



Seminar Experience

ELECTRICAL & COMPUTER ENGINEERING

Friday, February 20

FIU Engineering Center

11:00 am - 12:00 pm

EC Room # 1105

www.ece.fiu.edu



*“Advancing Fundamental Knowledge and
Clinical Therapies by Developing and Applying
Novel Micro/Nanotechnologies with
Multidisciplinary Teams”*

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ABSTRACT

In this seminar I will describe the vision of my institute, the Nanoscience Institute for Medical and Engineering Technology (NIMET) to bridge the scientific, engineering, and medical communities at the University of Florida by revealing, enabling, focusing, and coordinating related research and educational activities.

The ability to advance fundamental knowledge about science, engineering, and medicine, and the ability to translate those insights into real-world impacts on the economic and medical well being of individuals and society at large, are greatly enhanced by the emergence and use of micro-electro-mechanical systems (MEMS) and nano-electro-mechanical systems (NEMS) technologies. The continued development of MEMS and NEMS technologies make it increasingly possible to realize sensing systems that quantify, and actuator systems that manipulate, physical parameters at unprecedentedly small size scales and high resolutions. Furthermore, the batch-fabrication processes used to produce MEMS and NEMS can often enable large-scale production of low-cost units. As an example, I will describe research from my own lab that was developed to push the limits of MEMS technology and performance, was commercialized to advance computer networks, was adopted by NASA as a critical element in the James Webb Space Telescope (the successor of the Hubble Space Telescope known), and has the potential to help treat a debilitation symptoms of a common brain disease.

Despite the tremendous opportunities, it can be very challenging to effectively bridge all of the communities needed to be successful and to maintain financial support for the duration required without over promoting the effort. For medical applications, challenges exist for all parties involved, including funding agencies, technology developers, clinical demonstrators, outcome evaluators and regulators, commercializers, and reimbursers. In this presentation I will illustrate some opportunities and challenges that exist for microscale and nanoscale technology to advance fundamental understanding of the nervous systems and to improve the clinical therapies of brain, spinal-cord, and peripheral-nervous-system injuries and diseases.

Time permitting, I will also convey some lessons learned from my time as a Program Manager at DARPA. Specifically, I will briefly describe how DARPA works and how to work with it in order to make a difference.