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Department of Chemistry

Seminar

9:45 a.m. Thursday, April 9, 2015 • 331 Smith Hall



Associate Professor

Richard Brutchey

Department of Chemistry

University of Southern California, Los Angeles

An Alkahest for Chalcogenide Semiconductors: Solution Processing of Insoluble Bulk Materials

Research interests: developing new synthetic routes to compositionally complex inorganic nanocrystals and thin films using low-temperature, high yielding, and scalable methods, and is subsequently studying the growth mechanisms, structure, and functional properties of these materials.

Website: <http://chem.usc.edu/faculty/Brutchey.html>

Abstract

The ability to solution deposit semiconductor thin films has received a great deal of recent attention as a way to potentially lower costs for many optoelectronic applications; however, most bulk semiconductors are totally insoluble in common solvents. Here, we describe a novel and relatively nonhazardous binary solvent mixture that possesses the remarkable ability to rapidly dissolve a wide scope of bulk chalcogenides at room temperature and atmospheric pressure. After solution deposition (by spin coating, dip coating, or spray coating) and mild annealing, the chalcogenides can be fully recovered as good quality, phase pure, and highly crystalline thin films with negligible organic content. We will discuss the nature of these dissolved chalcogenides, in addition to their application as ligands and precursors for semiconductor nanocrystals.

Host: Valerie Pierre

Refreshments will be served prior to the seminar.