ADVANCED RESEARCH WORKSHOP

Frontiers in Planar Lightwave Circuit Technology: Design, Simulation and Fabrication

September 21-25, 2004, Ottawa, Canada

Institute for Microstructural Sciences, National Research Council Canada
Institute of Radio Engineering & Electronics, Academy of Sciences of the Czech Republic
Vitesse Re-Skilling™ Canada

Over the last decade the optical component industry and research community have embarked on a planar lightwave circuit (PLC) revolution. Recent advances in photonics and microelectronics have driven this revolution, and by the commercial reality that new optical technologies must eventually be manufacturable and meet market requirements. The focus of photonics research and development has shifted away from the traditional source/fibre/detector based telecommunication link, to complex devices incorporating microphotonic waveguides, high index contrast materials, photonic crystals, sub-wavelength diffractive structures, and highly integrated planar lightwave circuits. Applications of planar lightwave circuits now encompass biomedical research, optical interconnects, transportation, environmental monitoring, and sensors for defence and security.

The NATO Advanced Research Workshop will address the scientific and technical challenges encountered along the path from design and simulation to fabrication and qualification of planar lightwave circuits that incorporate these new optical technologies and address the expanding range of applications. The workshop will bring together internationally recognized photonics experts from university, government, and industrial research organizations to provide a critical review of the existing knowledge, identify key areas for future research and product development, and explore emerging applications in communications, information technology, and in the health, defence and security sectors.

Areas of Interest

High refractive index contrast devices	Magneto-optic materials and devices
Photonic crystal devices	PLC components for optical interconnects
Waveguide based biosensors	Etching techniques for sub-micron feature definition

Scientific Directors:

Dr. Siegfried Janz, Group Leader, Optoelectronics Device Group
Institute for Microstructural Sciences, NRC, Ottawa, Ontario, Canada
Dr. Jiri Ctyroky, Associate Professor, Institute of Radio Engineering and Electronics, Academy of Sciences of the Czech Republic

Scientific Secretary (Contact to apply):

Dr. Stoyan Tanev, Program Manager, Vitesse Re-Skilling™Canada
Tel. 613-746-3595, ext. 228, Fax 613-746-6653, stoyan.tanev@vitesse.ca

Location: Cooper Street Hotel & Suites (to be renamed to Holiday Inn Hotel & Suites)
111 Cooper Street, Ottawa, Ontario, Canada, K2P 2E3, Tel. 613-238-1331, Fax 613-230-2179

Participation Cost: $750 USD (accommodation, breakfasts, lunches, reception, no dinners)

A very limited number of scholarships will be available to cover the participation cost of participants having no other sources for financial support.

Organizing Committee:

Sylvain Charbonneau, IMS-NRC, Canada
André Delâge, IMS-NRC, Canada
Solomon Saltiel, Sofia University, Bulgaria
Trevor Benson, University of Nottingham, UK
Alan D. Boardman, University of Salford, UK

Invited Speakers

Trevor Benson, University of Nottingham, UK, *Micro-Optical Resonator Devices, Materials & Technologies*

A. D. Boardman, Salford University, UK, *Magneto-Optics Devices, Materials and Technologies*

Jiri Ctyroky, Czech Academy of Sciences, Praha, *Simulations of High Contrast Photonic Structures*

Richard De La Rue, University of Glasgow, UK, *Photonic Crystal Fabrication Techniques*

Jiri Homola, Czech Academy of Sciences, Praha, *Surface Plasmon Resonance Biosensors for Food Safety*

Siegfried Janz, IMS-NRC, Canada, *Microphotonics: Current Challenges and Applications*

S. Saltiel, Sofia University, Bulgaria, Cascaded Nonlinear Optical Processes in 1D and 2D Photonic Crystals
Boris Lamontagne, IMS-NRC, Canada, *Fabrication of Planar Waveguides: Techniques and Issues*

Laura Lechuga, CSIC, Spain, *Optical Biosensor Devices as Early Warning Systems*

A. Nosich, Institute for Radiophysics and Electronics, Ukraine, *Design and Software Simulation Tools*

Bert J. Offrein, IBM Research, Switzerland**,** *The Future of Photonics R&D and Industry II*

Christoph Waechter, Fraunhofer Institute, Germany, *Exploring the Integrated Optics Software Landscape*

Elena Romanova, Saratov State Univeristy, *Ultra-short pulse propagation in non-linear planar waveguides*

Shlomo Ruschin, Tel-Aviv University, Israel, *Light by light interaction in silicon-on-insulator waveguides*

Jeff Young, UBC, Canada, *Nonlinear processes in high index contrast semiconductor waveguides*

Workshop Format

The workshop will consist of invited lectures by experts in specific aspects of planar lightwave technology, focus sessions in the areas of design, modeling and fabrication, and round table discussions.

Invited talks: Each talk will review a particular subject and discuss the related design, simulation and fabrication challenges, as well as new promising directions. The speakers will also discuss in depth practical examples demonstrating successful and outstanding design, simulation and fabrication experiences related to the topic they are presenting. This will make the discussions practically oriented and meaningful.

Focus sessions: The focus sessions will be informal discussions of practical issues in the design, simulation, fabrication and testing of planar lightwave circuit devices. The discussions will be led by experts in the focus topics. Examples drawn from the invited lectures will be used to generate discussions on real life issues in optical design and state-of-the-art micro-fabrication techniques.

Sponsors

Optiwave

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Canada's Capital University