

Wednesday, November 20

09:30 – 10:00 **Opening Session**

10:00 – 10:50 **Plenary Talk**

Current Status and Future Vision of Hodoyoshi Microsatellites – Systems for Quick and Affordable Space Utilizations:

Dr. Shinichi Nakasuka, University of Tokyo, Japan

10:50 – 11:10 **Break**

11:10 – 12:30 **Hodoyoshi Project Current Status**

Dr. Shinichi Nakasuka, University of Tokyo, Japan

- 1. Micro/Nano-satellites On-board Software Framework Design and Its Implementation in Hodoyoshi Satellites:** J. Takisawa, S. Nakasuka, The Tokyo University, Japan; S. Kobayashi, T.N.L. Huong, S. Kimura, Tokyo University of Science, Japan;
- 2. 300 Mbps X band Communications from 50kg Class Small Satellites:** H. Saito, A. Tomiki, T. Mizuno, T. Fukami, ISAS/JAXA, Japan; N. Iwakiri, H. Watanabe, University of Tokyo, Japan; O. Shigeta, H. Nunomura, AI Electronics Co. Ltd., Japan; Y. Kanda, Antenna Giken Co. Ltd., Japan; K. Kojima, T. Shinke, Addnics Corporation, Japan; T. Kumazawa, TOYO Corporation, Japan
- 3. New Receiving Ground Antenna using Active Phased Array Antenna for Nano-Satellites:** S. Ooe, S. Nakata, M. Iwashita, N. Kaya, Kobe University, Japan
- 4. Environment Monitoring of Fukushima and Chernobyl Areas using a Constellation of Earth Observation Microsatellites:** S. Yoshimoto, S. Nakasuka, A. Iwasaki, Y. Aoyanagi, University of Tokyo, Japan; A. Sakhatsky, S. Stankevich, Scientific Centre for Aerospace Research of the Earth, Ukraine; D. Bobro, State Agency of Ukraine on Exclusion Zone Management, Ukraine

12:30 – 14:00 **Lunch**

14:00 – 15:00 **Standardization and Regulatory Issues 1**

Dr. Jordi Puig-Suari, California Polytechnic State University, USA

Dr. Mengu Cho, Kyushu Institute of Technology, Japan

1. **Low-cost and Fast-delivery Verification Strategy for the Aalto-1 Nano-satellite Attitude Determination and Control System:** T. Tikka, Aalto University, Finland; F. Wedekind, B. Danziger, Berlin Space Technologies GmbH, Germany; M. Cho, Kyushu Institute of Technology, Japan
2. **Basic Research on Vibration Test Standardization for Small-scale Satellites:** A. Batsuren, T. Hatamura, H. Masui, M. Cho, Kyushu Institute of Technology, Japan
3. **Reliability Growth of Small-scale Satellites through Testing:** M. Cho, M. Ibrahim, Kyushu Institute of Technology, Japan

15:00 – 15:20 **Break**

15:20 – 16:40 **Standardization and Regulatory Issues 2**

Dr. Joseph C. Casas, NASA/MSFC, USA

Dr. Mengu Cho, Kyushu Institute of Technology, Japan

1. **Reliability Analysis and Risk Management of SwampSat:** B. Shiotani, K. Patankar, N. Fitz-Coy, University of Florida, USA
2. **Adapting Traditional Design Processes to the Student CubeSat Environment:** J. Puig-Suari, California Polytechnic State University, USA
3. **Thermal analysis of X-band transmitter for NanoSat/CubeSat platforms:** M. Lamut, H. Frohlich, D. Matko, T. Rodic, L. Teslic, M. Bosnak, L. Pavlovic, SPACE-SI, Slovenia
4. **Proposal Procedure of Thermal Design for Micro and Nano Satellite Pointing to Earth with Bodymounted Solar Cells:** T. Totani, R. Inoue, H. Ogawa, T. Kumar Das, M. Wakita, H. Nagata, Hokkaido University, Japan

