



Northeastern University

College of Engineering

Please join us for a
Special Chemical Engineering Seminar

Wednesday, February 5, 2014
320 Shillman Hall
11:45 a.m. – 1:00 p.m.

“Assembling Nanoclusters in Water for Therapy or Imaging”

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ABSTRACT



Nanometer-scale particles suspended in a fluid can self-assemble into different structures depending on the nature of their effective interparticle interactions. In many cases, these interactions are tunable via physical or chemical modification of the particle surfaces or changes in the composition of the suspending solvent. For example, fluid dispersions of particle clusters can result from a balance between short-range interparticle attractions and longer-range repulsions. In this talk, we explore how the ability to tune these interactions to reversibly assemble and dissociate such clusters suggests novel solutions to technological challenges in drug delivery and other biomedical applications. We will explore how assembly of therapeutic proteins, guided by basic principles of polymer physics and colloid science, can help facilitate creation of low-viscosity, high-concentration formulations appropriate for at-home treatment of disease via subcutaneous injection. We will also discuss how similar ideas can be used to create gold nanoparticles of tunable size of interest for biomedical imaging.

BIOGRAPHY: Prof. Thomas Truskett is Department Chair, Les and Sherri Stuewer Endowed Professor, and Bill L. Stanley Leadership Chair in the McKetta Department of Chemical Engineering at The University of Texas at Austin. His research group studies how interfaces and confinement impact the properties of molecular liquids and crystals, colloidal and nanoparticle suspensions, protein solutions and glassy solids. He earned Bachelor of Science and Doctoral degrees in chemical engineering from UT Austin (1996) and Princeton University (2001), respectively, and he was a postdoctoral fellow in biophysics at UCSF (2001-2002). Truskett is recipient of the 2014 O'Donnell Award in Engineering from The Academy of Medicine, Engineering & Science of Texas, the 2007 Allan P. Colburn Award from the American Institute of Chemical Engineers, an Alfred P. Sloan Research Fellowship, a Packard Foundation Fellowship in Science and Engineering, and the National Science Foundation's CAREER Award.

Refreshments will be served.