A FRIDAY SYNTHESIS SYMPOSIUM PRESENTATION:
Kinetic Control of Core/Shell Nanoparticle Heterostructures and Nanoplatelets using Thio- and Selenoureas

Speaker: Leslie Hamachi (Owen)
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Where: 209 Havemeyer

Abstract

We have developed a library of cyclic thione and selenone precursors to synthesize highly fluorescent core/shell nanocrystals in a single step. This expands upon recent thiourea, selenourea, and thiocarbonate precursor development in the Owen Lab, which for the first time controlled nanocrystal size via precursor selection instead of halting a reaction early. In this work, we combine two precursors with well-defined conversion kinetics yielding highly reproducible core/shell or alloyed nanocrystal products. Additionally, we have extended the utility of this method towards the synthesis of 2D nanoplatelets and more complex 3D CdS/CdSe/CdS spherical quantum well structures for solid state lighting applications.