

Department of Physics & Astronomy

**Dr. Thomas Truskett**

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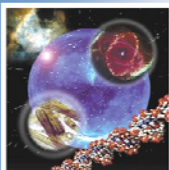
**Friday, September 6, 2013**

**3:00 p.m. - 4:00 p.m.**

**AET 0.102**

### **Assembling Nanoclusters in Water for Diagnostics & Therapy**

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.



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