

Commission D (Electronics and Photonics) Activity Report

April 2019 - August 2020

September 16, 2020

Hiroyuki Toda

1. International Activities related to areas covered by Commission D

URSI JRSM 2019: 2 members contributed to organizing the conference. Prof. Naoki Shinohara is a member of Organizing Committee and Technical Program Committee. Prof. Hiroyuki Toda is a member of Technical Program Committee.

URSI GASS 2020: 3 members contributed to organizing the conference. Prof. Tadao Nagatsuma is a convener of session D09 Integrated terahertz electronic and photonic devices and systems. Prof. Naoki Shinohara is a convener of session D03 Far-field wireless power transfer and energy harvesting, and assigned conveners to session DK1 Bio effects and EM interference of wireless power transfer. Prof. Hiroyuki Toda assigned conveners to session D01 Photonic signal processing real-time instrument and biomedical imaging, session D10 Microwave and photonic subsystems and antennas for 5G communications, and session DA1 Measurement and instrument technologies for mm- and THz waves.

URSI Centenary Book: A report written by Prof. Tadao Nagatsuma and Prof. Hiroyuki Toda was submitted on August 24, 2019.

Other activities: Prof. Yasuichi Otsuji organized a session entitled "Metamaterials/Metasurfaces in Dirac/Kane Plasmons" in the 10th International Conference on Metamaterials, Photonic Crystals and Plasmonics on July 23-26, 2019. Prof. Y. Otsuji made 20 invited presentations at international conferences related on terahertz wave technology. Prof. Hiroshi Ito made one keynote presentation at International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz 2019), and two invited presentations at 4th Energy, Materials and Nanotechnology (EMN) Terahertz Meeting, and SPIE Optics and Photonics (Optical Engineering + Applications; Optical Sensing, Imaging, and Photon Counting; From X-Rays to THz 2019, Conference OP111, on highly sensitive terahertz-wave detection by Fermi-level managed barrier diode.

2. Domestic Activities related to areas covered by Commission D

Technical Committees on Microwave Photonics (IEICE):

The following technical meetings were held. On May 22, 2019 at Tokyo, one invited talk related on a spin-controlled vertical-cavity surface-emitting lasers for low-power and high-speed data communication, and 4 regular talks were presented. On July 18 and 19, 2019 at Hakodate, one invited talk related on prototype of millimeter wave radar system connected by optical fiber for bi-static scattering measurement, and 7 regular talks were presented. On November 27, 2019 at Tokyo, two invited talks related on flight demonstration of airborne coherent Doppler lidar, and quantum cascade lasers for sensing applications, and 4 regular talks were presented. On Jan 30 and 31, 2020 at Kyoto, one invited talk related on IEEE802.3 plenary meeting for automotive ethernet standardization, and 6 regular talks were presented. On May 28, 2020, one invited talk related on fabrication process of InP-HEMT-based sub-millimeter wave ICs for beyond 5G application, and 4 regular talks were presented in virtual format. On July 16 and 17, 2020, one invited talk related on standardization activities of terahertz spectrum towards 6G, and 2 regular talks were presented in virtual format. Prof. Naoto Yoshimoto is a Chair. Prof. Masayuki Izutsu, Prof. Hiroshi Ito, and Prof. Hiroyuki Toda are members. Prof. Tadao Nagatsuma, Prof. Katsumi Iwatsuki, Prof. Katsutoshi Tsukamoto, and Prof. Yuichi Kado are Advisory members.

2019 IEICE Society Conference:

IEICE Society Conference was held on Sept. 10 - 13, 2018 at Osaka. Microwave and mm-wave photonics session (C-14) was held and 20 regular talks were presented. A symposium (CI-2) on ultra-high speed device technology for next generation seamless wired and wireless communications, co-sponsored with Technical Committee on Lasers and Quantum Electronics, was held and 6 invited talks were presented.

2020 IEICE General Conference:

IEICE General Conference was planned on March 17 - 20, 2020 at Tokyo, however due to COVID-19, on-site conference was cancelled. 19 regular presentation were programmed on Microwave and mm-wave photonics session (C-14).

Technical Committees on Terahertz Application Systems (IEICE):

The following technical meetings were held. On December 23 and 24, 2019 at Sendai, four invited talk and 13 regular talks were presented with co-sponsored with Technical Committees on Electron Devices. The technical committees co-sponsored two technical meetings on July 18 and 19, 2019 at Hakodate and on July 16 and 17, 2020 in a virtual format. Prof. Masayuki Fujita is a Chair. Prof. Hiroshi Ito is a member.