

85g Solution Phase Synthesis of Metal Multipods [Invited]

Xiaowei Teng, Sean Maksimuk, and Hong Yang

Branched nanocrystals are important building blocks for making complex three-dimensional (3D) nanostructures through the self-assembly process. Such 3D structures are directly relevant to the fabrication of multiple-terminal nanodevices and as active components in new photovoltaic devices. Recently, we have demonstrated the feasibility of making platinum multipods from platinum 2, 4-pentanedionate ($\text{Pt}(\text{acac})_2$) in diphenyl ether using silver acetylacetonate ($\text{Ag}(\text{acac})$) to trigger the anisotropic growth of Pt nanocrystals. In this presentation, I will discuss our latest results on the formation of branched Pt nanocrystal through the controlled heterogeneous nucleation and growth process and the strategies of controlling the aspect ratios of the arm in the multipods by using the capping agents and via the tuning of growth kinetics. The formation of other morphologies of Pt nanocrystals will also be discussed. The catalytic properties of these Pt nanostructures will be presented.