

Presentation on Photonics: Illuminating a world of opportunity

Date: November 10, 2008

Time: 10:30 am – 12:00 noon

Location: Room T-102ABC, in T-Building, School of Advanced Technology, Algonquin College

Program:

- 10:30 am *Opening*
Stephen Finnagan, Academic Chair, Electronics/Electro-Mechanical Studies
- 10:35 am *Welcoming Remarks*
Kent MacDonald, Vice President Academic
- 10:45 am *Keynote Presentation “Photonics: Illuminating a world of opportunity”*
Dr. Sylvain Charbonneau, Director of Applications Technologies
Institute for Microstructural Sciences (ATIMS), NRC
- 11:35 am *Questions and Answers*
- 11:45 am *Closing remarks*
Wahab Almuhtadi, R&D Coordinator, Professor, Photonics Program

**Presentation on
Photonics: Illuminating a world of opportunity**

*by Dr. Sylvain Charbonneau
Director, Applications Technologies
Institute for Microstructural Sciences
National Research Council of Canada*

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Abstract:

Photonics is a \$710 billion global industry that impacts every sector of the economy and the daily lives of every Canadian. Yet despite its pervasiveness, this “science of light” has a relatively low profile among our leaders and decision makers. Canada has approximately 370 photonics companies that employ some 20,000 people and collectively generate close to \$4.3 billion annually — approximately 85% from exports. Most of these companies are sub-system or system-level integrators of photonics components.

The nation’s core photonics producer sector is firmly rooted in small and medium enterprises (SMEs) and start-ups with revenues in the \$1–10 million range and up to 50 employees (although there are a handful of larger companies or divisions). These companies range from developers and components manufacturers (e.g., of lasers, fibre optics) to complete photonics-based instruments (cameras, projectors, scanning microscopes). The industry has migrated away from the telecommunications sector with which it was strongly associated during the high-tech “bubble” of 2000: with the exception of the consumer market, it now addresses most industry sectors. Automotive and aerospace companies, for example, make extensive use of photonics. Canada invests strongly in — and excels at — photonics R&D. But while Canada creates world-class photonics physicists at the Ph.D. level, a shortage of photonics technicians and application engineers hampers the industry’s growth. Most engineers graduating from Canadian universities and colleges have little exposure to photonics, impeding the industry’s ability to adopt photonic solutions in all sectors. Yet photonics has great potential to be a significant engine for national economic growth. Given greater public and industry awareness, and greater focus on potential key applications in such sectors as energy and the environment (each with a strong domestic demand for photonics solutions), Canada would be well-positioned to leverage our expertise by creating companies with global opportunities.

During my presentation I will highlight the findings of the ‘soon to be released’ National Photonics Study commissioned by the Canadian Photonics Consortium and review how this technology platform will be used to meet future needs of Canadians.

Dr. Sylvain Charbonneau’s Bio:



Sylvain Charbonneau received the Ph.D. degree in semiconductor physics from Simon Fraser University, British Columbia, Canada in 1988. In 1988 he joined the Institute for Microstructural Sciences of the National Research Council of Canada. For a period of 10 years, he became involved in a number of research activities within the institute and led such programs as wavelength routing and switching and more exploratory research efforts like the nano-optics project. He has published over 180 papers and has sixteen patents granted or pending in the field of optoelectronics. From 1998 to January 2000, Dr. Charbonneau took on the responsibility of Director of Components Technologies for the Institute for Microstructural Sciences. His responsibilities included components related research and development programs for the Institute as well as the initial development phase

of the newly funded Canadian Photonic Fabrication Center (CPFC). Following a brief assignment of 14 months as Chief Technology Officer of a NRC start up company, he returned to the Institute for Microstructural Sciences as the lead Director responsible for the management and operation of the CPFC. He is an Adjunct Professor at three Canadian universities and sits on six national and international Boards of photonics related organizations.