
FOREWORD

Joint Special Section on Opto-electronics and Communications for Future Optical Network

With the global penetration of recently-introduced 5G services and various cloud services based on data center network, communication traffic is expected to continue increasing by 30–50% annually in the future. This situations naturally demand not only the continuous capacity growth but also different requirements in conventional telecom application areas of access, metro, and core network, and emerging new application area such as data center network.

On the basis of this background, the 24th Optoelectronics and Communications Conference and International Conference on Photonics in Switching and Computing (OECC/PSC 2019) was held in Fukuoka, Japan from July 7th to July 11th, 2019. The following seven categories were covered a wide range of topic:

O1: Core/Access/Data Center Networks and Subsystems

O2: Transmission Systems and Subsystems

O3: Optical Fibers, Cables and Fiber Devices

O4: Optical Active Devices and Modules

O5: Optical Passive Devices and Modules

P1: Photonics in Switching Technologies, Systems and Architectures for Communications and Networking

P2: Photonics in Switching Technologies, Systems and Architectures for Computing and Big Data.

OECC/PSC2019 was especially characterized by three main special symposia: Cat. O1-organized Symposium S1 on “Future Technologies for Optical Transport Network Support of Post 5G Mobile Services”, Cat. O4+O5-jointly-organizaed Symposium S2 on “Photonics Technologies in Automotive Application~from Networks to Devices~”, and Cat. P1+P2-jointly-organized-Symposium S3 on “Advanced Optical Technologies for Bigdata/IoT Service analytics”.

This joint special section organized by both IEICE Transactions on Communication and IEICE Transactions on Electronics provides an overview of the key topics discussed in OECC/PSC 2019. This Special Section on Communication consists of 4 excellent invited papers and 12 contributed papers, which were selected from 19 submissions on the technical categories O1, O2, O3, P1 and P2.

I would like to appreciate all of the authors for submitting the excellent papers and to reviewers and editorial committee members for their great effort on organizing this special section.

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Yutaka Miyamoto (*Fellow*) received the B.E. and M.E. degrees in electrical engineering from Waseda University, Tokyo, Japan, in 1986 and 1988, respectively. He joined the NTT Transmission Systems Laboratories, Yokosuka, Japan, in 1988, where he engaged in research and development on high-speed optical communications systems including the 10-Gbit/s first terrestrial optical transmission system (FA-10G) using EDFA inline repeaters. He then joined NTT Electronics Technology Corporation between 1995 and 1997, where he engaged in the planning and product development of high-speed optical module at the data rate of 10Gbps and beyond. Since 1997, he has been with NTT Network Innovation Labs, where he has contributed in the research and development of optical transport technologies based on 40/100/400-Gbit/s channel and beyond. He is now NTT Fellow and director of Innovative Photonic Network Research Center of NTT Network Innovation Laboratories, where he has been investigating and promoting the future scalable Optical Transport Network with the Pbit/s-class capacity based on innovative transport technologies such as digital signal processing, space division multiplexing and cutting-edge integrated devices for photonic pre-processing. He received Dr. Eng. degree in electrical engineering from Tokyo University. He is a member of the IEEE, and a Fellow of IEICE. He is a recipient of the Best Paper Awards from 1st OECC'96, 16th OECC2011 and 21st OECC2016, Best Paper Award of IEICE in 2003, Kenjiro Sakurai Memorial Award from OITDA in 2007, IEICE Achievement award in 2010, Hisoka Maejima Award from Tsushinbunka Association in 2011, Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology in 2013, and IEICE Distinguished Achievement and Contributions Award in 2019.

