

Commission D (Electronics and Photonics) Activity Report

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Katsutoshi Tsukamoto

1. Commission Activities

National Report (November 2013 - October 2016) : 9 Members contributed to overviewing recent remarkable advances in their specialized areas such as Quantum Cascade Lasers and Optical Antennas (Kenichi Kasahara, Ritsumeikan Univ.); Current-Injection Terahertz Lasing in a Distributed-Feedback Dual-Gate Graphene-Channel Transistor (Taiichi Otsuji, Tohoku University); Terahertz Photonic Crystals (Masayuki Fujita, Osaka University); THz-Wave Emitters and Detectors Based on Diode Technology (Hiroshi Ito, Kitasato University); Millimeter-wave and submillimeter-wave antennas in standard CMOS technology (Eiichi Sano, Hokkaido University); Space-Division-Multiplexed Optical Fiber Transmission (Hiroyuki Toda, Doshisha University); Recent research trends in optical access network technologies (Jun-ichi Kani, NTT Corporation); Optical Access Networks for broadband IoT services (Naoto Yoshimoto, Chitose Institute of Science and Technology); and Construction of resilient cyber physical system based on ICT (Katsumi Iwatsuki, Tohoku University). Total number of pages counts 61.

URSI GASS 2017: the members on Japan Commission D contributed on paper presentations as follows:

"FEC IMPROVEMENT OF TRANSMISSION PERFORMANCE IN DIGITAL RADIO ON RADIO," K. Tsukamoto, Osaka Institute of Technology, Japan, et. al., and "STUDY ON NON-THERMAL EFFECTS OF EXPOSURE TO 0.07-0.6 THZ RADIATION TO CULTURED CELLS," K. Kawase, Nagoya University, Japan, et. al.

2. Domestic activities related to areas covered by Commission D

Technical Committee on Microwave Photonics (IEICE)

Following technical meeting was held on May 11, 2017 (Tokyo). Three invited talks were presented, that were entitled on "Current Status and Perspective of R&D in High Capacity FWS using Microwave and Millimeter-wave", "VHF-band Broadband Fixed Wireless systems to Resolve Digital Divides," and "Optical and Radio Converged Access Network for Accommodating Mobile Services in Beyond-5G Era". Several regular contributions were also presented related to 60 GHz band Radio-over-Fiber System, systems and functional devices for FM-CW Linear Cell Radar, millimeter-wave mobile terminal localization in 5G mobile, photonic based millimeter-wave radio link. The committee chair, Prof. Yuich Kado, Kyoto Inst. of Tech. and the vice-chair, Prof. Hiroyuki Toda, Doshisha Univ., are members on Japan Commission D.

Another meeting was held on July 20-21, 2016 (Obihiro). (jointly held with related technical committees referring to light-wave and radio-wave workshop). Four invited talks were presented, that were entitled on "Application of RoF technique in V/UHF band and some problems for next generation wireless communications", "Layer2 technologies in Optical Wireless Convergence Platform for IoT Services", "Precision Inspection of Dielectric Constant Measurement Using Terahertz Time-domain Spectroscopy System and Its Application", and "Scattering and Guiding Problem of Electromagnetic Waves in Inhomogeneous Media by Improved Fourier series Expansion Method - The Application of Photonic Crystal and Metamaterial -". Several papers related to following technical topics were presented: heterogeneous wireless communication systems utilizing photonic technologies for 5G mobile systems, phased array laser system, optical frequency comb generation, RoF-based millimeter-wave radar system, millimeter and terahertz wave integrated circuits, photonic technology for microwave and millimeter-wave heterogeneous network, etc. One of members on Japan Commission D, Prof. Naoto Yoshimoto (Chitose Inst. of Science and Tech.) was contributed in the organization.

IEICE Society Conference: Following technical meeting was held in the session of Microwave Photonics (C-14) at the IEICE society conference: September 12-15, 2017 (Tokyo); 19 papers were presented, which cover IF over Fiber system for 5G mobile, optical wave and THz wave conversion, photonic detection of THz wave, THz imaging system, photonic MMW and THz wave generation, linear optical modulator, photonic beam steering in MMW and THz wave.