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October 12th, 2007, 2:30 pm - Concordia University SP-S110

Three-dimensional Photonic Crystals: Fabrication and Perspectives

Dr. Nicolas Tétreault

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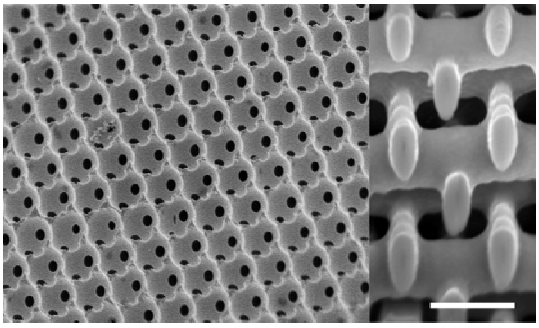
Photons have several advantages over electrons as carriers of information. They are faster and can convey huge amounts of data with low power losses. A new class of materials called photonic crystals has the potential to steer light in the same way as electrons are manipulated in semiconductor chips. Fabricating these devices is proving extremely challenging. Nevertheless, chemical and physical approaches, including colloidal self-assembly, holography, two-photon lithography and micro-templating, are being developed and exploited for their fabrication. These may not only contribute to the expansion of a new field of materials science but also to the development of the all-optical computer.



Dr. Nicolas Tétreault completed his undergraduate studies in Chemistry at Concordia University in 1999 before obtaining his Ph.D. in Physical Chemistry with Prof. G. A. Ozin at the University of Toronto in 2005. He has received the Gold Medal of the Governor General of Canada for the excellence of his research and his contribution to the advancement of nanochemistry in general and the photonic crystal field in particular. Since then, he has been holding a fellowship at the Nanoscience Centre at the University of Cambridge where he is working with Prof. M. E. Welland and Prof. R. H. Friend.