactive Forecast System to Mitigate Typhoon Disasters

Tetsuo Nakazawa (Meteorological Research Institute)

15:00-15:20

W1-03-O (5014)

Dual-Doppler Lidar Measurements of Three-Dimensional Flow over Sendai Airport

Hironori Iwai, Shoken Ishii, Nobumitsu Tsunematsu, Kohei Mizutani, Yasuhiro Murayama (NICT), Izumi Yamada (ENRI), Ryouhei Yoshida, Sha Weiming, Takeshi Yamazaki, Toshiki Iwasaki (Tohoku University)

15:20-15:40

W1-04-O (5044)

Lidar Data Assimilation Experiment for Wake Turbulence

Takashi Misaka, Takeshi Ogasawara, Shigeru Obayashi (Tohoku University), Izumi Yamada (ENRI), Yoshinori Okuno (JAXA)

15:40-16:00

W1-05-O (5049)

Measurement of Aircraft Wake Vortices Using Doppler LIDAR

Takeshi Ogasawara, Takashi Misaka, Toshihiro Ogawa, Shigeru Obayashi (Tohoku University), Izumi Yamada (ENRI)

16:00-16:20

W1-06-O (5062)

High Resolution Simulation of Seabreeze and Its Validation with Doppler Lidar Observation in Sendai Airport

Kazutaka Tamura, Sha Weiming, Takeshi Yamazaki, Toshiki Iwasaki (Tohoku University), Hironori Iwai, Shoken Ishii, Toshikazu Itabe, Kohei Mizutani, Nobumitsu Tsunematsu, Tetsuro Aoki (NICT), Izumi Yamada (ENRI)

WS2: Hemodynamics on Multi-Scale (Lecture room, IFS, 2F)  
Organizers: Makoto Ohta (IFS) and Atsushi Shirai (IFS)

14:00-14:40

W2-01-K (Keynote) (5086)

Flow Dynamics of Cerebral Aneurysms - in vivo Measurement with MR  
Stephan Wetzel (University Hospital Basel)

14:40-15:00

W2-02-O (5011)

Micro-Computed Tomography Intracranial Angiography in Rat  
Chuan He, Makoto Ohta, Masayuki Ezura, Akira Takahashi (Tohoku University)

15:00-15:20

W2-03-O (5031)

Parameter Study of Hemodynamics Simulation at Internal Carotid Artery Stenosis  
Toshio Nakayama (Tohoku University), Hitoshi Hayase, Koji Tokunaga (Okayama University),  
Makoto Ohta (Tohoku University)

15:20-15:40

W2-04-O (5043)

Measurements of Mechanical Properties of Poly (vinyl alcohol) Hydrogel for Development of Blood  
Vessel Biomodeling  
Hiroyuki Kosukegawa, Keisuke Mamada, Kanju Kuroki, Lei Liu, Kosuke Inoue, Toshiyuki Hayase,  
Makoto Ohta (Tohoku University)

15:40-16:00

Break

16:00-16:20

W2-05-O (5048)

Influence of Stent Implantation on Wall Shear Stress in the Aortic Arch  
Futoshi Mori, Teruo Matsuzawa (JAIST)

16:20-16:40

W2-06-O (5051)

Development of a Three-Dimensional Blood Vessel Image Acquisition System with Ultrasonic Diagnostic  
Equipment  
Kosuke Takeuchi, Kosuke Inoue, Toshiyuki Hayase (Tohoku University)

16:40-17:00

W2-07-O (5066)

Tracking of Red Blood Cells in Microchannel with Stenosis by Confocal Micro PTV System  
Hiroyuki Fujiwara, Takuji Ishikawa (Tohoku University), Rui Lima (ESTiG Braganca Polytechnic  
Institute), Yohsuke Imai, Noriaki Matsuki, Hirokazu Kaji, Daisuke Mori, Matsuhiko Nishizawa,  
Takami Yamaguchi (Tohoku University)

17:00-17:20

W2-08-O (5079)

MR-Measurement-Integrated Simulation of Blood Flow in a Cerebral Aneurysm  
Yoshitsugu Suzuki, Kenichi Funamoto, Toshiyuki Hayase (Tohoku University), Takashi Kosugi,  
Haruo Isoda (Hamamatsu University School of Medicine)



