

**OS27: The 21st International Students / Young Birds Seminar
on Multi-scale Flow Dynamics**

November 10, 2025

EX-Hall-3B

13:30-15:00 Poster Session I

- OS27-1 **Thermodynamic Analysis of Closed-Cycle MHD Power Generation System for Output Adjustment**
Hina Kikuta, Kotaro Tabuchi, Takayasu Fujino (University of Tsukuba, Japan),
Hidemasa Takana (Tohoku University, Japan)
- OS27-2 **Temperature-Dependent Solar Absorption Characteristics of Thermally Oxidized Stainless Steel for Photothermal Applications**
Kota Matsui, Atsushi Sakurai (Niigata University, Japan)
- OS27-3 **Surface Temperature Fluctuations in Fin-Type Pulsating Heat Pipe by Infrared Imaging**
Takumi Sasagawa, Kanji Ichikawa, Masayoshi Miura (Chiba Institute of Technology, Japan)
- OS27-4 **Fundamental Experiments on the Thermodynamic Suppression Effects of a Cavitation Instability Suppression Device**
Kota Eki, Shuichi Moriya, Junnosuke Okajima (Tohoku University, Japan), Yuka Iga (Tohoku University / Japan Aerospace Exploration Agency, Japan)
- OS27-5 **Combined Evaluation of Radiative and Conductive Heat Transfer for Regolith Layer**
Shuto Kamiya, Kiyoto Kawai (Yamagata University, Japan), Sumitaka Tachikawa (Japan Aerospace Exploration Agency, Japan), Hiroki Gonome (Yamagata University, Japan)
- OS27-6 **Spectral Switching Using Thermosensitive Gel/SiO₂ Pickering Microparticles**
Yusuke Koizumi, Takashi Nagata, Yoshimune Nonomura, Akito Masuhara, Hiroki Gonome (Yamagata University, Japan)
- OS27-7 **Directional Mid-Infrared Thermal Emitters Based on Planar Thin-Film Structures**
Ayanobu Kakei, Atsushi Sakurai (Niigata University, Japan)
- OS27-8 **Estimation of Heat Generation in Spacecraft using Graph Neural Networks**
Daichi Yamashita, Tsubasa Ikami, Hiroki Nagai (Tohoku University, Japan)
- OS27-9 **Quantifying Stripe Pattern Formation in Evaporating Sugar-solution Drops on Heated Surfaces via Confocal Laser Microscopy**
Kirito Tajiri, Taimei Miyagawa, Minori Shiota (Hiroshima University, Japan), Yasuhiro Saito (Kyushu Institute of Technology, Japan), Yoshiya Matsukawa, Hideyuki Aoki (Tohoku University, Japan), Masatoshi Daikoku (Hachinohe Institute of Technology, Japan), Junichi Fukuno (Honda Motor Co., Ltd., Japan), Takahiro Okabe (Hiroshima University, Japan)

