Introduction to the Special Issue on Silicon Photonics

THE GUEST editors of the IEEE JOURNAL OF SELECTED TOPICS IN QUANTUM ELECTRONICS (JSTQE) are pleased to introduce this issue on Silicon Photonics. The 41 papers in this issue describe some of the most exciting work in the field and are a testament to the creativity and vitality of the area of Si photonics and to the researchers, who are carrying out the experiments and theory. There are 16 invited papers written by leading researchers that comprehensively treat topics ranging from devices to circuits and systems on a silicon chip. The remaining 25 contributed papers are no less important in their discussion of important results in topics such as silicon modulators, silicon light sources, and nonlinear processes in silicon.

This special issue would not have been possible without the professionalism, dedication, and expertise of all the members of our publication team. In particular, the guest editors would like to express thanks to the authors, both invited and contributed, for submitting comprehensive and thought-provoking papers. A special thanks goes to the international peer reviewers who donated their time and skill to maintain the technical quality of this special edition while also staying within tight deadlines. The coordination of this issue was handled with skill and grace by C. Tan-Yan, and the production tasks were resourcefully managed by the IEEE staff. We are sincerely grateful to these individuals for their assistance and support. Finally, the editors would like to thank Dr. F. Bartoli for inviting us to serve the semiconductor integrated photonics community and for helping us complete this complex, but always rewarding task.

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He is currently a Professor of microphotonics, materials engineering with the University of Tokyo, Tokyo, Japan. In 1975, he joined the Research Laboratories, Nippon Telephone and Telegraph (NTT), Tokyo, where he was engaged in research on defects in Si and III–V materials and devices. During 1998, he was with the Microphotonics Center, Materials Science and Engineering, Massachusetts Institute of Technology (MIT), where he was engaged in conducting research on Si photonics. He focused on Ge photodetector and modulator on Si CMOS platform. During 2004, he joined the University of Tokyo, as a Professor, where he is involved in managing Microphotonics Laboratory for Si CMOS photonics research. Since 2008, he has been the coordinator of the Japan Society for the Promotion of Science (JSPS) program on Si Photonics Research Centers in the US, EU, and Japan. He has authored or coauthored more than 150 refereed journal papers and has edited 13 books. He was an Associate Editor of the *Japanese Journal of Applied Physics* and the *Journal of Electronic Materials*.

He was the Chair of Si Photonics of Institute of Electrical, Information, and Communication Engineers (IEICE) in Japan, was a member of the Board of Directors of MRS, a Chair, and an International Advisory Committee Member of the international conference on Group IV Photonics (IEEE), and a Program Committee Member of SiGe Symposium at Electrochemical Society (ECS), the Program Committee Chair of the International Conference on Solid State Devices and Materials sponsored by the Japanese Society of Applied Physics (JSAP). He was an Associate Editor of the IEEE/TMS. He is a Fellow of JSAP and to serve the Director of JSAP 2010.