The Johns Hopkins University
Whiting School of Engineering
Department of Electrical and Computer Engineering

Nanotechnology for Neural Interfaces

Seminar by
Professor Jacob Robinson
Rice University

Abstract:
Nanofabricated electronic, magnetic, and photonic devices can help us understand the brain by precisely reading and writing activity in individual neurons. In this talk I will describe some of our latest work to develop next-generation neural interfaces using technologies borrowed from the semiconductor industry and inspiration from the natural world. In particular I will describe integrated nanodevices that can perform high-throughput electrophysiology on individual cells and the nematode C. elegans.

Bio:
Jacob Robinson is an Assistant Professor in Electrical & Computer Engineering and Bioengineering at Rice University, and an Adjunct Assistant Professor in Neuroscience at Baylor College of Medicine. His research group uses nanofabrication technology to create devices that can manipulate and monitor neural circuit activity.

Dr. Robinson earned a B.S. in Physics from the University of California, Los Angeles and a Ph.D. in Applied Physics from Cornell University working with Michal Lipson. Upon completing his Ph.D. in 2008, Dr. Robinson joined Professor Hongkun Park’s research group in the Chemistry and Chemical Biology Department at Harvard University. As a postdoctoral researcher he helped develop arrays of vertical silicon nanowires that can penetrate the cellular membrane without affecting cell viability. His work at Harvard showed that vertical silicon nanowires can be used to deliver biomolecules into a cell and interrogate a cell’s internal electrical activity. His current research interests include nanoelectronic, nanophotonic and nanomagnetic technologies to manipulate and measure brain activity. Dr. Robinson’s work has been recognized by several agencies including the DARPA Young Faculty Award and the John S. Dunn Foundation Collaborative Research Award.

Tuesday, February 10, 2015
3p.m.
Sherwood Room-Levering Hall

Refreshments will be served at 2:45 pm

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