- OS27-10 **Computational Study of Thickness Effect on Aerodynamic Performance of a Flat Plate at Low Reynolds Number Flow**
Taishi Kimura, Kosei Funada, Shota Inoue, Daisuke Sasaki (Osaka Metropolitan University, Japan), Yuki Kawamoto (Tokai University, Japan), Masato Okamoto (Kanazawa Institute of Technology, Japan), Tsubasa Ikami, Hiroki Nagai (Tohoku University, Japan)
- OS27-11 **Numerical Simulation of Amine Absorbent Flow considering Property Changes in Random Packed Column**
Gentaro Tashiro (Kyushu Institute of Technology, Japan), Chairunnisa, Takahiko Miyazaki (Kyushu University, Japan), Yusuke Uehara, Hiroshi Machida, Koyo Norinaga (Nagoya University, Japan), Yasuhiro Saito (Kyushu Institute of Technology, Japan)
- OS27-12 **Experimental Study of Unsteady Flow Field of a Pitching Airfoil at Low Reynolds Number**
Gabriel Yiting Lim, Tsubasa Ikami, Hiroki Nagai (Tohoku University, Japan)
- OS27-13 **Aerodynamic Testing with a Wind Tunnel Model on a Roadable Aircraft Using FDM 3D Printer**
Yusuke Shinzato, Seiichiro Morizawa (National Institute of Technology, Okinawa College, Japan)
- OS27-14 **Simulation of Plasma-Contacted Liquid Flow Including Short-Lived Reactive Species with Chemical Reactions**
Satoshi Murakami, Shingo Tomita (Tohoku University, Japan), Joe Yoshikawa (Industrial Technology Institute, Miyagi Prefectural Government, Japan), Kalyani Barman, Makoto Sugimoto, Shota Sasaki (Tohoku University, Japan), Hisaya Komen (The University of Osaka, Japan), Hitoshi Muneoka, Toshiro Kaneko, Masaya Shigeta (Tohoku University, Japan)
- OS27-15 **Investigation of the Effects of Surface Plastic Skin on Lava Flow Dynamics Using SPH Simulation**
Shingo Tomita, Takuma Sato, Satoshi Murakami (Tohoku University, Japan), Joe Yoshikawa (Industrial Technology Institute, Miyagi Prefectural Government, Japan), Makoto Sugimoto (Tohoku University, Japan), Hisaya Komen (The University of Osaka, Japan), Masaya Shigeta (Tohoku University, Japan)
- OS27-16 **Characterizing Horizontal-Axis Wind Turbine Aerodynamics Across Different Tip Speed Ratios**
Yu-Tso Li, Te-Wei Sha, Ren-Zong Hung (Feng Chia University, Taiwan)
- OS27-17 **Curved Laser Sheet Visualization of Wall-Bounded Vortical Structures over a NACA0012 Airfoil**
Ritsuki Mise, Tsubasa Ikami, Hiroki Nagai (Tohoku University, Japan)
- 15:00-15:15 BREAK

15:15-16:45 Poster Session II

- OS27-18 **High-speed Infrared Measurements to Estimate Interfacial Temperature during Transient Contact between Two Materials**
Kento Kudo, Shin Koishikawa (Hirosaki University, Japan), Takuma Kogawa (Shibaura Institute of Technology, Japan), Yutaku Kita (King's College London, UK), Takahiro Okabe (Hirosaki University, Japan)
- OS27-19 **Heat Transfer Analysis and Visualization of Nitrogen Pool Boiling under Pressure Variation**
Shion Tokunaga, Masaharu Kubota, Junnosuke Okajima (Tohoku University, Japan)
- OS27-20 **Evaluation of the Effect of Humidity on Heat Stroke by a Thermoregulation Model**
Koki Kitamura (Yamagata University, Japan), Takuma Kogawa (Shibaura Institute of Technology, Japan), Hiroki Gonome (Yamagata University, Japan)
- OS27-21 **Numerical Analysis Approach to Heat Flux Enhancement by Pyramid Structures**
Ryota Miura, Kosuke Kikuchi (Niigata University, Japan), Satoshi Ishii (National Institute for Materials Science (NIMS), Japan), Atsushi Sakurai (Niigata University, Japan)
- OS27-22 **Experimental Study on Flame Structure of Liquid Ammonia Co-flow Combustion under Oxygen-enriched Conditions**
Jia Liang, Yi-Rong Chen, Taku Kudo, Akihiro Hayakawa, Hideaki Kobayashi (Tohoku University, Japan)
- OS27-23 **Ultra-High-Speed Measurement of Transient Heat-Flux Distributions During Droplet Impact on Heated Surfaces**
Yuzuna Kudo, Hiroto Echigo, Minoru Shirota, Takahiro Okabe (Hirosaki University, Japan)
- OS27-24 **Characterization of Elastocaloric Effect of Natural Rubber under Wide Range Temperature and Elongation Conditions**
Takuma Oiri (Tohoku University, Japan), Gaël Sebald (ELyTMaX UMI 3757, CNRS – INSA Lyon – Université de Lyon – Tohoku University, International Joint Unit, Tohoku University, Japan), Gildas Coativy (INSA Lyon, France), Atsuki Komiya (Tohoku University /ELyTMaX UMI 3757, CNRS – INSA Lyon – Université de Lyon – Tohoku University, International Joint Unit, Tohoku University, Japan)
- OS27-25 **Effect of Weak Forced Convection on Natural Convection Heat Transfer of Optimized Heatsink**
Reo Sato, Atsuki Komiya (Tohoku University, Japan)
- OS27-26 **Visualizing Convection and Vortex Generation from Stripes Illuminated by Halogen Lamps Using Background Oriented Schlieren (BOS)**
Kazuki Naganuma, Yuya Iseki, Toshihiro Sawamura, Shogo Ogasawara (National Institute of Technology Hachinohe College, Japan), Takuma Kogawa (Shibaura Institute of Technology, Japan)
- OS27-27 **Characteristics of an Axial Flow of a Vortex in Homogeneous Isotropic Turbulence**
Kazuki Sakurai, Katsuyuki Nakayama (Aichi Institute of Technology, Japan)

