

OS4: Flow Dynamics and Combustion Technology of Hybrid Rocket Propulsion, 16th Edition

November 18, 2024

EX-4-B

- OS4-1 **Empirical Analysis of Fuel Regression Rate Considering Swirl Geometry in Hybrid Rocket Engines**
13:10-13:25 Kento Shimotake, Keisuke Murakami (Nihon University, Japan), Yuki Funami (National Defense Academy, Japan), Kenichi Takahashi (Nihon University, Japan)
- OS4-2 **Study on Solid Fuel Made from Polyethylene and Polypropylene Sorted from Ocean Plastics for Hybrid Rockets**
13:25-13:40 Yoshito Takahashi, Kenichi Takahashi (Nihon University, Japan), Toshifumi Sakata (Mitsubishi Chemical Corporation, Japan)
- OS4-3 **Study on Frequency Characteristics of Low Frequency Instabilities in 2D Slab Burner**
13:40-13:55 Yuhei Ishizuka (Nihon University, Japan), Takakazu Morita, Yo Kawabata (Tokai University, Japan), Kenichi Takahashi (Nihon University, Japan)
- OS4-4 **Study on Solid Fuels for Hybrid Rockets made of WAX and PLA with added Oxidizer**
13:55-14:10 Keisuke Murakami, Kenichi Takahashi (Nihon University, Japan)
- OS4-5 **Combustion Characteristics of Solid Fuels for Hybrid Rockets with Added B and Mg/Al Powders**
14:10-14:25 Chihiro Nakashima, Kenichi Takahashi (Nihon University, Japan)

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- OS4-6 **Hybrid Rocket Propulsion Design Handbook - Introduction and Scope of the Textbook** *(Invited)*
10:40-11:25 Ashley C. Karp, Elizabeth T. Jens
- OS4-7 **Development of a Cost-Competitive Hybrid Rocket Space Launch System** *(Invited)*
11:25-12:10 Yen-Sen Chen (tiSPACE Incorporated, Taiwan)
- OS4-8 **Estimating Combustion States in Hybrid Rockets: An Extended Kalman Filter Approach** *(Invited)*
13:10-13:55 Toru Shimada (Nihon University, Japan)
- OS4-9 **Development from Reconstruction Techniques to Nozzle Erosion Suppression Technology**
13:55-14:10 Harunori Nagata, Landon Kamps, Shota Hirai (Hokkaido University / Letara Ltd., Japan), Giuseppe Gallo (Hokkaido University, Japan)

- OS4-10
14:10-14:25 **Innovative R&D for Expanding the Use of Hybrid Rocket Systems in Aerospace**
Landon Kamps (Letara Ltd. / Hokkaido University, Japan), Shota Hirai (Letara Ltd., Japan), Harunori Nagata (Letara Ltd. / Hokkaido University, Japan)
- OS4-11
14:25-14:40 **Experimental Study on Internal Ballistics for ELS-R100 Hybrid Thruster**
Yuji Saito (Tohoku University, Japan), Shota Kameyama, Kosuke Kida (ElevationSpace inc., Japan), Hinata Kariya, Toshinori Kuwahara (Tohoku University, Japan), Kazuhisa Fujita, Ryohei Kobayashi (ElevationSpace inc., Japan), Hirohide Ikeda, Taiichi Nagata (Japan Aerospace Exploration Agency (JAXA), Japan)
- OS4-12
14:50-15:05 **Current Status on a New Time-Resolved Fuel Regression Measurement Applied to Cylindrical Hybrid Rocket Engine**
Kohei Ozawa, Yusuke Jinnouchi, Kazushi Omiya, Nobuyuki Tsuboi (Kyushu Institute of Technology, Japan)
- OS4-13
15:05-15:20 **High Fidelity Numerical Simulations of Ablating Boundary Layers for Hybrid Rocket Motors**
Kenneth Budzinski, Kolos Retfalvi, Elektra Katz Ismael, Razieh Zangeneh, Paul DesJardin (State University of New York at Buffalo, USA)
- OS4-14
15:20-15:35 **Fundamental Experiments on Metalized Fuel Hybrid Rockets for Spacecraft with Microwave Repetitive Ignition**
Keita Nishii, Tomoya Kanda, Akira Kakami (Tokyo Metropolitan University, Japan)
- OS4-15
15:35-15:50 **H₂O₂ Droplet Ignition in a Deep-Pool of NaBH₄ Hypergolic Fuel – Part 1: Observation of Fluid Dynamics Phenomena**
Zongyan Guo, Yuxin Hsia, Kolun Chang, Chih-Chin Chang, Shih-Sin Wei, Jong-Shinn Wu, Zu Puayen Tan (National Yang Ming Chiao Tung University, Taiwan)
- OS4-16
15:50-16:05 **H₂O₂ Droplet Ignition in a Deep-Pool of NaBH₄ Hypergolic Fuel – Part 2: Ignition Trends and Hypothesis of Mechanisms**
Yuxin Hsia, Zongyan Guo, Kolun Chang, Chih-Chin Chang, Shih-Sin Wei, Jong-Shinn Wu, Zu Puayen Tan (National Yang Ming Chiao Tung University, Taiwan)
- OS4-17
16:05-16:20 **Performance Evaluation of Ground Test Prototype of Thrust-O/F Control System for A-SOFT Hybrid Rocket**
Koki Kitagawa, Thun Siricharoensathaporn, Kohei Matsui (Kyushu Institute of Technology, Japan)
- OS4-18
16:30-16:45 **Tethered Hovering Flight Demonstration of the HTTP-4 Hybrid Rocket with Vertical Takeoff Vertical Landing (VTVL) Capability**
Shuo-Chieh Wang, Zuo-Ren Chen, Chih-Chin Chang, Hsi-Yu Tso, Jui-Cheng Hsu, Tsung-Chun Lee, Yen-Ting Hou (National Yang Ming Chiao Tung University, Taiwan), Sho-Tsung Kao, Chang-Hsiang Huang, Yu-Cheng Liang, Jing-Shiuan Shiang, Jhen-Wei Huang (Taiwan Space Agency, Taiwan), Ming-Tzu Ho (National Cheng Kung University / National Yang Ming Chiao Tung University, Taiwan), Shih-Sin Wei, Jong-Shinn Wu (National Yang Ming Chiao Tung University, Taiwan)

- OS4-19
16:45-17:00 **Development the Shortened Tsuâ-Ing Hybrid Rocket Engine for the Asfaloth Supersonic Sounding Rocket**
Ken-Hsien Chang, Hsi-Yu Tso, Chih-Chin Chang, Shuo-Chieh Wang, Jui-Cheng Hsu, Yong-Xiang Chang, Ming-Hao Wang (National Yang Ming Chiao Tung University, Taiwan), Yu-Tsao Chang, Tzu-Yu Lin (Taiwan Space Agency (TASA), Taiwan), Shih-Sin Wei, Zu Puayen Tan, Jong-Shinn Wu (National Yang Ming Chiao Tung University, Taiwan)
- OS4-20
17:00-17:15 **Development of Hypergolic Solid Fuel for Hybrid Rocket Ignition**
Hsi-Yu Tso, Ko-Lun Chang, Chih-Chin Chang, Tzu-Fu Lin, Kung-Hsiu Lee, Zu-Puayen Tan, Shih-Shin Wei, Jong-Shinn Wu (National Yang Ming Chiao Tung University, Taiwan)