

Keynote and Scientific Sessions

● Keynote Sessions I & II

Chairs: Charles Lin (NCKU) and Yuki Tobimatsu (RISH, Kyoto U.)

Confirmed Keynote Speakers:

- Prof. Mt. Jade Scholar Masaru Ohme-Takagi (NCKU)
- Prof. Mt. Jade Scholar Takashi Gojobori (NCKU)
- Prof. Ping-Sheng Wu (NCKU)
- Prof. Emer. Toshitaka Tsuda (RISH, Kyoto U.)
- Prof. Mamoru Yamamoto (RISH, Kyoto U.)

● Session I. Satellite Payload and Engineering

Chairs: Alfred Bing-Chih Chen (NCKU), Hirotsugu Kojima (RISH, Kyoto U.)

Description: This session aims to share engineering knowledge related to spacecraft and their onboard instruments, targeting the observation of the space environment, Earth observation from space, and the utilization of space. Space is an essential domain that supports the sustainable development of the humanosphere, both in terms of globally monitoring the Earth and utilizing space itself. Recently, extensive efforts have been made toward using the lunar surface and manned missions to Mars, extending beyond near-Earth space. Space is an environment filled with tenuous ionized gas, known as plasma, and pervaded by radiation, exemplified by cosmic rays. Advancing our understanding of such an environment is crucial for space utilization, and the engineering involved must support instruments and spacecraft that operate under conditions far harsher than those on Earth. Since the beginning of human exploration and utilization of space, onboard instruments designed to function in this environment have been developed, making human activity in space increasingly diverse. In particular, in recent years, the use of inexpensive, miniaturized satellites, such as CubeSats, has been actively pursued. While CubeSats and other small satellites have dramatically lowered barriers to space utilization, they must deliver high-quality observations and services within extremely limited resources of mass, size, and power. This requires advanced miniaturization and sophistication of onboard instruments. Engineering that supports spacecraft and their payloads in space spans a wide range of disciplines. This session is organized around invited talks that highlight key technologies selected from recent missions and newly developed instruments, which represent significant advancements in this field.

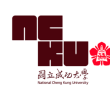
Speakers: Sheng-Long Kao (National Taiwan Ocean U.), Loren Chang (National Central U.), Chih-Hsun Lin (Academia Sinica), Satoshi Kasahara (U. Tokyo), Alfred Bing-Chih Chen (NCKU), Hirotsugu Kojima (RISH, Kyoto U.)

● Session II. Equatorial Aeronomy and Remote Sensing

Chairs: Charles Lin (NCKU), Tatsuhiko Yokoyama (RISH, Kyoto U.)

Description: This session focuses on the equatorial ionosphere and thermosphere, highlighting space and ground-based remote sensing, ionospheric variability, and space weather impacts. Contributions on observations, modeling, and interdisciplinary studies including machine learning techniques will be presented.

Speakers: P. K. Rajesh (NCKU), Yen-Hsyang Chu (National Central U.), Chi-Yen Lin (National Central U.), Peng Liu (RISH, Kyoto U.), Chun-Yen Huang (RISH, Kyoto U.)



- **Session III. Urban Pest and Management**

Chairs: Hou-Feng Li (National Chung Hsing U.), Wakako Ohmura (RISH, Kyoto U.)

Description: This session will focus on the problematic at hand of invasive alien species that cause economic damage with destruction of native ecosystems, as well as pest problems closely related to human life. Through the relationships among the individual problems and phenomena introduced by the speakers, an efficient approach to addressing invasive alien species will be explored.

Speakers: Etsuko Kagaya (FFPRI, Japan), Shu-Ping Tseng (National Taiwan University), Kok-Boon Neoh (National Chung Hsing U.), Hou-Feng Li (National Chung Hsing U.), Wakako Ohmura (RISH, Kyoto U.)

- **Session IV. Wireless Systems – Semiconductor Devices and Wireless Power Transfer –**

Chairs: Yu-Te Liao (National Yang Ming Chiao Tung U.), Tsung-Heng Tsai (National Yang Ming Chiao Tung U.), Tomohiko Mitani (RISH, Kyoto U.)