WS3: Advanced Device Research by Intelligent Nano-Process(Seminar room, COE building, 3F)

Organizers: Seiji Samukawa (IFS), Satoshi Hamaguchi (Osaka Univ.), Ichiro Yamashita (Matsushita Elec. Indus. Co. Ltd.), Kazuhiko Endo (AIST), Hideo Miura(Tohoku Univ.), Takashi Tokumasu (IFS), Takehiko Sato (IFS), Yoshinori Sato (Tohoku Univ.), Hiroto Ohtake (IFS)

13:30-13:50

Introductory talk

Seiji Samukawa (Tohoku University)

13:50-14:30

W3-01-I (Invited) (5058)

The Importance of Doping in Nanotube Technology: From Theory to Applications and Toxicity

Mauricio Terrones (IPICyT)

14:30-15:10

W3-02-I (Invited) (5060)

Diamond Transistors and Carbon Nanotube Electrodes Fabricated by Intelligent Nanoprocess

Hiroshi Kawarada, Kazuyuki Hiramata, Shouma Kuga, Daisuke yokoyama, Takayuki Iwasaki (Waseda University)

15:10-15:50

W3-03-I (Invited) (5054)

Applications of Nonequilibrium Atmospheric Pressure Plasma Jets to Bio- and Nano-Processes in Liquid

Katsuhisa Kitano (Osaka University), Hitoshi Furusho, Yukio Nagasaki (University of Tsukuba), Satoshi Ikawa (Technology Research Institute of Osaka Prefecture), Satoshi Hamaguchi (Osaka University)

15:50-16:00

Break

16:00-16:40

W3-04-K (Keynote) (5055)

High Mobility Nanoelectronic Devices, Physics, and Technology

Chi On Chui (University of California, Los Angeles)

16:40-17:20

W3-05-I (Invited) (5057)

New Functional Devices Developed with Bio Nano Process

Yukiharu Uraoka, Atsushi Miura, Takashi Fuyuki (Nara Institute of Science and Technology), Ichiro Yamashita (Matsushita Electric Industrial Co., Ltd.)

17:20-18:00

W3-06-I (Invited) (5059)

Semiconductor with Ordered Dopant Arrays and Its Electrical Characteristics

Takahiro Shinada, Tomonori Kurosawa, Iwao Ohdomari (Waseda University)

WS4: Development and Evaluation of the Carbon Thin Film with New Performance (Sakura Hall, 2F)  
Organizers: Toshiyuki Takagi (IFS), Tetsuya Uchimoto (IFS), and Hiroyuki Miki (IFS)

14:00-14:40

W4-01-K (Keynote) (5074)  
Tribology of DLC Coating: Some Fundamental Insights  
Julien Fontaine (Ecole Centrale de Lyon)

14:40-15:00

W4-02-I (Invited) (5067)  
Dispersion Characteristics of Rayleigh-Like Waves for Evaluation of Thin Coating Layers  
Hak-Joon Kim, Sung-Jin Song (Sungkyunkwan University), Sung-Duk Kwon (Andong National University)

15:00-15:20

W4-03-I (Invited) (5072)  
Quantitative Evaluation of Degraded TiN Coating Layer Using Generalized Leaky Lamb Waves  
Sung-Duk Kwon (Andong National University), Hak-Joon Kim, Sung-Jin Song (Sungkyunkwan University)

15:20-15:40

W4-04-I (Invited) (5073)  
Tribological Evaluation of Materials by Novel Technologies: Application to Complex DLCs Coating  
Michel Belin, Julien Fontaine (Ecole Centrale de Lyon, CNRS)

15:40-16:00

W4-05-I (Invited) (5080)  
Tribological Properties of Single-Walled Carbon Nanotube Solids  
Go Yamamoto, Toshiyuki Hashida, Koshi Adachi, Toshiyuki Takagi (Tohoku University)

16:00-16:20

W4-06-I (Invited) (5083)  
The Effect of Nitrogen Gas on Reducing Friction of CN<sub>x</sub>-Coatings  
Koshi Adachi (Tohoku University), Koji Kato (Nihon University)

16:20-16:40

W4-07-I (Invited) (5088)  
Tribology of Metal-Containing CLCs: A Brief Review  
Kosuke Ito (Ecole Centrale de Lyon), Takanori Takeno (Tohoku University)

