

# IEICE Society Conference 2022 Symposium

## A: Engineering Sciences Society [Click here to see details.](#)

AS-1. Edge computing in smart agriculture

AS-2. Optical wireless communications gaining momentum

## B: Communications Society [Click here to see details.](#)

BS-1. Frontline of R&D for beyond 5G/6G - From the study of use case to development of component technologies -

BS-2. Special Poster Session ~ Network Technology ~

BS-3. Power Conversion Technology and Its Application Toward the Construction of a Decarbonized Society

BS-4. Network and Service Design, Control and Management

BS-5. Communication and Sensing Technologies to Support Healthcare and Medicine for Future B5G/6G Applications

BCS-1. Cross-sectional transmission technology utilizing light and radio waves in Society 5.0

## C: Electronics Society [Click here to see details.](#)

CS-1. Current status of analytical methods and numerical analysis in electromagnetic analysis

CS-2. Forefront of Magnetic Recording Technologies

BCS-1. Cross-sectional transmission technology utilizing light and radio waves in Society 5.0

## A: Engineering Sciences Society

### AS-1. Edge computing in smart agriculture

Smart agriculture incorporating information technology into agriculture is booming. At this symposium, experts will give lectures on examples of edge computing such as embedded system designs related to smart agriculture, as well as technologies of integrated circuits and embedded systems for smart agriculture. We hope that this symposium will help you to deepen your understanding of the relationship between VLSI and smart agriculture.

### AS-2. Optical wireless communications gaining momentum

Optical wireless communication technology is gaining momentum in research and development. Not only indoors and outdoors, and not only in terrestrial spaces, but also in underwater are considered as the transmission media. Optical wireless communications are being applied to digital signage devices and smartphones, as well as to the realization of advanced mobility, including autonomous driving. Hybrid wireless technologies that simultaneously use radio and optical waves are also under study. Optical wireless communication technology is one of the main research topics of the Technical Committee on Wideband Systems of the Institute of Electronics, Information and Communication Engineers (IEICE), and many reports have been made on both experimental and theoretical aspects. This symposium is organized for the purpose of soliciting a wide range of reports on the latest research results on optical wireless communications, and to discuss in depth the new direction and the better scenario of the future optical wireless communication technology.

## B: Communications Society

### BS-1. Frontline of R&D for beyond 5G/6G - From the study of use case to development of component technologies -

The 5th generation (5G) cellular communication systems are just launched in 2019 and it is expected to provide various services utilizing 5G technology such as enhanced mobile broadband (eMBB), ultra-reliable and low latency communications (URLLC), and massive machine type communication (mMTC). Meanwhile, new technology concepts for the next generation mobile communications such as beyond 5G and 6G (B5G/6G) are about to be investigated in many research entities. This symposium is aiming to provide opportunities to present wide range of the latest research and development activities for B5G/6G, specifically, from the use case studies to element technologies for B5G/6G.

### BS-2. Special Poster Session ~ Network Technology ~

This session handles themes on Network Technology.

The presentation style is a poster session so that people in the room including speakers could hold an active and fruitful discussion anytime during the session and could have feedback or tips for his or her own study.

As the session aims to have a discussion about research topics in progress, 1 written paper would be sufficient.

### BS-3. Power Conversion Technology and Its Application Toward the Construction of a Decarbonized Society

From electronic devices to CEMS (Community Energy Management System), highly efficient use of energy is being promoted in various stages. In this session, we will focus on the introduction of renewable energy and high efficiency energy use. We will focus on the introduction of renewable energy and high-efficiency utilization of energy, and discuss the efforts to build a decarbonated society from the viewpoint of energy. We also plan to have presentations on a wide range of topics, from the level of device and circuit technologies to railroads and smart cities. We would like to provide a forum for active discussions from a wide range of viewpoints by covering various examples of initiatives at each stage as well as the use of new information technologies such as AI and IoT.

### BS-4. Network and Service Design, Control and Management

As further evolution of networks is required for beyond 5G/6G era, autonomous and intelligent network control/management are important to provide flexible and stable information and communication systems. AI/Machine Learning are one of the promising technologies for network softwarization. In this session, authors are invited to submit their papers regarding the network design, control and management technologies from various aspects such as performance, quality, reliability, security, and usability.

### BS-5. Communication and Sensing Technologies to Support Healthcare and Medicine for Future B5G/6G Applications

In recent years, beyond 5G (B5G) and 6G technologies have been actively discussed. As promising applications, healthcare and medical applications based on B5G/6G have attracted much attention. To realize healthcare and medical applications with B5G/6G, it is essential to establish highly accurate and reliable vital data sensing and wireless communication technology specialized for healthcare and medical applications. Therefore, this session invites a wide range of cross-sectional research presentations with regard to communication and sensing technologies to support healthcare and medicine for future B5G/6G applications.

### BCS-1. Cross-sectional transmission technology utilizing light and radio waves in Society 5.0

In Society 5.0, it is expected that IoT will connect all people and things, share various knowledge and information, and create new value that has never existed before. The communication infrastructure that uses light and radio waves is the core system, and R&D for technological innovation is progressing. Therefore, in this symposium, presentations on a wide range of transmission technologies such as "light to radio," "radio to light," and "light and radio waves" will be invited for the purpose of synergistic effects created by the intersection of both areas of light and radio waves. Also technological trends and issues toward Society 5.0 will be clarified.

## C: Electronics Society

### CS-1. Current status of analytical methods and numerical analysis in electromagnetic analysis

In recent years, electromagnetic analysis has been applied to a wide range of fields such as metamaterials, scattering problems in large-scale structures, and propagation analysis in optical communication systems. In this session, the recent topics of analytical techniques and applications in electromagnetic analysis are discussed.

### CS-2. Forefront of Magnetic Recording Technologies

The total amount of digital data worldwide is estimated to be about 60 zettabytes by 2020. In addition, the average annual growth rate of the total data amount is expected to be more than 25% in the next few years due to the development of telework and DX by the Corona disaster. As a result, the demand for information storage is increasing, and the requirements for storage, such as reliability and thrifty power consumption, are becoming more diverse. On the other hand, it is said that more than 75% of all data handled by companies is cold data that has not been updated for more than a year, and magnetic recording technologies such as HDD and magnetic tape are responsible for storing this data. This symposium will discuss the latest trends in these magnetic recording technologies and future technologies such as racetrack memory.

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