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Department of Chemistry

Seminar

9:45 a.m. Thursday, September 26, 2013 • 331 Smith Hall



Associate Professor

Christy Haynes

Department of Chemistry
University of Minnesota

Nanoparticle Toxicity and Therapeutics

Research interests: applications of analytical chemistry in the fields of immunology and toxicology, and nanotoxicology, investigating the biological and ecological impacts of engineered nanomaterials.

Website: <http://www.chem.umn.edu/groups/haynes/>

Abstract

Engineered nanoparticles are found in many everyday products and hold great potential as therapeutic agents. Accordingly, it is critical to consider how engineered nanoparticles interact with physiological and ecological systems. The Haynes lab focuses on functional assessment of immune cell or bacterial cell behavior following exposure to noble metal and metal oxide nanoparticles. Functional considerations include cell delivery of chemical messengers, production of reactive oxygen species, and gene expression, among others. The goal of this work is to discover critical nanoparticle features that determine cellular toxicity and then redesign nanoparticles to minimize unintentional toxicity. In parallel, the Haynes group is focused on designing a nanoscale therapeutic platform based on core-shell mesoporous silica nanoparticles. Their high drug loading capacity, easy surface functionalization, and good biocompatibility position these nanoparticles to have a broad clinical impact. Together these two topics encapsulate the Haynes groups' viewpoint that engineered nanoparticles can be made safely and sustainably to have significant societal benefits.

Refreshments will be served prior to the seminar.