

# Mechanical Engineering Department Seminar

3:30pm March 21, 2011  
1130 Mechanical Engineering

## Understanding the High Temperature Reactivity of Nanoparticles for Energy Applications

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The high temperature reactivities of metals and metal oxides are important in a wide variety of industrial applications including solar-thermal hydrogen generation, CO<sub>2</sub> sequestering, chemical-looping combustion, and energetic materials, among others. In this seminar I will discuss the reactivity of nanometals and metal oxides, towards developing a conceptual picture of rate limiting and phenomenological processes, in particular for application to energetic materials. This discussion will naturally lead to what makes nanoscale materials attractive for these applications, as well as some of their limitations.



**Bio** Professor Zachariah is the founding Director of the University of Maryland/NIST Center for NanoManufacturing and Metrology. He has published extensively on the metrology of nanoparticles in both the liquid and aerosol phases. This includes the development of new mass spectrometry and ion mobility methods to characterize nanoparticles and their reactivity.