

# “BNC Seminar”

March 21st, 2016 @ 10:00am  
BRK, ROOM 1001

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**Title: Nanomaterials design for solar energy conversion and biomedical fluorescence imaging**

**Abstract:** Energy and healthcare are among the most significant global issues. Nanomaterials have exhibited tremendous opportunities to solve these issues by offering extraordinary electronic, optical, and biological properties unparalleled from bulk materials. I will demonstrate the benefits of rational design of nanomaterials by mainly focusing on the applications of nanostructured solar cells and second-window fluorescence biomedical imaging. For the nanostructured solar cells, both carrier collection and light harvesting of the devices are improved by an M13 bacteriophage-SWNT complex structure and several types of noble metal-based plasmonic nanomaterials. On the other hand, the second-window fluorescence imaging is an emerging biomedical imaging modality, which promises much deeper penetration for biological tissue to detect diseases at earlier stages than other optical modalities. The design of the imaging instrumentation capable of hyperspectral and diffuse imaging as well as the theranostic platform based on a wide range of second-window fluorescent nanomaterials will be discussed.