**"The Synthesis and Coordination Chemistry of Colloidal Quantum Dots"**

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**Abstract:** I will describe our studies of nanocrystal nucleation and growth and surface coordination chemistry. First, I will present a library of derivatized thiourea and selenourea precursors whose wide range of reactivity adjusts the metal chalcogenide formation kinetics. Using this library, we control the concentration of nanocrystals using the conversion reactivity, and can prepare red-emitting quantum dots with > 90% PLQY in a single vessel. Second, I will describe the important relationship between nanocrystal coordination chemistry and electronic structure. Using NMR spectroscopy we have characterized a variety of ligand binding and exchange mechanisms and evaluated the relative affinities of donor types. The importance of the nanocrystal stoichiometry to the binding motifs and surface electronic structure will be discussed.

**Bio:**Jonathan Owen obtained a BS from the University of Wisconsin-Madison in 2000 and a PhD from Caltech with John Bercaw in 2005. Following his PhD, he joined the lab of Professor Paul Alivisatos at UC Berkeley. In 2009 he joined the faculty at Columbia University where he is currently Associate Professor of Chemistry. His group studies the coordination chemistry of colloidal semiconductor nanocrystals, as well as the mechanism of nanocrystal nucleation and growth. Jon has received several awards for his work including: The 3M Nontenured Faculty Award (2010); The Early Career Award from the Department of Energy (2011); The DuPont Young Faculty Award (2011); A Career Award from the National Science Foundation (2012); The Award in Pure Chemistry from the American Chemical Society (2016).

