



Photonics Forum

February 23, 2016

11:45 a.m. -
1:15 p.m.

3rd Floor

Room 339

Photonics Center

8 Saint Mary's Street

Lunch will be served!



Photonics Faculty: Dr. Allison Dennis

Engineering 'Giant' Nanocrystal Quantum Dots (g-NQDs) for Biosensing and Bioimaging

The Semiconductor Quantum Dots (QDs) have been used extensively for applications in cellular imaging, biosensing, photovoltaics, and solid-state lighting. Despite successes with traditional cadmium selenide QDs, limitations persist because of the fluorescence intermittency (or blinking) of the QD emission, concerns about toxicity, and cross-talk due to broad, overlapping absorption spectra. Thick-shelled QDs, also known as 'giant' nanocrystal quantum dots (g-NQDs) exhibit emission and absorption spectra that can be tailored based on semiconductor composition, core size, and shell thickness. Through these advanced chemistries, we customize the QDs to applications including QD-QD fluorescence resonance energy transfer (FRET)-based biosensors and cadmium-free NIR emitters for multiplexed tissue-depth imaging.

Allison M. Dennis completed her B.S. in Bioengineering and B.A. in German from Rice University in 2002. From 2002-2003, she performed research in the Department of Pharmaceutical Technology at the Universität Regensburg in Bavaria, Germany as a Fulbright Scholar. Dr. Dennis earned her Ph.D. in Bioengineering from the Georgia Institute of Technology in 2009, followed by post-doctoral research in nanomaterials chemistry at the Center for Integrated Nanotechnologies at Los Alamos National Laboratory. In 2013, Dr. Dennis joined the Department of Biomedical Engineering and Division of Materials Science and Engineering at Boston University, where she is also a member of the Photonics Center and the Nanotechnology Innovation Center (BUNano). Dr. Dennis's research group uses advanced Quantum Dot chemistries for applications in fluorescent biosensing and biomedical imaging.



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