WS5: Advanced Visualization Research and Development in Fluid Science (Sakura Hall, 2F)  
Organizer: Iseei Fujishiro (IFS)

14:00-14:40

W5-01-K (Keynote) (5065)

A Volume Rendering Framework for Visualizing 3D Flow Fields

Hsien-Hsi Hsieh, Liya Li, Han-Wei Shen (The Ohio State University)

14:40-15:00

W5-02-I (Invited) (5005)

Hierarchical Data Visualization for Fluid Science

Takayuki Itoh (Ochanomizu University)

15:00-15:20

W5-03-I (Invited) (5006)

A Method of Visualization of Brain Neural Pathway by Using Critical Point and Target Regions

Akio Doi (Iwate Prefectural University), Hironori Fujimura (Alps Co.), Masaki Nagano (Iwate Prefectural University), Takashi Inoue, Akira Ogawa (Iwate Medical University)

15:20-15:40

W5-04-I (Invited) (5012)

An Interactive Approach for Hierarchical Parameter Optimization

Teppei Tanaka (Kyoto University), Takayuki Itoh (Ochanomizu University), Naohisa Sakamoto (KGT Inc.), Koji Koyamada (Kyoto University)

15:40-16:00

Break

16:00-16:20

W5-05-I (Invited) (5020)

Mapping In Situ Dynamic Thin Films by Optical Techniques

Philippe Vergne (INSA-Lyon, CNRS)

16:20-16:40

W5-06-I (Invited) (5052)

Interactive Fluid Simulation and Its Remote Steering Framework with Visual and Haptic Feedback

Shin-ichiro Mori, Kensuke Hashimoto (University of Fukui), Akinori Yamaguchi, Makoto Komatsubara, Shinji Tomita (Kyoto University)

16:40-17:00

W5-07-I (Invited) (5053)

Perceptually Adaptive Visualization through Nonperspective Projection

Shigeo Takahashi, Kenichi Yoshida (The University of Tokyo), Iseei Fujishiro (Tohoku University), Masato Okada (The University of Tokyo)

17:00-17:20

W5-08-I (Invited) (5064)

Compact Display Techniques for Information Visualization

Takafumi Saito, Hiroko Nakamura Miyamura, Tadasuke Furuya, Yuji Shinano (Tokyo University of Agriculture and Technology)

WS6: Advances in Fluid Science (Sakura Hall, 2F)

Organizers: Toshiyuki Hayase (IFS) and Takatoshi Ito (IFS)

14:00-14:40

W6-01-I (Invited) (5025)

Influence of Surface Micromorphology on the Turbulent Boundary Layer

Frédéric Plaza, Elena Sanz Garcia, Rémi Point, Christian Nicot (École Centrale de Lyon, CNRS)

14:40-15:00

W6-02-O (5035)

The Mechanism of Response Time Delay to the Flow Oscillation in Unsteady Droplet Combustion Under Microgravity at High Pressure

Mehdi Jangi, Shoichi Hasegawa (Tohoku University), Satoru Sakurai (IHI Aerospace Co., Ltd.), Yasuhiro Ogami, Kentaro Yoshinaga, Hisashi Nakamura, Hideaki Kobayashi (Tohoku University)

15:00-15:20

W6-03-O (5046)

Low-Boom and Low-Drag Optimization of the Twin Engine Version of Silent Supersonic Business Jet

Koma Sato, Takayasu Kumano, Masahito Yonezawa, Hiroshi Yamashita, Shinkyu Jeong, Shigeru Obayashi (Tohoku University)

15:20-15:40

W6-04-O (5050)

Development and Application of a New Robust Optimization Framework for Real-World Engineering Design

Koji Shimoyama, Shinkyu Jeong, Shigeru Obayashi (Tohoku University), Masataka Koishi (Yokohama Rubber Co., Ltd.)

