1587

Photonic integration: beyond telecom and datacom

G. Roelkens[1,2]

[1] *Photonics Research Group, Ghent University/imec, Belgium*
gunther.roelkens@intec.ugent.be
[2] *Center for Nano- and Biophotonics (NB-Photonics), Ghent, Belgium*

Abstract: In this paper we elaborate on the use of silicon photonic integrated circuits for sensing applications. We will discuss disposable bio-sensing chips, chips for biomedical applications such as optical coherence tomography and laser doppler vibrometry as well as integrated spectroscopic sensors based on Raman spectroscopy and vibrational spectroscopy.

Silicon photonics has emerged as a prominent platform for the realization of high data-rate transceivers for use in optical interconnect and telecommunication applications. Silicon photonics leverages the existing technologies in advanced CMOS fabs, which has resulted in a very fast progress in this field as well as the development of an industrial supply chain. The available high refractive index contrast also allows for unprecedented miniaturization. The market potential for silicon photonics is however much broader than datacom and telecom, and there are especially opportunities in the area of lab-on-a-chip. In this paper we will elaborate on the development of a disposable biosensor platform for the detection of biomolecules, a technology that starts to become commercially available. Current research efforts focus on the realization of spectroscopic sensor systems, both in the near-infrared (Raman spectroscopy using SiN waveguide technology) and the mid-infrared (vibrational spectroscopy using Si/Ge technology), in order to enhance the selectivity of currently available sensors. Also in the biomedical field silicon photonic integrated circuits for e.g. optical coherence tomography and laser doppler vibrometry are of interest.

1587

Home | Practical informations | Program | Abstracts | Registration | Sponsors | Contact

Program

WRITTEN BY ECIO MOC 2014 ON 13 AUGUST 2014. POSTED IN ECIO-MOC 2014

Download latest ECIO-MOC program   Download latest LFIB workshop

Topics

- Photonic ICs : design, fabrication, hybrid or monolithic approach
- Passive devices : Fibers, Waveguides, Multi/Demultiplexers, Add-drop multiplexers, Branching and mixing components, Filters, Microlenses, Diffractive optical elements, Isolators, Polarizers, etc.
- Dynamic and Functional Devices : MEMS, Switches, Modulators, Tunable devices, Deflectors, Optical buffers, etc
- Nonlinear devices : wavelength converters, frequency mixers, signal regenerators,
- Active devices : Lasers, LEDs, VCSELs, Array lasers, Amplifiers, Detectors,
- Polymer photonics including OLEDs
- Silicon photonics
- Nanophotonics, photonic crystal materials and devices, metamaterials
- Plasmonic waveguides and devices
- Membrane photonics and optomechanical devices
- Materials and fabrication technologies for guided waves devices and quantum optical or opto-electronic structures
- Modelling, theory and simulation of active and passive guided wave devices and quantum optical or opto-electronic structures
- Characterization and testing of guided waves devices and circuits,
- Packaging and Hybrid integration : flip-chip and bonding techniques, novel pigtailing and packaging technologies, micro- optic benches
- Application : telecom and datacom, quantum communication, biophotonics, instrumentation and sensors, micro- wave applications, data storage, lighting and displays
- Production technologies, foundry concepts and industrial exploitation

Plenary Talks (confirmed)

Kenichi Iga ,Tokyo Institute of Technology, Japan

Register for the event

REGISTRATION

Book your Hotel !

IMPORTANT DATES

April 2014
Opening registration

April 25, 2014
Abstract notification (sent by email to First Authors)

May 15, 2014
Earlybird online registration

June 10, 2014
Online registration deadline

June 23 - 24, 2014

LFIB 2014

June 24 - 27, 2014

ECIO MOC 2014

June 27 - 28, 2014

OWTNM 2014

VCSEL -Its History and Prospects for Green Microoptics

Thomas L. Koch, University of Arizona, USA
Advances in integrated optics technologies,

X **Gunther Roelkens**, Ghent University, Belgium
Photonic integration: beyond telecom and datacom,

Phillip Russell, Max Planck Institute for the Science of Light, Erlangen, Germany
Control of Light-Matter Interactions in Microstructured Glass Fibres

Sébastien Tanzilli, University Nice Sophia Antipolis, France
Quantum Integrated Optics,

Laurent Vivien, Université Paris-Sud, France
Silicon and Germanium optoelectronic devices

Tutorials (confirmed)

Hirochika Nakajima, Waseda University, Japan
40 years anniversary of Ti:LiNbO3 and beyond"

Alejandro Ortega-Moñux, University of Malaga, Spain
Design of integrated photonic devices for high-speed coherent receivers,

Invited (confirmed)

T. Suhara, Osaka University, Japan
Grating coupler integrated semiconductor laser diode
R. Kou, Waseda University, Japan
Graphene integrated silicon photonics
T. Tenemura, Tokyo University, JAPAN
Polarization converter
K. Hamamoto, Kyushu University, JAPAN
Optical mode switch
I. Favero, MPQ Paris 7, France
On chip gallium arsenide optomechanical systems
A. Martin, GAP, Genève, Switzerland
Nonlinear interaction between two independent single photons
N. Hanazawa, NTT, JAPAN
LP21 mode device based on silica waveguide
K. Williams, TU Eindhoven Holland
Active optical switches
G. Bellanca, University Ferrara, Italy
Ultracompact photonic crystal integrated circuits:
Connecting tiny devices to achieve high-performances, modeling and experiences
T. Watanabe, Yokohama National University, Japan
Fan-in/Fan-out devices using laminated polymer waveguide for multi-core fibers.
M. Smit, TU Eindhoven, Holland
Foundry based approach for ImP based PIC development,
R. Ram, MIT, USA
CMOS Photonic Integrated Circuits and Systems
K. Suzuki, AIST, Japan
Si-wire based 8 × 8 strictly-non-blocking PILOSS switch
G. Mashanovich, University of Southampton, UK
Passive and active silicon photonic devices for the mid-IR
F. Sciarrino, Sapienza Università di Roma, Italy
Quantum simulation with integrated photonics.
S. Höfling, University St Andrews, UK
Integrated single photon circuits
J. Ctyroky, Institute of Photonics and Electronics, Czech Republic
Computational analysis of subwavelength waveguide structures