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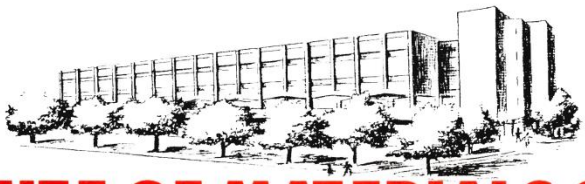

INSTITUTE OF MATERIALS SCIENCE

POLYMER PROGRAM SEMINAR

"Harnessing Synergies at the Interface of Polymers and Inorganic Nanomaterials"

Dr. Jie He
University of Connecticut

Friday, March 31, 2017
11:00 AM, IMS Room 20

ABSTRACT

Integration of polymers and inorganic materials as a powerful tool can produce hybrid materials having enriched chemistries of polymers and functionalities of inorganic materials. Harnessing such synergies at the interface of polymers and inorganic nanomaterials has created numerous useful materials in the plastics industry, *e.g.* fiber reinforced composites and filled rubbers. Our group works on developing new synthetic methodologies of hybrid polymer/inorganic nanomaterials with well-defined chemical compositions, nanostructures and synergetic functionalities. We seek to understand the role of polymers in tuning the interface of hybrid materials in order to control the catalytic properties of inorganic nanomaterials. My talk will show our recent effort on, i) the development of new synthetic methods to prepare polymer-tethered nanoparticles and explore the role of polymer tethers in the self-assembly of nanoparticles in solution and solid states; and ii) control over the electronic properties and accessibility of nanoparticles or metal ions that are incorporated in polymer frameworks. I will introduce the concept of polymer-tethered nanoparticles and the application of hybrid building blocks to prepare highly crystalline mesoporous oxides. The add-on functionality of metal nanoparticles to hybrid materials will be deliberated in the context of photocatalysis. The incorporation of metal ions within polymeric frameworks as functional metallopolymers to mimic natural metalloenzymes will be discussed at the end.

**For further information, please contact YoungHee Chudy at younghee.chudy@uconn.edu* or 860 486 3582.

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