

## EECS Announcement

## Razeghi Authors Technical Article in International Society for Optics and Photonics (SPIE)

January 10<sup>th</sup>, 2014



Manijeh Razeghi, Walter P. Murphy Professor, Director, Center for Quantum Devices (CQD) wrote a featured technical article, titled, "Quantum Cascade Lasers for IR and THz Spectroscopy," that was published December 16, 2013, on the International Society for Optics and Photonics (SPIE) website for her recent research on demonstrating increased power, spectral coverage, and tunability of quantum cascade lasers.

Prof. Razeghi's recent publication, focuses on how developing quantum cascade lasers (QCLs) with the highest power, efficiency, and tunability. Unlike traditional diode lasers, the QCL has a series of quantum wells, which split the usual electron bands into subbands. The QCL emits over several intersubband transitions in this structure. Her CQD team can engineer its optical response using quantum size effects, to achieve a highly variable emitting wavelength based on nanometer-scale control of the quantum well thickness: see Figure 1(a). They demonstrated room-temperature QCLs covering both the 3–16 $\mu\text{m}$  and 65–300 $\mu\text{m}$  wavelength ranges using an indium phosphide (InP) material system.

