



SPECIAL SEAS SEMINAR

MONDAY, FEBRUARY 23RD

11:00 AM IN MD 119

Plasmons to Proteins: Self-Organized, Tunable Optical Materials

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Hierarchical assembly is critical for the rational design of functional nanoscale materials. In the first part of this talk, I will demonstrate how silver nanocrystals and nanowires are used as building blocks for the bottom-up fabrication of plasmonic materials. Nanoscale organization using Langmuir-Blodgett compression is used to construct 1-D and 2-D assemblies with impressive alignment over large areas. These plasmonic lattices are demonstrated as promising platforms for photonics, spectroscopy, and chemical sensing.

Nature provides endless examples of hierarchically organized, responsive materials from which we can learn fundamental design principles. In the second part of this talk, I will discuss the role of protein self-assembly in squid iridophores. Iridophores are specialized light-reflecting organelles found in cephalopod (squid, octopus, cuttlefish) skin tissue that display structural color. Aligned protein nanoplates within iridophores serve as Bragg reflectors and, unlike other creatures, squid control this color response based on biochemical signaling at the cellular level.