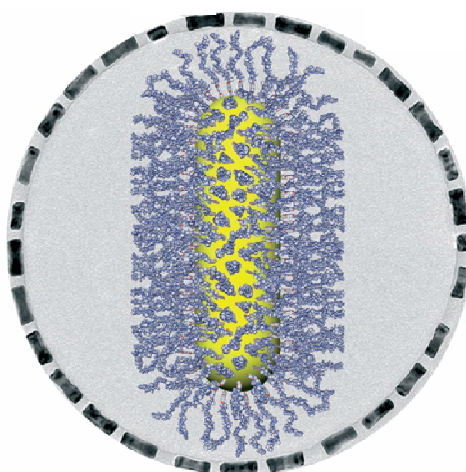


# NANO HOUR

Wednesday, November 28, 2007  
3:00 PM, Beckman Institute - Room 3269

## Synthesis and Self-Organization of Hybrid Nanocrystals

Professor Eugene Zubarev  
Rice University, Department of Chemistry



This presentation will describe the synthesis of inorganic nanocrystals and their covalent functionalization with organic molecules. Specifically, the preparation and anticancer activity of taxol-coated nanoparticles with a well-defined number of drug molecules will be discussed. In another example, one-dimensional core-shell structures are synthesized via covalent attachment of polymer chains to thiol-functionalized gold nanorods. The presence of the polymer shell and its high grafting density render large inorganic nanocrystals ( $MW \approx 10^8$  g/mol) soluble in many organic solvents. When chloroform solutions of hybrid gold nanorods are dried on solid substrates, the nanocrystals undergo spontaneous self-organization into ring-like arrays. Our investigation revealed that the rings of rods are templated by water microdroplets that condense from the air due to evaporative cooling of organic solvents. The size of rings can be controlled if monodisperse water droplets are used as soft templates. This method was found to be highly versatile and can be used for the preparation of ring-like assemblies of inorganic nanocrystals regardless of their size, shape, and chemical composition.

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