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Laurent Vivien
Seppo K. Honkanen
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Editors

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Wolfgang Sohler, Universität Paderborn (Germany)
Jason Liow Tsung Yang, A*STAR Institute of Microelectronics (Singapore)
Danxia Xu, National Research Council Canada (Canada)
Koji Yamada, Nippon Telegraph and Telephone Corporation (Japan)
YinZhong Yu, Institute of Semiconductors (China)

Session Chairs

- 1 Nonlinear Integrated Photonics
Laurent Vivien, Institut d'Électronique Fondamentale, CNRS, Université Paris-Sud (France)
- 2 Nonlinear Optics
Lorenzo Pavesi, Università degli Studi di Trento (Italy)
- 3 Photodetectors
Seppo K. Honkanen, University of Eastern Finland (Finland)
- 4 Light Guiding and Coupling
Giancarlo C. Righini, Istituto di Fisica Applicata Nello Carrara (Italy)
- 5 Silicon and Germanium Modulator
Maria-Pilar Bernal, FEMTO-ST, CNRS, Université de Franche-Comté (France)
- 6 CMOS Photonics for Theranostics
Lorenzo Pavesi, Università degli Studi di Trento (Italy)
- 7 Silicon Modulators
Laurent Fulbert, CEA-LETI (France)
- 8 Industry and Silicon Photonics
Lorenzo Pavesi, Università degli Studi di Trento (Italy)
- 9 Silicon Photonics Integration
Bert-Jan Offrein, IBM Zürich Research Laboratory (Switzerland)
- 10 Source on Silicon
Kazumi Wada, The University of Tokyo (Japan)
- 11 Non-Silicon Integrated Optical Devices
Stefano Pelli, Istituto di Fisica Applicata Nello Carrara (Italy)
- 12 Plasmonics on Silicon
Seppo K. Honkanen, University of Eastern Finland (Finland)
- 13 Passive and Resonant Photonic Devices
Béatrice Dagens, Institut d'Électronique Fondamentale (France)
- 14 Biosensing
Laurent Vivien, Institut d'Électronique Fondamentale, CNRS, Université Paris-Sud (France)

Introduction

This issue contains the papers presented at the third edition of the “Silicon Photonics and Photonic Integrated Circuits” Conference of Photonics Europe (2012). The conference was aimed to review and debate the hottest topics in integrated optical structures fabricated in silicon as well as in glasses, crystals, and polymers.

The conference was a success as was witnessed by the 81 submitted abstracts, a number which sharply rose above the 2010 edition. The conference success was also reflected in the high quality of the presentations, which in turn maintained the high interest of a large active audience.

The conference has shown that integrated optics, in particular silicon photonics, is able to provide technologies and devices suitable for industries or commercialization, while still keeping the style of a blue-sky research with the demonstration of interesting new phenomena. These new discoveries act as an innovation drive bound to be exploited by the industry in a longer time frame. This trend was particularly evident in the sessions devoted to sensing and to theranostics, where commercial achievements and novel approaches were concurrently illustrated.

The conference also caught a significant evolution of silicon photonics which moved from being a mostly datacom or interconnect oriented platform to a multipurpose platform for diverse applications, such as sensing, energetic, or medical applications.

This trend was evident in the four special sessions which covered:

- Nonlinear Integrated Photonics
- CMOS Photonics for Theranostics
- Industry and Silicon Photonics
- Non-Silicon Integrated Optical Devices.

We organized these special sessions mainly with invited presentations by experts who succeeded to efficiently highlight the most relevant research and industrial developments.

All sessions were well-attended, some exceptionally well, e.g., the one that focused on industry. They were all animated by many questions and comments from the participants, making them a valuable occasion for discussions and debates.

The Best Student Paper Award offered by SPIE for this conference was presented to Papichaya Chaisakul, Institut d'Électronique Fondamentale, CNRS, Univ. Paris-Sud (France) for the paper on "Room temperature direct-gap electroluminescence in Ge/SiGe quantum well waveguides" (8431-44).

In cooperation with SPIE, we awarded three prizes to the best contributed paper presentations, which at the end of the conference we were delighted to confer to:

- 1) Carlos Alonso-Ramos, Univ. de Málaga (Spain) for the paper on "Grating couplers in thick rib SOI waveguides for TE and TM polarizations" (8431-13)
- 2) Paul Muellner, AIT Austrian Institute of Technology GmbH (Austria) for the paper on "On-chip multiplexing concept for silicon photonic MZI biosensor array" (8431-27)
- 3) Alexandros Emboras, CEA-LETI-Minatec (France) for the paper on "CMOS integration of field effect plasmonic modulator" (8431-56).

The good outcome of this conference has been a result of a cooperative work and we thank the members of the Programme Committee and the authors for this, and SPIE for the smooth organization of the symposium.

Laurent Vivien
Seppo K. Honkanen
Lorenzo Pavesi
Stefano Pelli