15:40-16:00

Break

16:00-16:20

W6-05-O (5061)

LES on Plume Dispersion in the Convective Boundary Layer Capped by a Temperature Inversion

Hiromasa Nakayama (JAEA), Tetsuro Tamura, Satoshi Abe (Tokyo Institute of Technology)

16:20-16:40

W6-06-O (5068)

Numerical Analysis for the Characteristics of Heat and Fluid Flow Against the Pattern of Channel in PEFC

Kohji Imuta, Takashi Tokumasu (Tohoku University)

16:40-17:00

W6-07-O (5075)

Proton Transfer in Polyelectrolyte Membrane by Molecular Dynamics Simulation

Satoshi Ito, Takashi Tokumasu (Tohoku University)

17:00-17:20

W6-08-O (5081)

Effects of Number of Feedback Points in PIV Measurement-Integrated Simulation

Takayuki Yamagata, Toshiyuki Hayase (Tohoku University), Hiroshi Higuchi (Syracuse University)

17:20-17:40

W6-09-O (5004)

An Understanding of Fluid Behaviour in Centrifugal Casting [Part 1]

Mukunda Porakattu Gopal (Nitte Meenakshi Institute of Technology), Srikantha Sasihitlu Rao, Kiran Aithal Subbanna, Shailesh Rao Agari (National Institute of Technology)

Poster presentations

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35	W6-13-P	5013
36	W6-14-P	5016
37	W6-15-P	5017
38	W6-16-P	5018
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Sorted by Paper ID

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18	W5-09-P	5009
34	W6-12-P	5010
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## General information

