

NANO HOUR

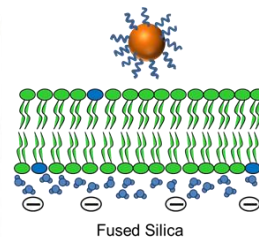
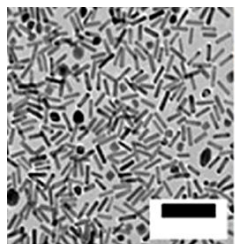
Wednesday, April 2, 2014 3:00 pm
Beckman Institute - Room 3269

Functionalized Gold Nanoparticles as Probes to Investigate the Connection between Nanoparticle Surface Chemistry and Biocompatibility

Dr. Sam Lohse, Chemistry

Postdoctoral researcher with Professor Cathy Murphy

Understanding the nature of nanomaterials' interactions with biological systems is essential for informing the design of nano-enabled therapeutics, predicting the potential environmental implications of nanomaterial contaminants, and developing a sustainable nanotechnology industry. Here, we discuss the synthesis of functionalized gold nanoparticles (AuNPs) with various physiochemical properties (size, shape, and surface chemistry), and describe how these functionalized NPs can be used as probes to investigate the behavior of functionalized NPs in biological systems. Specifically, we describe how studies into the interactions of 4.0 nm functionalized AuNPs with biological systems at different levels of complexity (simulated cell membranes, cell cultures, and whole organisms) reveal the importance of NP surface chemistry in governing their biological interactions. We find that nanoparticle surface charge is particularly important in influencing nano-bio interactions. For instance, AuNPs displaying positively-charged ligands show very different biological interactions (greater affinity for cellular membranes, higher acute toxicity in organisms, etc.) than their neutral or negatively-charged counterparts.



Coffee and cookies will be served
<http://nanohour.beckman.illinois.edu>