

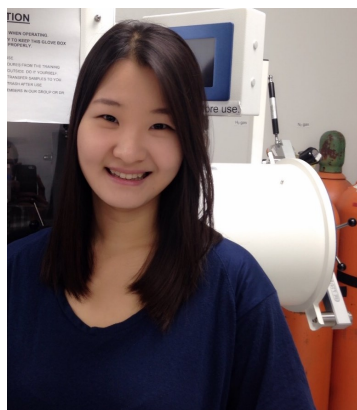


UNIVERSITY OF CENTRAL FLORIDA

NANOSCIENCE TECHNOLOGY CENTER

GRADUATE RESEARCH SEMINAR SERIES

Fabrication and Electronic Charge Injection and Transport in Organic Field-Effect Transistors (OFETs) using Graphene Electrodes



Narae Kang (12 – 12:30PM) - Dr. Saiful Khondaker's Group

Abstract: Organic field-effect transistors (OFETs) are of tremendous attentions due to their easy-process, low-cost, light-weight as well as their potential applications in flexible and transparent electronics. However, two major challenges in fabricating high-performance of OFETs are remained: (i) a large interfacial contact resistance forming between the metal electrodes and organic semiconductors (OSC) and (ii) morphology of the semiconducting channel materials which is dominated by grain boundaries, thereby causing inefficient charge transport. To overcome the challenges, graphene, a two-dimensional (2D) one-atom thick and hexagonal carbon atom structure, has been suggested as a promising electrode material for OFETs owing to its extraordinary electronic properties and strong π - π interaction with OSC which could reduce the injection barrier. We will present the fabrication and detailed electronic transport properties of OFETs using graphene electrodes.

**Friday
October 24th,
2014**

12:00 — 1:00PM

**NSTC
Conference Room**

Photo-reduction of Redox Active Nanoparticles in Presence of Dextran: An Attempt in Understanding the Storage and Handling of Nanoparticles

Swetha Barkam (12:30-1PM) - Dr. Sudipta Seal's Group

Abstract: Nanoparticles have proven to be novel material with resourceful applications in the field of nanomedicine. The physiochemical changes of reactive nanoparticles due to unsafe storage and handling are poorly documented, which pose an important issue in terms of stability and longevity to achieve sustainable use. Cerium oxide nanoparticles (CNPs) coated with dextran (Dex-CNPs) have proven to exhibit anticancer properties which is attributed to the ability of CNPs to change the oxidation states mediated at the oxygen vacancies. In this study, the extreme sensitivity of Dex-CNPs to visible light has been demonstrated with a clear indication of photo-reduction of CNPs in presence of dextran which is further confirmed through a systematic time based expedited study using a high powered xenon lamp. The physiochemical changes due to light exposure such as dispersion stability, surface chemistry, bioactivity, cytotoxicity and the microenvironment of CNPs in dextran have been significantly altered, thereby influencing the diversity in biological response. Through this study it has been demonstrated that the precise safe storage and handling of nanoparticles is a foremost concern to preserve and sustain its properties.

Pizza and drinks will be provided

