
FOREWORD

Special Section on Photonic Technologies for Access Networks

Optical fiber has reached almost every home, and broadband access environments have been realized based on the Fiber-To-The-Home (FTTH) system. The FTTH system provides subscribers with various services with an access rate of 100 Mb/s. These services include telephone, easy internet access, the provision of video on demand, and the opportunity to view lots of TV programs. The number of FTTH subscribers has now exceeded 15 million in Japan, and FTTH is spreading throughout the world. This represents the realization of a long-term dream that began with the birth of optical fiber communication in the 1880s. The FTTH system is now an important infrastructure supporting the ICT society, and it will be expanded to create secure and safe communities.

To deploy FTTH systems, we need optical component, installation, maintenance, and operation technologies. With respect to optical components, huge efforts have been made to develop optical splitters for passive optical networks (PONs), transceivers for ONUs and OLTs and low-cost optical connectors, which are key components for realizing cost effective FTTH. Recently, the power consumption of ICT network equipment has been extensively discussed, and it is the key to reducing the power consumption of FTTH systems, which has been increasing along with the number of subscribers. In particular, ONU power consumption is crucial, and various techniques such as low-power LSIs and the sleep mode have been adopted to reduce it. In addition, it takes a long time to construct FTTH systems, so it is important to continue to develop photonic devices for the next generation access networks. In this special section we review recent progress on photonics technologies for access networks. It consists of 6 invited papers and one regular paper.

The guest editor-in-chief expresses his sincere appreciation to all the authors for their contributions and to all the reviewers for their critical considerations. He would also like to thank the editorial committee members for their work on this special section.

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Yoshinori Hibino (*Member*) received B.S., M.S., and Ph.D. degrees in applied physics from the University of Tokyo, Japan, in 1980, 1982 and 1986, respectively. In 1982, he joined Ibaraki Electrical Communication Laboratories, Nippon Telegraph and Telephone Public Corporation, Tokai, Ibaraki Japan, where engaged in the research and development of optical fibers and planar lightwave circuits (PLC) for telecommunications. He was also the manager of the optical transport network group that has been developing optical transmission technologies in optical fibers. He is now the director of NTT Photonics Laboratories. His current research interests are photonic integrated devices based on PLCs and active components for photonic networks. He has published over 110 articles on photonic devices and photonic network systems. From 1989 to 1990, he was a Visiting Research Scholar at Optical Science Center in the University of Arizona, Tucson, AZ, USA. Dr. Hibino is a member of the Japan Society of Applied Physics and IEEE Photonics Society.