- OS27-28 **Experimental and Numerical Performance Evaluation of a Small Flapping-Wing Air Vehicle**
Yuichi Arai, Wataru Yamazaki (Nagaoka University of Technology, Japan)
- OS27-29 **Cross-Sectional Design Optimization and Three-Dimensional Effect Evaluation for Small Vertical Axis Wind Turbines**
Asama Kadoguchi (Nagaoka University of Technology, Japan), Shinya Imai (Nagaoka University of Technology / National Institute of Technology, Gifu College, Japan), Wataru Yamazaki (Nagaoka University of Technology, Japan)
- OS27-30 **Optimization of Multi-Element Airfoil Configuration Integrating Experimental and Numerical Analysis Data**
Motoki Kanno, Sota Fujisaki, Wataru Yamazaki (Nagaoka University of Technology, Japan)
- OS27-31 **High-Reynolds-Number Compressible Flow Simulation using Immersed Boundary Method and Wall Function on Adaptive Cartesian Grids**
Hang Chen, Zhenming Wang, Linlin Tian (Nanjing University of Aeronautics and Astronautics, China), Jianming Liu (Jiangsu Normal University, China), Ning Qin (University of Sheffield, UK), Ning Zhao (Nanjing University of Aeronautics and Astronautics, China)
- OS27-32 **A Study on Evaluation Method for the Time Variation of Tip Leakage Flow in Liquid Rocket Inducer**
Kazuki Ikeda, Koki Tamura (Tohoku University, Japan), Satoshi Kawasaki (Japan Aerospace Exploration Agency, Japan), Yuka Iga (Tohoku University / Japan Aerospace Exploration Agency, Japan)
- OS27-33 **Aerodynamic Testing of a Mars Aircraft Wing Model Using PC-PSP**
Ryouya Hanyuu, Kazuki Shibata, Daiju Numata (Tokai University, Japan)

17:00-18:30 Poster Session III

- OS27-34 **Development of Phase-Field Lattice Boltzmann Method for Gas-Liquid Multiphase Evaporation Simulation in Porous Media**
Yoshinari Ishikawa (Tohoku University, Japan), Joe Yoshikawa (Industrial Technology Institute, Miyagi Prefectural Government, Japan), Hitoshi Muneoka, Makoto Sugimoto, Masaya Shigeta (Tohoku University, Japan)
- OS27-35 **Studies of High-Pressure Ethane Oxidation up to 100 atm Using a Supercritical-Pressure Jet-Stirred Reactor**
Rui Bo, Shuyan Guo, Hao Zhao (Peking University, China)
- OS27-36 **Three-Dimensional Evaluation of Flake Particle Migration Behavior During Liquid Droplet Impact on a Solid Wall**
Akihiro Kurogi, Naoki Hashiguchi (Kyushu Institute of Technology, Japan), Taimei Miyagawa, Takahiro Okabe, Minoru Shirota (Hirosaki University, Japan), Yoshiya Matsukawa, Hideyuki Aoki (Tohoku University, Japan), Masatoshi Daikoku (Hachinohe Institute of Technology, Japan), Junichi Fukuno (Honda Motor Co., Ltd., Japan), Yasuhiro Saito (Kyushu Institute of Technology, Japan)

