



UNIVERSITY OF MINNESOTA
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Department of Chemistry

Seminar

9:45 a.m. Thursday, September 18, 2014 • 331 Smith Hall



Associate Professor

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Nanoparticles in Reactive Liquid Media

Research focus involves bridging the gap between the nanometer-length scale and the chemical and physical behavior of nanocrystalline materials. We aim to link chemical reactivity with specific microstructural features of both natural and synthetic nanoparticles.

Website: <http://www.chem.umn.edu/directory/faculty.lasso?serial=1222>

Abstract

Crystal growth, dissolution, and reactivity are central to a broad range of fields, from inorganic chemistry to catalysis, from materials synthesis to geochemistry and mineralogy. Crystals can serve as reactive agents in a wide variety of natural and engineered systems as well as proxies in the geologic record. Crystals often grow by a combination of mechanisms, and controlled crystal growth can lead to materials with controlled size, shape, and microstructure. For example, oriented attachment, a particle-mediated crystal growth mechanism that can lead to symmetry-defying morphologies and the incorporation of defects, typically occurs with concomitant growth by dissolution and reprecipitation. Solution conditions such as pH, ionic strength, solubility, the presence of chelating or other reactive agents, temperature, and more can dramatically influence the crystal growth, dissolution, and reactivity. Research in the Penn group focuses on green materials synthesis, nonclassical crystal growth, and nanoparticle reactivity in liquid media. The group employs a wholistic suite of characterization techniques to advance fundamental knowledge of how nanocrystals behave in reactive systems.

Refreshments will be served prior to the seminar.