

Photonics Forum

“Micro and Nano Photonic Integrated Circuits”

Dr. Jonathan Klamkin, Assistant Professor of Electrical and Computer Engineering

May 29, 2013

11:45 a.m.

9th Floor

Room 901

Photonics Center

*8 Saint Mary's
Street*

*Lunch will be
served!*

Photonic Integrated Circuits (PICs) have evolved over a period of more than 30 years from one-off devices that were realized with complex crystal growth steps to now foundry qualified circuits that yield high performance and wafer uniformity. This evolution was fostered by the maturation of compound semiconductor materials as well as the exploitation of already matured silicon manufacturing processes that were developed for the microelectronics industry. A field that was once dominated by indium phosphide, now showcases a host of other photonic materials including silicon, silica, lithium niobate, polymers, as well as hybrid platforms integrating more than one of these materials. Just as for microelectronics, the choice of photonic technology is application dependent. The original motivation for photonic integration was low size, weight, and power. This has expanded as photonic integration offers better performance and reliability, and enables new and emerging applications such as optical interconnects for data communications, microwave photonics for phased-array radars and radio astronomy, readout circuits for fiber temperature and strain sensors, and sensing devices for biological and medical applications. This talk will describe several examples of high-performance PICs and concepts for integrating laser sources on the silicon photonics platform. Novel materials for nanophotonic integrated circuits will also be described.

Dr. Jonathan Klamkin received a B.S. in Electrical and Computer Engineering (ECE) from Cornell University in 2002, and an M.S. in ECE and Ph.D. in Electronic Materials from the University of California Santa Barbara in 2004 and 2008 respectively. From 2001-2002 he worked at BinOptics. From 2008-2011 he was a member of the Technical Staff in the Electro-Optical Materials and Devices Group at MIT Lincoln Laboratory. From 2011-2013 he was an Assistant Professor at the Institute of Communication, Information and Perception Technologies (TeCIP), Scuola Superiore Sant'Anna, Pisa, Italy. He joined the ECE Department at Boston University as an Assistant Professor in 2013.