16:40 – 17:00 **Break**

17:00 – 18:00 **Novel Missions and Applications 1**

Dr. Mohammed Khalil Ibrahim, Cairo University, Egypt

Dr. Hironori Sahara, Tokyo Metropolitan University, Japan

- 1. Development of Binary Black Hole Observation Satellite "ORBIS":** K. Nishi, M. Masuda, H. Sahara, Y. Ezoe, Tokyo Metropolitan University, Japan; N. Isobe, JAXA, Japan; T. Kohmura, Kogakuin University, Japan; N. Miyamura, Meisei University, Japan
- 2. Cubesat Pico Dragon:** V.V. Phuong, T.X. Hung, B.N. Duong, D.X. Phong, L.T. Kien, N.T. Vinh, T.T. Long, N.V. Thuc, N.D.C. Minh, P.A. Tuan, Vietnam National Satellite Center, Vietnam
- 3. A Double CubeSat with an X Ray Detector for In Situ Environmental Measurements of QB50:** A.R. Aslan, M.E. Umit, Istanbul Technical University, Turkey; E. Kalemci, Sabanci University, Turkey; M. Ilarslan, Air Force Academy, Turkey

18:20 – **Symposium Reception**
Sanjo Conference Hall, University of Tokyo

Thursday, November 21

09:00 – 10:00 **Education and Capacity Building**
Dr. Alim Rustem Aslan, Istanbul Technical University, Turkey
Ms. Rei Kawashima, UNISEC, Japan

- 1. Activities of the United Nations Programme on Space Applications in Support of Space Education and Space Technology Development:** W. Balogh, United Nations Office at Vienna, Austria
- 2. Educate Utilizing CubeSat Experience: Systematic Approach to Deliver STEAM Content:** D. Buckley, B. Shiotani, K. Patankar, N. Fitz-Coy, Y. Thakker, University of Florida, USA
- 3. The first student nano-satellite of Kazakhstan:** G. Mutanov, A. Kaltaev, Z. Rakisheva, K. Alipbayev, A. Sukhenko, al-Farabi Kazakh National University, Republic of Kazakhstan

10:00 – 10:20 **Break**

10:20 – 11:40 **Novel Missions and Applications 2**
Dr. Werner Balogh, United Nations, Vienna, Austria
Dr. Ayumu Tokaji, University of Tokyo, Japan

- 1. Design Concept of Horyu-V, The Space Environment Explorer:** M.M. Ibrahim, A. Batsuren, M. Alkali, M. Nori, P. Ammarin, P.e Faure, M. Cho, Kyuhsu Institute of Technology, Japan
- 2. The Arctic Regional Communications SATellites (ARCSAT):** J. Casas, W. Sims, D. Sanders, NASA Marshall Space Flight Center, USA; M. Kress, The Von Braun Center for Science & Innovation, USA; S. Spehn, HQ USEUCOM, USA, T. Jaeger, Novawurks Inc., USA
- 3. Global Water Level Monitoring for Disaster Mitigation Using Data Collection Function of Micro-satellites:** A. Tokaji, S. Nakasuka, Y. Miyazaki, H. Sahara, R. Kawashima, K. Okuyama, T. Kondo, M. Matsui, T. Matsumoto, N. Kurahara, University of Tokyo, Japan
- 4. CubeSat on an Earth-Mars Free-Return Trajectory to study radiation hazards in the future manned mission:** J. Vannitsen, J.J. Miao, J-C. Juang, National Cheng Kung University, Taiwan; B. Segret, CNRS, France

11:40 – 13:10 **Lunch**

13:10 – 14:10 **Data Processing and Infrastructure**

Dr. Rainer Sandau, DLR, Germany

Dr. Norihide Miyamura, Meisei University, Japan

- 1. North Star – The Flexible, Green And Safe Sounding Rocket And Satellite Launch Service:** K. BLIX Dahle, T. Abrahamsen, Andoya Rocket Range AS, Norway; O. Verberne, Nammo Raufoss AS, Norway; J. Grande, NAROM AS, Norway
- 2. Development of an automatic near-real-time image processing chain for small satellites:** K. Ostir, A. Marsetic, P. Pehani, T. Veljanovski, Research Centre of the Slovenian Academy of Sciences and Arts, Slovenia; M. Perse, Sinergise d.o.o., Slovenia; K. Zaksek, University of Hamburg, Germany; J. Zaletelj, T. Rodic, University of Ljubljana, Slovenia
- 3. Development of University Ground Station for Nano Satellite Operation:** S. Aso, K. Fujisaki, H. Hirayama, K. Morishita, Kyushu University, Japan; T. Tokifuji, Micro Lab Co. Ltd., Japan; N. Kurahara, Y. Tsuruda, University of Tokyo, Japan

