NANOMATERIALS SPEAKER SERIES

EXPLORING THE INTERFACES BETWEEN SILICON AND SOFT MATERIALS

April 28, 2017 at 12:30pm

CBB, Rm 106

Soft materials are complex, with unique characteristics and functionalities spanning multiple length scales. Silicon-based materials are typically rigid and their direct interfaces with soft materials still represent an area with many open questions and unknown opportunities. To enable new studies at these interfaces, it is however important to target the right organizational length scale. For example, in the case of sub-cellular organization, this length scale is on the order of tens to hundreds of nanometers. In this talk, I will present several soft material-enabled exploratory approaches for the syntheses and applications of nanostructured silicon. Some of these silicon materials are deformable and have been tested with extra- and intracellular components (i.e., extracellular matrix, cytoskeleton and phospholipid bilayer) with an initial emphasis on biomechanics and bioelectrics. In addition to providing new knowledge of nanoscale silicon-based chemistry, these studies will deepen our understanding of the fundamental limits of physical and biological signal transduction between subcellular components and synthetic systems. At the end of my talk, I will discuss future opportunities in materials chemistry toward seamless silicon-based biointegration.

Bozhi Tian

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SPEAKER BIO

Bozhi Tian received his Ph.D. degree in physical chemistry from Harvard University in 2010. His Ph.D. research with Professor Charles Lieber included new nanowire materials synthesis, the fundamental study of high performance nanowire photovoltaics and the application of novel nanowire devices in cells and tissue. He worked with Professors Robert Langer and Daniel Kohane as a postdoctoral scholar in tissue engineering. He is now an assistant professor at the University of Chicago, working on semiconductor-based cellular biophysics. Dr. Tian's accolades from his independent career include Presidential Early Career Awards for Scientists and Engineers (PECASE), 2016 NIH new innovator award, 2016 ONR young investigator award, 2016 Sloan fellowship, 2015 AFOSR young investigator award, 2013 NSF CAREER award, 2013 Searle Scholar award, and 2012 TR35 honoree.

Contact Professor Cunjiang Yu at cyu13@central.uh.edu if you would like to arrange for a time to meet with Dr. Tian.

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