### Registration

Registration desk is located in the Lobby, Sakura Hall, 1F

December 14, Friday 11:00-18:00

December 15, Saturday 8:30-11:00

### Banquet

19:30-21:00, Friday, December 14  
at Shozan-kan

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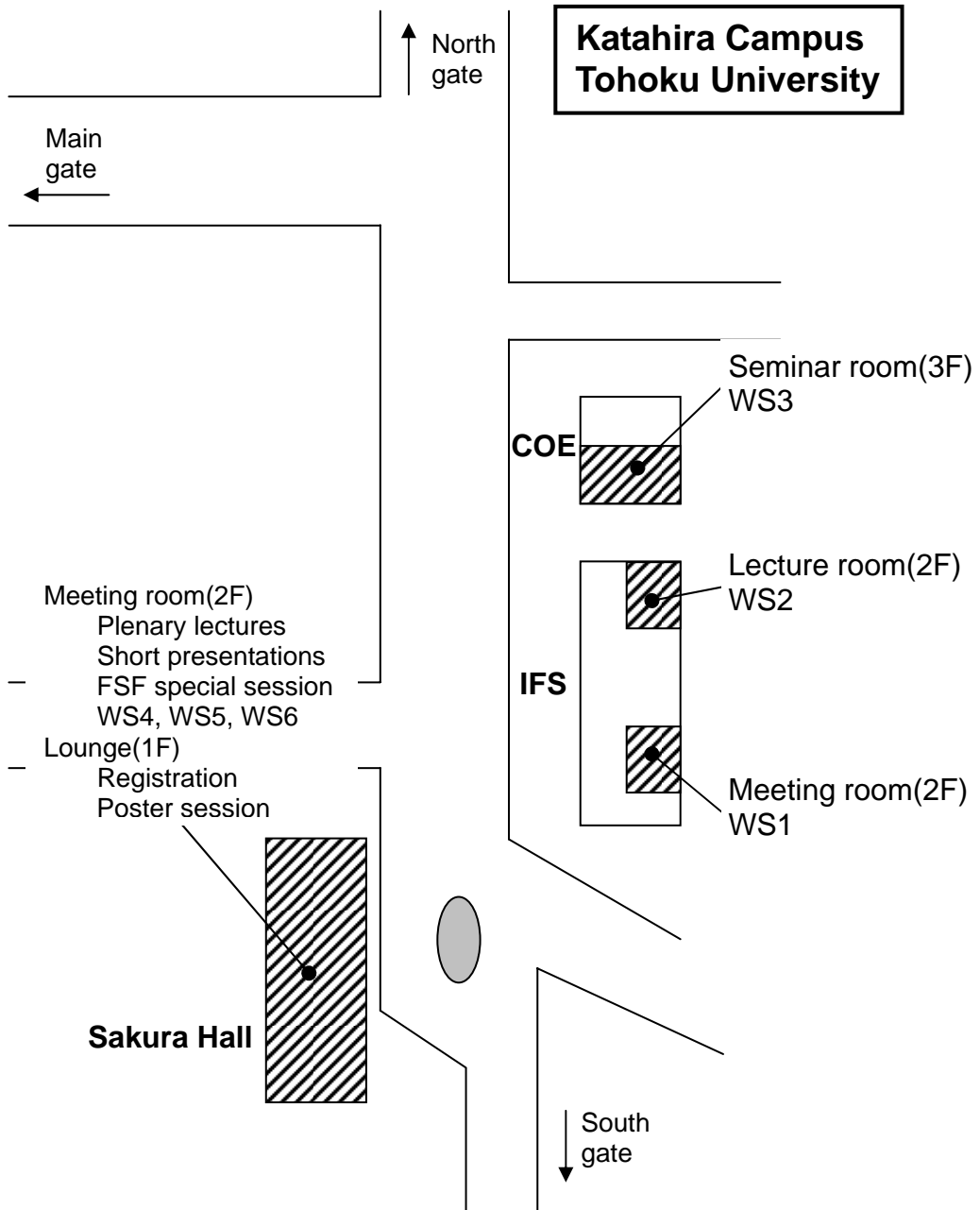
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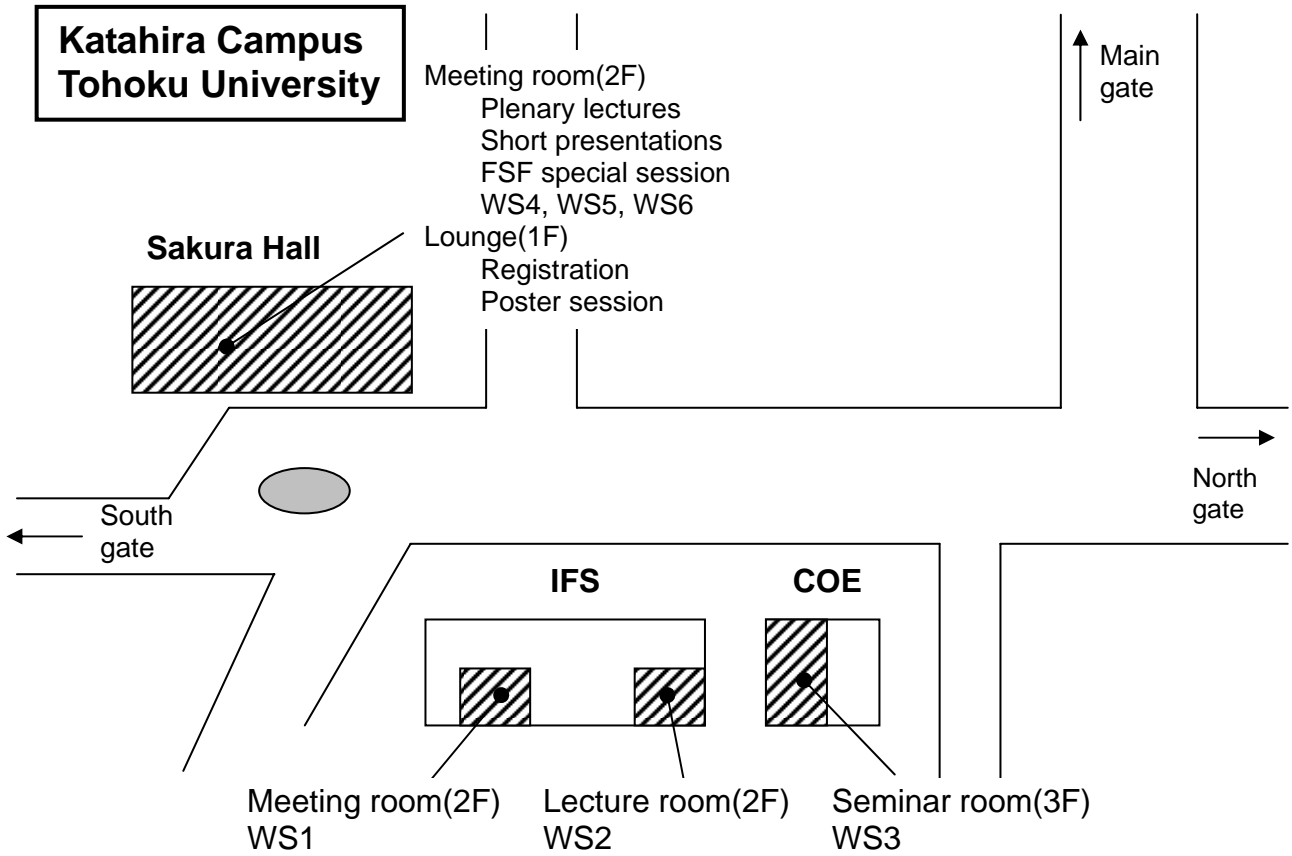
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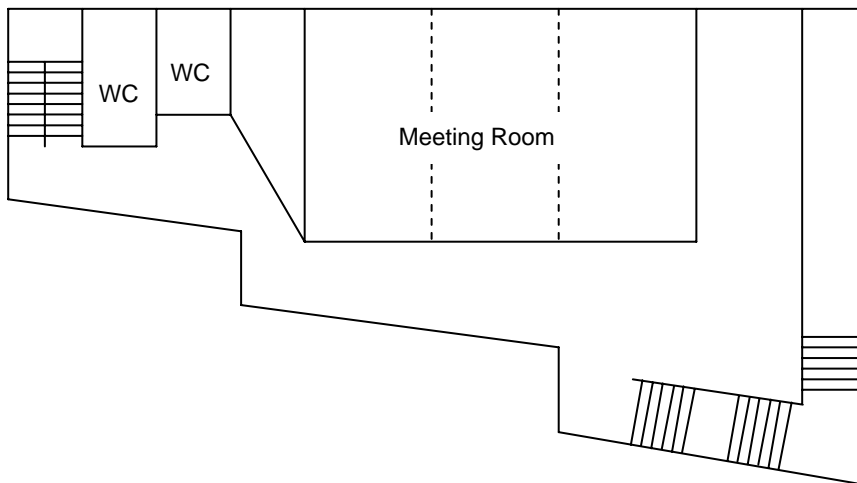
Map