14:10 – 14:30 **Break**

14:30 – 15:50 **Earth and Space Science Missions**

Sir Martin Sweeting, University of Surrey, UK

Dr. Ryu Funase, University of Tokyo, Japan

1. **Development of Compact Instrument (TeNeP) for Nano/Pico satellites:** K. Oyama, Y.W. Hsu, G.S. Jiang, W.H. Chen, C.Z. Cheng, National Cheng Kung University, Taiwan
2. **JUXTA : A New Probe of X-ray Emission from Jupiter and the Solar System:** Y. Ezo, T. Ohashi, Tokyo Metropolitan University, Japan; T. Kimura, S. Kasahara, A. Yamazaki, K. Mitsuda, M. Fujimoto, JAXA, Japan; Y. Miyoshi, Nagoya University, Japan; G. Branduardi-Raymont, University College London, UK
3. **Cosmic Infrared Background and Zodiacal Light Measurements with Nano-Satellite:** S. Matsuura, M. Shirahata, K. Tsumura, Y. Sarugaku, F. Usui, N. Isobe, M. Kawada, JAXA, Japan; T. Arai, University of Tokyo, Japan; Y. Onishi, Tokyo Institute of Technology, Japan; M. Ishiguro, Seoul National University, Korea; T. Ootsubo, Tohoku University, Japan
4. **Establish of Gravitational Wave Astronomy with Gamma-Ray Burst and X-ray Transient Monitor:** D. Yonetoku, T. Murakami, Y. Wakashima, H. Yonemochi, S. Takata, H. Seta, K. Yoshida, A. Toyanago, Kanazawa University, Japan

15:50 – 16:10 **Break**

16:10 – 17:50 **Panel Discussion**

Novel and Promising Space Utilizations Triggered by Micro/Nano-Satellites:

Introductory presentation by Dr. Shinichi Nakasuka, University of Tokyo, Japan

Panel discussion with world leading researchers in the field of micro/nano-satellites

(to be announced)

Friday, November 22

09:00 – 10:00 **Satellite Architecture and Technologies 1**

Dr. Shinichi Kimura, Tokyo University of Science, Japan

1. **Small/nano satellites and SpaceWire, the high-speed onboard data link interface:**
T. Yuasa, T. Takahashi, JAXA, Japan

- 2. IITMSAT, An efficient nanosatellite bus design for a large payload:** A. Gulati, N. Sivadas, D. Kannapan, D. Koilpillai, H. Ramachandran, A. Gaurav, J. Mohanbai, A. Karat, Indian Institute of Technology Madras, India; S. Ansari, ISRO Satellite Centre, India
- 3. Utilizing Low-Cost Linux Micro-Computer & Android Phone Solutions on Cube-Satellites:** A. Farid, October University for Modern Sciences & Arts, Egypt; A. Samy, A. Shalaby, A. Tarek, M. Ayyad, M. Assem, S. Amin, Cairo University, Egypt

10:00 – 10:20 **Break**

10:20 – 11:40 **Satellite Architecture and Technologies 2**

Dr. Herman Steyn, University of Stellenbosch, South Africa

Dr. Yasuyuki Miyazaki, Nihon University, Japan

- 1. The QB50 CubeSat mission deployment system:** C. Bernal, ISIS, The Netherlands
- 2. Use of piezo-motor technology in NovaDock, a separation mechanism for nano and micro satellites:** S. Ostoja-Starzewski, S. Balinov, NovaNano SAS, France
- 3. Development of a Very Small on-Board Oscilloscope for a Cube-Satellite HORYU-3:** T. Shimizu, S. Hidaka, M.M. Ibrahim, S. Iwai, K. Toyoda, H. Masui, M. Cho, Kyushu Institute of Technology, Japan
- 4. NEMO-HD: HIGH-DEFINITION VIDEO AND MULTISPECTRAL IMAGING IN A SMALL PACKAGE:** L. Stras, J. Lifshits, S. Grocott, F. Pranajaya, R. Zee, University of Toronto, Canada

