Electrical & Computer ENGINEERING

Carnegie Mellon University

Seminar

The DSN-I Seminar Series is hosted by the Device Science and Nanofabrication Initiative. DSN-I Seminars target researchers in micro and nanofabrication technologies or devices, with the goal of strengthening the user community of the new Scott Hall nanofabrication facility and other shared infrastructure.

State of the Nanofab

Prof. Gianluca Piazza | Faculty Director

Dr. Matthew T. Moneck | Executive Manager

December 13, 2017 | 12:00 - 1:30pm | Scott Hall 6142

Seminar abstract

As a premier multidisciplinary, open, and shared research lab, the Carnegie Mellon Nanofabrication Facility, or Nanofab, is a nanomanufacturing hub that plays a vital role in major research thrusts for the College and the University, namely in Information Technology, Internet of Things, Energy, and Life Sciences. The Nanofab serves a broad community at Carnegie Mellon and beyond, providing equipment, services, and process support for the invention, synthesis, and fabrication of new materials and devices in the areas of magnetics and spintronics, MEMS and NEMS, optics and photonics, functional oxides, 2-dimensional materials, bioelectronics, and much more. This talk will focus on the current state of the Nanofab as it relates to both research, equipment capabilities and user interface. In particular, we will highlight the transformative impact that the new Claire and John Bertucci Nanotechnology Laboratory will have for the CMU community and the region. The new facility will play a critical role in facilitating housing of cutting-edge nanomanufacturing equipment as well as creating new synergies and means for research collaboration across campus. We will discuss these new capabilities and some of the future initiatives we would like to purse to revolutionize nanoscale science and engineering within Carnegie Mellon and the region.

Speaker bio

Gianluca Piazza is a Professor in the Department of Electrical and Computer Engineering at Carnegie Mellon University. He also holds a courtesy appointment in the Department of Mechanical Engineering. Prior to joining CMU he was the Wilf Family Term Assistant Professor in the department of Electrical and Systems Engineering at the University of Pennsylvania. His research interests focus on piezoelectric micro and nano electromechanicalsystems (M/NEMS) for RF wireless communication, optomechanics, chemical/biological detection, and all mechanical computing. He also has a general interest in the areas of micro/nano fabrication techniques and integration of micro/nano devices with state-of-the-art electronics. He has more than 10 years of experience working with piezoelectric materials and devices. He holds several patents in the field of micromechanical resonators some of which have been acquired by industry. He received the IBM Young Faculty Award in 2006 and has won, with his students, the Best Paper Award at the IEEE Frequency Control Symposium in 2008, 2009, 2011 and 2013, and at the IEEE Ultrasonic Symposium in 2012. He serves as an associate editor for the IEEE Journal of MicroElectroMechanical Systems (JMEMS).

Matt Moneck received his B.S. in Physics from Allegheny College in 2000 and his M.S. and Ph.D. in Electrical and Computer Engineering from Carnegie Mellon University (CMU) in 2002 and 2008 respectively. Between 2008 and 2012, he held the position of Postdoctoral Fellow in the Data Storage Systems Center (DSSC) within the Department of Electrical and Computer Engineering (ECE) at CMU. In 2012, Matt was appointed as a Research Scientist in ECE. His research focused on the fabrication, testing, and development of spin dependent magneto-electronic devices including magnetic logic, spin torque oscillators and magnetoresistive random access memory (MRAM), as well as bit patterned media for magnetic recording. In addition to research, Matt served as a staff member and process advisor in the Carnegie Mellon Nanofabrication Facility for more than 2 years. Starting in March of 2015, he moved to the position of Executive Manager of the Carnegie Mellon Nanofabrication Facility where he now responsible for all aspects of Nanofab operation.

Seminar notes: Lunch will be served.