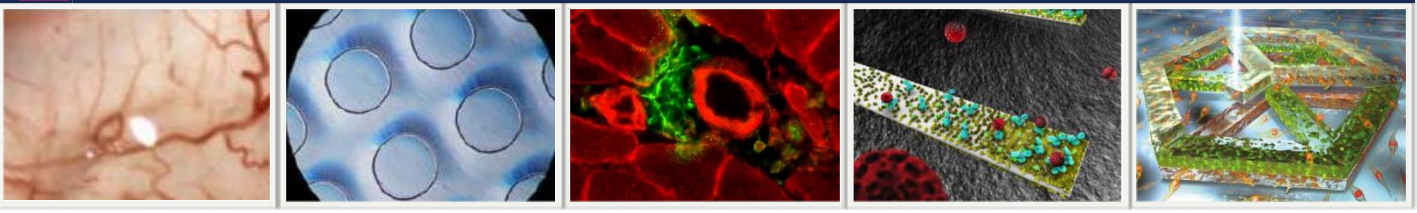
BioNanotechnology Seminar Series

Spring 2011



Iron-Mediated Lipid Peroxidation and Lipid Raft Disruption in Low-Dose Silica-Induced Macrophage Cytokine Production

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Date: **Tuesday, May 24, 2011**

Time: **12:00 – 1:00 p.m. CDT**

Location: **1000 MNTL**
(live via videoconference)

Abstract:

Over the past two decades, an increasing number and variety of microscale and nanoscale materials have been developed for medical diagnostics and therapeutics, as well as for a multitude of technological and consumer applications. However, many questions still remain as to their toxicity, due to both the variety of materials properties that may lead to toxicity (e.g. phase, size, surface chemistry, contaminants, and agglomeration) and incomplete characterization of these properties for cellular and whole animal studies. A lack of understanding of toxicity mechanisms further complicates the effort to understand which materials properties are of concern and how they can be controlled to minimize toxicity. Here, we present results from our investigations of the pro-inflammatory effects of silica particles on alveolar macrophages. Of particular note in this work is the use of sub-lethal doses that approximate a more realistic exposure scenario compared to most studies published in the literature, and testing of a novel hypothesis for an iron-mediated mechanism for silica particle-induced pro-inflammatory effects. Specifically, we studied the role of particle size and iron, a common contaminant in natural and engineered micro/nanophases, in lipid peroxidation-dependent transcription of cytokines in THP-1 macrophages induced by well-characterized silica particles.

Seminar Presented by:

Center for Cellular Mechanics
University of Illinois at Urbana-Champaign

IGERT Integrative Graduate Education and Research Traineeship
Cellular and Molecular Mechanics and BioNanotechnology

M-CNTC NCI Alliance for Nanotechnology in Cancer
Midwest Cancer Nanotechnology Training Center

CNST University of Illinois Center for Nanoscale Science and Technology