- OS27-37 **Simulation of Water Droplet Motion with Anisotropic Wettability using Smoothed Particle Hydrodynamics**
Ryoichi Shinozaki, Yu Nishio (Seikei University, Japan)
- OS27-38 **Effect of the Number of V-Shaped Slits on Atomization near an Air Spray Gun Nozzle**
Kyosuke Mikami, Taimei Miyagawa, Wataru Kurebayashi (Hirosaki University, Japan), Naoki Serizawa, Tatsuhiro Teraoka (Anest Iwata Corp., Japan), Minoru Shirota (Hirosaki University, Japan)
- OS27-39 **Quantitative Analysis of Flake Content in Inkjet via Internal Flow Visualization**
Yoshinobu Arata, Taimei Miyagawa, Takahiro Okabe (Hirosaki University, Japan), Masatoshi Daikoku (Hachinohe Institute of Technology, Japan), Yoshiya Matsukawa, Hideyuki Aoki (Tohoku University, Japan), Yasuhiro Saito (Kyushu Institute of Technology, Japan), Junichi Fukuno (Honda Motor Co., Ltd., Japan), Minoru Shirota (Hirosaki University, Japan)
- OS27-40 **Evaluation of Wetting and Evaporation Characteristics at 3-Phase Contact Region in Cryogenic Fluids with Moving Contact Line Evaporation Model**
Taiga Akita (Tohoku University, Japan), Peter Stephan (Technical University of Darmstadt, Germany), Junnosuke Okajima (Tohoku University, Japan)
- OS27-41 **Spatio-temporal Imaging of Water Precursor Film Behavior at Interfaces by Phase Shifting Ellipsometry**
Harunori Narita, Atsuki Komiya (Tohoku University, Japan)
- OS27-42 **Large Deformation Analysis of Flexible Wings Using Modal Rotation Method**
Naruya Nagai, Kento Shimura, Yuya Nishizaki, Taisei Yamada, Keisuke Otsuka (Tohoku University, Japan)
- OS27-43 **Monitoring and Evaluation of Hydrogen-Assisted Crack Propagation in Austenitic Stainless Steels Using Acoustic Emission**
Ryutaro Matsumoto, Tetsuya Uchimoto (Tohoku University, Japan), Kaita Ito (National Institute for Materials Science, Japan), Hirotohi Enoki, Takatoshi Iijima (National Institute of Advanced Industrial Science and Technology, Japan)
- OS27-44 **Enhanced Near-Field Thermal Radiation in Multilayered hBN–Graphene Structures without Vacuum Gaps**
Jinsei Minaki, Masato Suzuki, Atsushi Sakurai (Niigata University, Japan)
- OS27-45 **Scattering Behavior of Cu, Sn-Enriched Droplets from Molten Metal Pool under Nitrogen-Containing Arc Plasma**
Takahide Gunji, Tsuyohito Ito, Kazuo Terashima (The University of Tokyo, Japan), Joe Yoshikawa (Industrial Technology Institute, Miyagi Prefectural Government, Japan), Makoto Sugimoto, Masaya Shigeta, Hitoshi Muneoka (Tohoku University, Japan)
- OS27-46 **Effect of Ligand Structure on Interfacial Behavior at the Nanoscale Interface between Surface-Modified Ag and Curing Agent**
Yoichiro Kurosawa, Takamasa Saito (Tohoku University, Japan), Yohei Okada (Tokyo University of Agriculture and Technology, Japan), Manabu Inutsuka, Chiharu Tokoro (Waseda University, Japan), Eita Shoji, Momoji Kubo, Masaki Kubo (Tohoku University, Japan)

- OS27-47 **Molecular Insights into Thermal Conduction Mechanisms in Sugar Alcohol Phase Change Materials**
Shukai Cheng, Donatas Surblys, Taku Ohara (Tohoku University, Japan)
- OS27-48 **Quantitative Analysis of Convective Mass Transfer near the Gas-Liquid Interface in CO₂ Absorption into Ionic Liquid**
Soichiro Gunji, Yuki Kanda, Atsuki Komiya (Tohoku University, Japan)

