Physics
AT QUEENS COLLEGE

# Colloquium Notice


## Vinod. M. Menon

**Center for Photonics and Optoelectronic Materials (POEM)**
**Princeton University**


## *Photonic Integrated Circuits (PICs)*


In this talk, we will describe a photonic integration platform known as asymmetric twin guide (ATG), whereby any combination of waveguides, modulators, couplers, lasers, optical amplifiers, detectors, etc. can be "laid out" on a chip using CAD-based design to meet the requirements of a particular application. The designs are then realized on standard, non-regrown, epitaxial wafers followed by standard semiconductor fabrication processes. The integrated photonic devices have performance equal to discrete components. In this context, we will present our recent results on various monolithically integrated photonic circuits that have been developed in our group like all-optical wavelength converter based on Sagnac interferometer geometry, waveguide photodiode with integrated semiconductor optical amplifier, chip-scale demultiplexer using arrayed waveguide grating with integrated photodiodes, and microring resonators with integrated gain elements. Some novel physical phenomena observed in these integrated devices like non-reciprocity of counterpropagating signals in the Sagnac interferometer and control of quality factor and critical coupling in microring resonators will also be addressed. Finally, we will briefly discuss nano/micron-scale photonic circuits that will have possible applications in quantum information processing.


Monday
**March 1, 2004**
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326