

Commission D (Electronics and Photonics) Activity Report

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1. Commission Activities

URSI GASS 2014: Status of submission of two sessions proposed by Commission D of Japan is as follows;

- 1) Broadband Ubiquitous Network with Wired and Wireless convergence (Katsumi Iwatsuki, Yuichi Kado, and Katsutoshi Tsukamoto) scheduled on August 19, 2014.
Total submission: 9 (5 papers are invited)
- 2) Trends in THz Communications (Tadao Nagatsuma, Ci-Ling Pan, and Thomas Kuerner) scheduled on August 22, 2014.
Total submission: 6 (2 paper are invited)

Status of National Report: Commission Chair asked all the members to submit their report, and the report will be put together by the end of April 2014. Considering delayed submission as experienced in 2011, it will be finalized by the middle of May at the latest.

2. Domestic activities related to areas covered by Commission D***Technical Committee on Microwave Photonics (IEICE):***

Following technical meeting was held on specific subjects including regular contributions:

January 23-24, 2014 (Osaka); In particular, special session on “Future access networks by combining fiber-optic and wireless technologies” were organized with invited speakers from NTT, NTT Docomo, KDDI, NEC, Waseda University, Tohoku University, etc.

Technical Committee on Terahertz Applications Systems (IEICE):

Following technical meeting was held jointly with Technical Committee on Electron Devices on subjects related to THz devices and applications:

January 16-17, 2014 (Sendai); Invites talks were on 60-GHz radios, >100-GHz amplifiers and their communications applications, THz resonant tunneling diode, THz generation and detection using nonlinear optical devices, and THz Graphene devices.

Technical Committee on Integrated Photonic Devices and Applications (IEICE):

Following technical meeting was held on subjects related to integrated photonic device technologies and their and applications:

January 30-31, 2014 (Kinugawa); Invites talks were Silicon photonics as multi-purpose

photonics-electronics convergence platform, Integration of photonic nanostructure devices using silicon CMOS-compatible process, Optical interconnection technology using Si photonics, III-V photonics on Si platform, Lightwave modulation technologies for digital and analog applications, Trends in terahertz communications and expectation to integrated photonics, Optical Nyquist pulse and applications, Ultra-high capacity optical transmission by space division/mode-division multiplexing, InP photonic integrated circuits for optical switching and polarization control, Photonic crystal laser, Photonic integrated circuits using optical multi-mode, Photonic AD converter, MEMS technologies for optical path control, Bio-implantable devices using CMOS image sensor technology, and NDT technologies using electromagnetic wave from microwaves to infrared waves.

IEICE General Conference:

Following technical meeting was held in the session of Microwave Photonics (C-14) at the IEICE general conference:

March 19-20, 2013 (Niigata); 23 papers were presented, which cover signal generation, electronic and photonic devices for microwave photonics applications, system applications including radio-over-fiber links, radars, imaging and wireless communications. In addition, focused session on optical probing of electromagnetic waves was held, covering an antenna-integrated electric field sensor, electro-optic electric field sensor, photonically-assisted antenna characterization, etc.

3. International activities related to areas covered by Commission D

SPIE 2014 Photonics West:

The conference was held on February 1-6, 2014 at Moscone Center San Francisco. At a session of Conference 9007: Broadband Access Communication Technologies VIII, following notable papers were presented; Toward 100G/400G flexible systems for advanced access and data Center Networks, Digital coherent technologies, Next-generation integrated photonics devices, Next-generation access network and advanced components, Wireless and wired convergence access networks, Few mode fibers , multimode fiber for MIMO communications. In particular, the theme on “Data center networks” is the most central one at this conference, as was taken at Optical Communications Plenary Session, while number of papers on Radio-over-fiber was decreased.

Optical Fiber Communications Conference (OFC 2014):

The conference was held on 09-13 March 2014 at Moscone Convention Center, San Francisco. This is the largest conference related to fiber-optic communications technologies covering devices and system applications. One of the important technological trends which Commission D is deeply involved in is a combination of fiber optic communications and wireless communication. Use of analog photonic techniques is expected to offer much higher performance and energy-efficient solutions comparing to digital techniques. Integration of photonic and electronic devices will play a key role to realize such services at low cost.