

## Boston Chapter of the IEEE Photonics Society

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### Emerging Optical Materials Workshop

Wednesday, April 5, 12, 19, 26, May 3, 2017, 7:00–9:30 PM

Located at MIT Lincoln Laboratory – 3 Forbes Road, Lexington, MA 02420, USA

Wednesday  
April 12, 2017  
7 PM

#### Atomic Engineering of III-V Semiconductor for Quantum Devices from Deep UV(200nm) up to THZ(300 microns)

Prof. Manijeh Razeghi, Northwestern University, Evanston, IL

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**Abstract:** Nature offers us a full assortment of atoms, but nanoengineering is required to put them together in an elegant way to realize functional structures not found in nature.

A particular rich playground for nanotechnology is the so-called III-V semiconductors, made of atoms from columns III and V of the periodic table, and constituting compounds with many useful optical and electronic properties in their own right. Guided by highly accurate simulations of the electronic structure, modern semiconductor optoelectronic devices are literally made atom by atom using advanced growth technology such as molecular beam epitaxy and metal organic chemical vapor deposition to combine these materials in ways to give them new properties that neither material has on its own. Modern mastery of materials growth and characterization with the help of such techniques allows high-power and highly efficient functional devices to be made, such as those that convert electrical energy into coherent light or detect light of any wavelength and convert it into an electrical signal.

This talk will present the latest world-class research breakthroughs at Center for Quantum Devices (CQD) at Northwestern university, that have brought quantum engineering to an unprecedented level, creating light detectors and emitters over an extremely wide spectral range from 0.2 to 300 microns.

**Biography:** Manijeh Razeghi joined Northwestern University, Evanston, IL, as a Walter P. Murphy Professor and Director of the Center for Quantum Devices in Fall 1991, where she created the undergraduate and graduate program in solid-state engineering. She is one of the leading scientists in the field of semiconductor science and technology, pioneering in the development and implementation of major modern epitaxial techniques. Her current research interest is in nanoscale optoelectronic quantum devices. She has authored or coauthored more than 1000 papers, more than 30 book chapters, and 16 books. She holds 55 U.S. patents and has given more than 1000 invited and plenary talks. She received the IBM Europe Science and Technology Prize in 1987, the Achievement Award from the SWE in 1995, the R.F. Bunshah Award in 2004 and many best paper awards. Dr. Razeghi is an elected Fellow of SWE (1995), SPIE (2000), IEC (2003), OSA (2004), APS (2004) IOP (2005), IEEE (2005) and MRS (2008). And IBM teacher of excellence 2013, and the 2016 Jan Czochraiski Award. She is editor, associate, and Board member of many journals, including Nano Science and Nano technology.



#### Advance registration and fee required (Open to all IEEE members as well as non-members)

\$75/\$85 (IEEE Member/Non-Member) early registration fee for ten 1-hour talks over 5 nights; cost includes coffee and cookies each night, as well as downloadable copies of speakers slides. Early registration deadline March 31st, 2017. Post deadline fee \$85/\$95 (IEEE Member/Non-Member).

[Click here for registration](#)

*Onsite registration available*

For more information on the technical content of the workshop, contact either:

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