

# Materials Chemistry Seminar

Prof. Richard Brutchey

Univ of Southern CA & Ctr for Energy Nanoscience

Thursday, Oct. 27 at 12:15 p.m.

Room 1315 Chemistry

*“New Routes to Functional Nanocrystals for Solar Energy Conversion and Energy Storage”*

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Functional inorganic nanocrystals are a potential component in next-generation, high performance alternative energy technologies; however, there is a need to develop rational methodologies for the synthesis of inorganic nanocrystals using less energy intensive conditions. Aside from lower cost and ease of scalability, low-temperature solution-phase reactions offer the potential of kinetically controlled pathways to nanocrystals with morphologies, crystal structures, and/or compositions that are different from those derived from thermodynamically controlled pathways. We developed two methods for the low-temperature synthesis of functional nanocrystals for use in solar energy conversion and energy storage. In the first method, a general, low-temperature route to semiconductor nanocrystals for photovoltaic applications has been successfully devised using thermally (and photolytically) unstable dialkyl dichalcogenide reagents. We are focusing on nontoxic semiconductors comprised of earth abundant elements to incorporate into solution-processed photovoltaics as an inexpensive means of collecting solar energy. Our second low-temperature synthesis method is . . . **Attend the seminar to find out this vital piece of information!**