



Ontario Centres of Excellence

Where Next Happens

# Energy Efficient Lighting Helps the Environment

**“With the stimulus provided by the Ontario Centres of Excellence, we have been able to attract committed investors and accelerate commercialization of this breakthrough energy-efficient lighting technology.”**

Stephen Naor, CEO, Group IV Semiconductor Inc.

The cost of energy may be what is making the headlines but there is another price for energy – its impact on the environment. With the signs of climate change ever more apparent, and with growing concern over air pollution, governments across Canada are searching for better ways to promote energy conservation.

Nearly 20% of all electricity generated is consumed for lighting, and conventional light bulbs are extremely inefficient. This means the introduction of new, highly efficient, solid-state lighting technologies is one of the most promising initiatives available for the reduction of overall energy consumption.

Ontario Centres of Excellence (OCE) Inc. has helped drive innovation in this important field by supporting a collaborative effort between researchers at McMaster University's Department of Engineering Physics and their industry partner Group IV Semiconductor Inc. of Ottawa. OCE's Industrial Collaboration Programs helped to accelerate exploitation of the intellectual property toward creation of a new breed of energy-saving, solid-state

lighting products.

Group IV's light emitters are set to secure a leadership position in the rapidly expanding energy-efficiency segment of the \$12 billion general illumination market. The products are based on silicon, while competing technologies use costly compound semiconductor materials. This positions Group IV with a breakthrough combination of efficiency, brightness, AC line-voltage capability, white purity and low cost.

This project began in 2003 with early research conducted by Dr. Peter Mascher's team at McMaster, in facilities staffed and supported by the McMaster-led Ontario Photonics Consortium. With OCE support, the McMaster team was able to enter into an agreement with Group IV that provided access to the university's research facilities and world-leading expertise in the field. This included co-development of intellectual property, the filing of joint patents and the creation of proof-of-concept devices that set the scene for commercialization.

“OCE helped us launch this program in 2003 by enabling our first collaboration with Group IV,” says Dr. Mascher. “With assistance from the Centres for Photonics and Materials and Manufacturing we were able to advance the research, set up the technology licensing and help Group IV to begin a solid development program. OCE has been at our side throughout and is continuing to support us as

this year we launch the second phase of the project.”

OCE is one of the few publicly funded institutions that build the bridges from university research to the marketplace. OCE helps provide what is needed for innovative science and technology to be transformed into profitable new businesses.

A key role played by OCE in this program has been to help foster Group IV's partnerships with both McMaster and Carleton Universities, to the point where Group IV is able to make the move towards pilot fabrication at the NRC's Canadian Photonics Fabrication Centre. The hard work and commitment of the partners is starting to pay off, as Group IV is attracting attention in the industry and has now been able to secure a new round of venture funding, as well as a grant from Sustainable Development Technology Canada - evidence that others recognize both the commercial and the environmental benefits of the technology.

Ideas such as this that promote quality of life for Ontario citizens also help to drive the province's economy by stimulating innovation and strengthening its competitive position. Energy conservation is not only an immediate need; it will continue to increase in importance into the future. With innovative technology partnerships such as this one stimulated by OCE's visionary approach, everyone wins.