Description: Wireless systems including mobile communications, satellite systems, and IoT networks play a vital role in modern society. With the rapid development of wireless systems, there is an increasing demand for high-performance semiconductor devices. At the same time, wireless power transfer technologies are gaining attention as a solution for powering electronic devices wirelessly. In this session, we introduce the recent development of wireless systems that support a sustainable future.

Speakers: Heng-Ming Hsu (National Chung Hsing U, Taiwan), Yu-Te Liao (National Yang Ming Chiao Tung U.), Chia-Chan Chang (National Yang Ming Chiao Tung U.), Bo Yang (RISH, Kyoto U), Tomohiko Mitani (RISH, Kyoto U.)

- **Session V. Architecture with Wood – Large-scale Structures with Timber Materials –**

Chairs: Yu-Lin Chung (NCKU), Ai Tomita (RISH, Kyoto U.), Hiroshi Isoda (RISH, Kyoto U.)

Description: In recent years, significant progress has been made around the world on the use of timber material as a versatile and sustainable construction material. New possibilities of timber and timber-composite construction and became available through updated design codes that allow larger and taller buildings, and buildings under extreme and serviceability loading conditions. This session will focus on the use of wood in buildings in Taiwan and Japan and promote discussion.

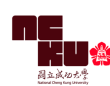
Speakers: Meng-Ting Tsai (NTUST), Yasuhiro Araki (NILIM), Bing-Syun Li (NCKU), Min-chih Hou (KKE), Hiroshi Isoda (RISH, Kyoto U.)

- **Session VI. Biology and Biotechnology for a Sustainable Future**

Chairs: Chao-Li Huang (NCKU), Yuki Tobimatsu (RISH, Kyoto U.)

Description: Unlocking the full potential of plant biomass is key to mitigating our dependence on fossil resources and realizing a sustainable society. It is also increasingly important to assess the impacts of global climate change and human activities on our ecosystems. In this session, a panel of expert biologists will share their recent work in plant genetics, metabolic engineering, and ecosystem biology, envisioning how we can achieve a sustainable future through biological and biotechnological approaches.

Speakers: Ying-Chung Jimmy Lin (National Taiwan U.); I-Ching Chen (NCKU); Ying-Lan Chen (NCKU); Chao-Li Huang (NCKU); Yuki Tobimatsu (RISH, Kyoto U.)



- **Session VII. Space Science and Space Weather**

Chairs: Charles Lin (NCKU), Yusuke Ebihara (RISH, Kyoto U.)

Description: The utilization of space has already begun, and space infrastructure has become indispensable to our daily lives. Severe space disturbances can exert significant effects on modern society, so that understanding the dynamics of space environment and their consequences is crucial for ensuring societal safety and security. This session broadly covers the fundamentals of space science, space weather applications, and extreme space conditions.

Speakers: Tiger J. Y. Liu (National Central U.), Nicholas Larsen (Nagoya U.), Chia-Hung Chen (NCKU), Charles Lin (NCKU), Yikai Hsieh (RISH, Kyoto U.), Yusuke Ebihara (RISH, Kyoto U.)

- **Session VIII. Advanced Biomass-based Materials**

Chairs: Yi-Chun Chen (National Chung Hsing U.), Yukiko Enomoto (U. Tokyo)

Description: This session focuses on advanced materials derived from biomass, including lignin or cellulose, the processing and production of biomass into high-value-added chemicals, environmental remediation materials, and any other novel methods or approaches in the related field. This session aims to discuss and explore sustainable development and the circular economy by sharing recent technologies based on carbon neutral and resource recycling, as well as low-environmental-impact approaches.

Speakers: Yi-Chun Chen (National Chung Hsing U.), Biqing Liang (NCKU), Yu-Ting (Lusia) Liu (National Chung Hsing U.), Bing Xie (Kyoto U.), Yukiko Enomoto (U. Tokyo)