November 11, 2025
EX-Hall-3B

9:00-10:30 Poster Session IV

- OS27-49 **Machine Learning-Based Vibration Control of Flexible Space Structures Using Magnetostrictive Transducers with Negative Inductance Circuits**
Suhaib Solehuddin, Yuusuke Kobayashi, Ryoya Habe, Rahadian Swastika Adyatama, Yushin Hara, Kanjuro Makihara (Tohoku University, Japan)
- OS27-50 **Real-Time Moving Morphable Components Topology Optimization Using Neural Networks**
Yuta Matsumoto, Motonobu Kawai, Akitaka Komaba, Keisuke Otsuka (Tohoku University, Japan)
- OS27-51 **Extrapolation Predictions Using Physics-Informed Neural Networks (PINNs) for Shock Wave Propagation Based on the Burgers Equation**
Shannon Nakama, Seiichiro Morizawa (National Institute of Technology, Okinawa College, Japan)
- OS27-52 **Homogenization Method Based on Conservative Physics-Informed Neural Network for Thermal Analysis**
Ryo Kato, Soraki Eguchi, Yushin Hara, Kanjuro Makihara, Keisuke Otsuka (Tohoku University, Japan)
- OS27-53 **Reinforcement Learning-Based Control of Drop Position in Inkjet Printing**
Ryo Yamamoto, Taimei Miyagawa, Minori Shiota (Hirosaki University, Japan)
- OS27-54 **A Study on Droplet Breakup Behavior and its Electrical Characteristics 2nd Report, Formation of Uniform Droplets by Vibration Method**
Yuki Mizuguchi, Yuta Kurihara, Masatoshi Daikoku (Hachinohe Institute of Technology, Japan), Taimei Miyagawa, Takahiro Okabe, Minori Shiota (Hirosaki University, Japan), Yoshiya Matsukawa, Hideyuki Aoki (Tohoku University, Japan), Yasuhiro Saito (Kyushu Institute of Technology, Japan), Junichi Fukuno (Honda Motor Co., Ltd., Japan)
- OS27-55 **Development of High-Performance Underwater Drone (ROV)**
Tadamichi Kume, Jun Mizuno, Yoshifumi Sasaki, Takashi Ota (Ishinomaki Senshu University, Japan)
- OS27-56 **A Study on the Extension of Topology Optimization Methods Using Moving Morphable Components**
Motonobu Kawai, Yuta Matsumoto, Akitaka Komaba, Keisuke Otsuka (Tohoku University, Japan)

- OS27-57 **Semi-Active Vibration Control of Space Structures with Disturbance Estimation by Interacting Multiple Model**
Taiko Morikawa, Meng Zhou, Kotaro Yamao, Yushin Hara, Kanjuro Makihara (Tohoku University, Japan)
- OS27-58 **Subspace Identification of Frequency-domain State Space Models using Expectation-maximization Algorithm**
Xingzhi Li, Tianyi Tang, Hajime Saito, Takuma Matsukura, Kensuke Suzuki, Yushin Hara, Kanjuro Makihara (Tohoku University, Japan)
- OS27-59 **Performance Evaluation of Supersonic Transport Considering Uncertainties of Flight Conditions and Atmospheric Conditions**
Futo Asano, Wataru Yamazaki (Nagaoka University of Technology, Japan)
- OS27-60 **Molecular Dynamics Analysis of Hydrophobic Modified DNA Membrane Penetration via Lipofection**
Shuto Kurosawa, Takuya Mabuchi (Tohoku University, Japan)
- OS27-61 **Fundamental Characterization of Sulfuric-Acid-Type DP-AA-PSP**
Kiharu Yoneyama, Hiroto Takata, Yuma Kawamata, Takeru Kawashima, Daiju Numata (Tokai University, Japan)
- OS27-62 **Effect of Titanium Dioxide Particle Size on the Characteristics of PC-PSP**
Kyonosuke Bando, Tomoyuki Takizawa, Daiju Numata (Tokai University, Japan)
- OS27-63 **Application of Sulfuric-Acid-Type DP-AA-PSP to Aerodynamic Testing**
Hiroto Takata, Kiharu Yoneyama, Yuma Kawamata, Takeru Kawashima, Daiju Numata (Tokai University, Japan)
- OS27-64 **Fast Damage Detection Using Recursive Subspace Identification with Forgetting Factor for Structural Health Monitoring**
Hajime Saito, Tianyi Tang, Xingzhi Li, Takuma Matsukura, Kensuke Suzuki, Yushin Hara, Kanjuro Makihara (Tohoku University, Japan)