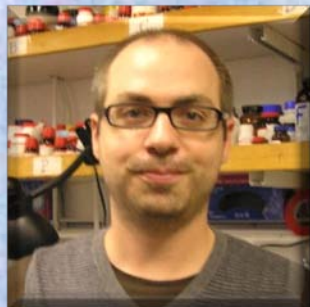


The 260th MANA Special Seminar



The Importance of Packing: Manipulating Light and Matter at the Nanoscale for Chemical and Biochemical Sensing

Chair: Dr. Takayoshi Sasaki (MANA PI)

Dr. Joel Henzie

(Department of Chemistry, University of California, Berkeley, USA)

Understanding how 3D shapes pack into extended arrangements is integral to the design and discovery of crystalline materials at all length scales. Much progress has recently been made in enumerating and characterizing the packing of polyhedral shapes, and the self-assembly of polyhedral nanocrystals into functional materials. However, directing the self-assembly of anisotropic particles into ordered superstructures and especially densest packings requires precise control of particle shape, polydispersity, interactions and driving forces. In this talk I will describe three major results along this research front: Silver polyhedra can behave as hard particles and self-assemble into their conjectured densest packings. These large-scale superstructures have interesting optical properties and can be used as plasmonic metamaterials. Polymer surfactants enable angstrom-level control of nanoscale interparticle gaps. Ag nanocrystal assemblies with precisely controlled gaps can focus light by surface plasmon resonances, creating an optimal platform for chemical sensing. And label-free sensing of biomolecular interactions using model plasmonic cells. Metal particles surrounded with fluidic lipid membranes are inexpensive nanosensors for rapidly assessing protein interactions at the biomembrane interface.

Venue: Auditorium, 1F, WPI - MANA Building

Date: May 15th, Tuesday Time: 15:30-16:15

Contact: International Center for Materials Nanoarchitectonics (MANA), Nakata (ex. 8806)

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