Sakura Hall  
2nd Floor  
Meeting Room



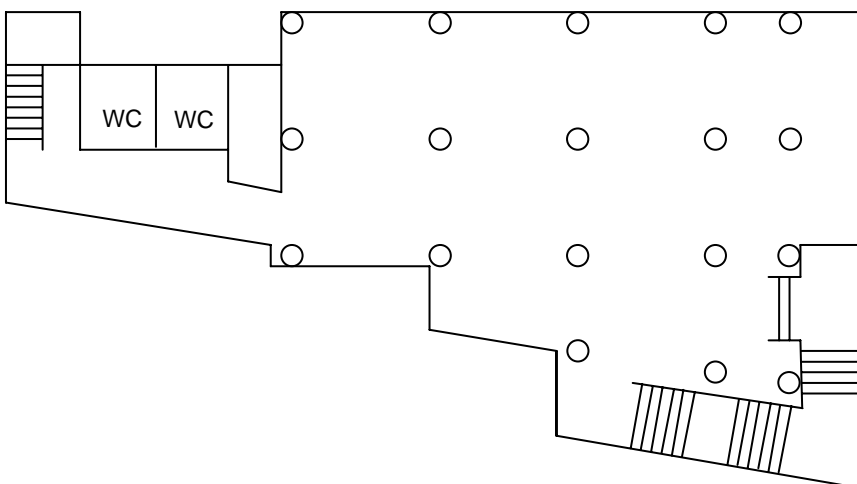
December 14

13:00-13:20 Opening Remarks  
13:20-14:10 Plenary Lecture 1  
14:20-14:54 Short Presentatin 1  
15:30-16:20 Plenary Lecture 2  
16:30-17:00 Short Presentation 2  
17:10-17:50 FSF Special Session

December 15

9:00- 9:50 Plenary Lecture 3  
10:00-10:44 Short Presentation 3  
11:00-11:50 Plenary Lecture 4  
11:50-12:00 Semi-closing Remarks  
14:00-18:00 WS 4, WS5, WS6

1st Floor  
Registration Deks  
Cloak



December 14

11:00-18:00 Registration

December 15

8:30-11:00 Registration  
12:00-13:30 Lunch and Poster Session