

## Commission D (Electronics and Photonics) Activity Report

July 2018 - March 2019

April 15, 2019

Hiroyuki Toda

### 1. Commission Activities

The 1st meeting was held on October 30, 2018 at Doshisha University. Prof. Hiroyuki Toda, Doshisha University was approved as a chair of the 24th committee.

### 2. International Activities related to areas covered by Commission D

**PIERS 2018 Toyama:** 5 members contribute to organizing and chairing sessions and to making invited presentations. Prof. Naoki Shinohara made a general lecture entitled "Electromagnetic Wave Theory for Wireless Power Transfer." Prof. Taiichi Otsuji organized and co-chaired a session "Emerging Electromagnetic Functionalization of Graphene and 2D Materials for Terahertz Device Applications" and co-authored two invited presentations entitled "Terahertz Detection with Asymmetric Dual Grating Gate Bilayer Graphene Field-effect-transistor" and "Comparison of Infrared and Terahertz Photodetectors Based on Graphene, CdHgTe, and  $A_3B_5$  Quantum-well Heterostructures." Prof. Tadao Nagatsuma co-organized and co-chaired a session "Recent Advances in Devices and System Technologies for Terahertz Wireless Communications," chaired a session "General Lecture 3" and co-chaired a session "Oral Presentations for Best Student Paper Awards — SC2: Metamaterials, Plasmonics and Complex Media," and co-authored an invited presentation entitled "Progress of 350 GHz-band Corporate-feed Plate-laminated Waveguide Slot Array Antennas." Prof. Masayuki Fujita made an invited presentation entitled "Photonic Crystal Slab for Terahertz Applications." Prof. Hiroyuki Toda co-organized and chaired a session "Future Wireless Communication Systems for Railways," co-authored an invited presentation entitled "Output Power Enhancement in Photonic-based RF Generation by Optical Pulse Compression with Fiber," and co-chaired a session "Oral Presentations for Best Student Paper Awards — SC3: Optics and Photonics."

**URSI AP-RASC 2019:** 4 members contribute to organizing and making invited presentations. Prof. Naoki Shinohara was a member of Scientific Program Committee, chaired a session "General Lecture 2," was one of conveners of a session "Electronic Systems, Wireless Devices, Wireless Power Transfer and Energy Harvesting," and made two invited presentations entitled "Wireless Charging System of Electric Bicycle via Microwave" and "Development of Battery-less Sensor for Maintenance of Infrastructures with Microwave Power Transfer." Prof. Tadao Nagatsuma made a Commission Keynote Lecture entitled "Terahertz-wave Applications Enabled by Photonics and Electronics." Prof. Masayuki Fujita was one of conveners of a session "Microwave, Millimeter Wave & THz Devices, Circuits and Systems. Prof. Hiroyuki Toda was one of conveners of a session "Photonic Signal Processing, Real-time Instruments and Biomedical Imaging."

**URSI JRSM 2019:** 2 members contribute 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.

### 3. Domestic Activities related to areas covered by Commission D

#### Technical Committees on Microwave Photonics (IEICE):

The following technical meetings were held. On July 19 and 20 at Toya, one invited talk related on a long-range and high-resolution LiDAR system, and 7 regular talks were presented. On November 26 at Tokyo, 6 regular talks related on transportation systems were presented. On Jan 17 and 18 at Osaka, 6 regular talks were presented. On August 6 and 7 at Matsue, MWP Symposium was held. 14 invited talks related on radio and optical technologies, future wireless services, and vehicle applications, and 22 regular poster presentations were presented. Prof. Naoto Yoshimoto is a Co-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.

**IEICE Society Conference:**

IEICE Society Conference was held on Sept. 11 - 14, 2018 at Kanazawa. Microwave and mm-wave photonics session (C-14) was held and 14 regular talks were presented.

**IEICE General Conference:**

IEICE General Conference was held on March 19 - 21, 2019 at Tokyo. Microwave and mm-wave photonics session (C-14) was held and 21 regular talks were presented.