

Using Precursor Libraries to Control Nanocrystal Properties

Mark P. Hendricks | Whitman College

Nanocrystal reactions are often controlled by changing the reaction conditions: time, temperature, reagent concentrations and ratios; or through the addition of Lewis acids or bases that influence the reaction. While effective, these changes often affect multiple reaction parameters and therefore make it difficult to isolate which variable of the reaction caused a change to the nanocrystal properties. One method to avoid this complication is to use a library of similarly-structured precursors that undergo the same mechanism, where the structural differences of the precursors influence the nanocrystal reaction in a systematic way. This enables rational control over nanocrystal properties and supports studies that correlate how and why the structural differences of the precursors impact the nanocrystal properties. This talk will highlight the use of precursor libraries to synthesize a variety of nanocrystals, including substituted thiourea and single-source precursors for controlling the formation of metal sulfide nanocrystals