11:40 – 14:10 **Lunch & Laboratory Tour**

14:10 – 15:10 **Satellite Architecture and Technologies 3**

Dr. Saburo Matsunaga, JAXA/ISAS, Japan

- 1. Nemo HD ADCS Experimental Mode: Imaging Modes for Interactive Surveillance:** D. Matko, T. Rodic, K. Ostir, A. Marsetic, M. Peljhan, M. Lamut, G. Klancar, G. Music, L. Teslic, M. Bosnak, S. Blazic, SPACE-SI, Slovenia; F. Pranajaya, S. Grocott, R. Zee, University of Toronto, Canada
- 2. A Study on an Accurate yet Simple Attitude Estimation Scheme for Nanosatellites:** H.E. Soken, The Graduate University for Advanced Studies, Japan; S. Sakai, JAXA, Japan

- 3. Development and Performance Evaluation of the Attitude Determination and Control System for nano-satellite "TSUBAME":** T. Kamiya, L.X. Huy, H. Ting, S. Kawajiri, M. Matsushita, T. Oya, Y. Takei, K. Jingu, T. Nishihara, K. Ishizaka, Y. Komiya, K. Ogatsu, K. Matsubara, Tokyo Institute of Technology, Japan; M. Terakura, Tokyo University of Science, Japan; S. Matunaga, JAXA, Japan

15:10 – 15:30 **Break**

15:30 – 16:30 **Satellite Architecture and Technologies 4**

Dr. Halil Ersin Soken, JAXA, Japan

Dr. Takuji Ebinuma, University of Tokyo, Japan

- 1. Origami-based Drag Sail for CubeSat Propellant-free Maneuvering:** C. Mason, G. Tilton, N. Vazirani, J. Spinazola, D. Guglielmo, S. Robinson, R. Bevilacqua, J. Samuel, Rensselaer Polytechnic Institute, USA
- 2. Magnetic plasma de-orbit (MPD) system using MTQs for nano-satellites:** T. Inamori, R. Kawashima, H. Ohsaki, University of Tokyo, Japan; N. Sako, Canon Electronics Inc., Japan; P. Saisutjarit, King Mongkut's University of Technology, Thailand
- 3. A Study and Analysis of MEMS based Attitude Determination for Nano-satellites using In-line Magnetic Sensing and Orbit Propagation for Sensor Fusion:** M.I. Rashed, H. Bang, KAIST, Korea

16:30 – 18:00 **Poster Session**

18:00 – 18:15 **Closing Session**

Poster Session

- 895. Disaster Observation Concept by NSAT Formation Flying:** A. Pimnoo, Kyushu Institute of Technology, Japan
- 904. The Advanced Instrumentation and Technology Centre: A Multi-sector Facility for Developing Australia's Space Capability:** N. Mathers, Australian National University, Australia
- 914. Supercapacitor: Testing it's practicability as power storage unit of a nano-satellite:** M. Alkali, Kyushu Institute of Technology, Japan

- 916. **VNSC's participation in the STAR and UNIFORM program:** Q. Trinh, Vietnam National Satellite Center, Vietnam
- 920. **CubeSat Development Program for monitoring of Illegal Gold Mining “Galamsey” activities in Ghana:** F. Agyemang, Ghana Space Science and Technology Institute, Ghana
- 934. **Thermal distribution of typical structure specialized in 50cm class satellite:** Y. Seri, Kyushu Institute of Technology, Japan
- 940. **Thermal analyses of micro and nano satellites with deployable solar panel on Sun-synchronous and circular orbit by simple nodal method:** T. Das, HOKKAIDO UNIVERSITY, Japan
- 941. **Water Level Monitoring System (WLMS), Flooding Series Kenya One Space Association (KOSA):** W. Abe, University of Nairobi, Kenya
- 942. **Solar EUV Sensor for the Augmentation of the QB50 Mission:** J-C, Juang, National Cheng Kung University, Taiwan
- 943. **Design and Experiment of Three DoFs Small Satellite Ground Simulator:** H. Yao, Tsinghua University, China
- 945. **Intelligent satellite orbit and telemetry data monitoring for a nanosatellite:** D. KUMARI, R.N.S.INSTITUTE OF TECHNOLOGY, INDIA
- 954. **CubeSat Project for Space Technology Demonstration in Thailand:** P. Saisutjarit, King Mongkut's University of Technology North Bangkok, Thailand
- 956. **Development of a Simple Deployment Mechanism of Panel Structure for Nano Satellite:** Y. Araki, Nihon University, JAPAN
- 965. **Flexible appendage vibration attenuation by semi-active piezoelectric devices:** S. Ma, Tsinghua University, China
- 967. **A ground star sensor monocular system for small satellite simulator:** Y. Wang, Tsinghua University, China
- 968. **Distribution measurement of Nano-satellite components for shock level estimation:** S. Kimoto, Kyushu Institute of Technology, Japan
- 975. **Concept of a “marketing mission” using cubesat:** M. Valdatta, University of Bologna, Italy
- 976. **A Modified Steering Logic using Control Moment Gyros for Nano-Satellite TSUBAME:** T. HAO, Tokyo Institute of Technology, JAPAN
- 978. **New Approach for Nano Satellites Utilization:** R. Ismail, Cairo University, Egypt
- 979. **Overview of Nano/Micro Satellite for Environmental Testing in CeNT:** H. Masui, Kyushu Institute of Technology, Japan
- 980. **Electrical Design of Advanced Ionospheric Probe for the FORMOSAT-5**

Satellite: Z-W. Lin, National Central University, Taiwan

982. **Radiation test for Horyu3's bus-system using Californium252:** Y. Okumura, Kyushu Institute of Technology, Japan
984. **Development of heat storage panel using a phase-change material encapsulated in a high-thermal-conductive CFRP for small satellites:** K. Yamada, Nagoya University, Japan
985. **Measurements and In-Orbit Demonstration on CubeSat VZLUSAT-1:** V. Daniel, Vyzkumny a Zkusebni Letecky Ustav, Czech Republic
987. **Performance Evaluation of Ground Station in Kyushu University:** H. Hirayama, Kyushu University, Japan
988. **Jitter reduction of a reaction wheel by using magnetic torquers in nano- and micro-satellites:** K. Yoosin, King Mongkut's University of Technology North Bangkok, Thailand
997. **Miniaturization of plasma wave receiver system for future space missions:** H. Kojima, Kyoto University, Japan
998. **Development of a shock test method suitable for Nano-Satellites; Performance evaluation:** T. Hatamura, Kyushu Institute of Technology, Japan
1002. **Libyan Cube-Sat for monitoring desertification and deforestation:** A. Elarabi, The Libyan Center for Remote Sensing and Space Science, Libya
1004. **A Nanosatellite Mission to Study Charged Particle Precipitation from the Van Allen Radiation Belts caused due to Seismo-Electromagnetic Emissions:** N. Sivadas, Indian Institute of Technology Madras, India
1013. **Heat Storage Material without Phase Change for Nano Satellite:** T. Totani, Hokkaido University, Japan
1015. **Automatic Remote Sensing Image Descriptor for Urban Evolution and Flood Detection:** K. BESBES, University of Monastir, Tunisia
1022. **Design and verification of BUAA-SAT UHF/VHF ground station:** W. Zhang, Beihang University, China
1033. **2nd Iteration Cairo University Cube-Satellite:** S. Amin, Cairo University, Egypt
1038. **Attitude Dynamics of Nano-Satellite due to Full Orbit Perturbations:** M. Ibrahim, King Fahd University of Petroleum and Minerals, Kingdom of Saudi Arabia
1045. **International Standard on Design Qualification and Acceptance Tests of Small-scale Satellite and Units Seeking Low-cost and Fast-Delivery; Introduction of Working Draft:** M. Cho, Kyushu Institute of Technology, Japan
1051. **Hands-on Practice for CanSat Leader Training Program:** N. Kohtake, Keio University, Japan