

Fabrication and Applications of Heterogeneous Nanocrystals and Nanocomposites

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Heterogeneous nanocrystals, such as bimetallic nanoparticles or nanocomposites, possess special properties compared to homogeneous ones. These specific properties of heterogeneous nanocrystals/ nanocomposites are influenced not only by the intrinsic properties of the components of heterogeneous nanocrystals/nanocomposites, but also by the extrinsic properties of the components of heterogeneous nanocrystals (such as synergistic effect). Therefore, heterogeneous nanocrystals and nanocomposites with desired properties can be obtained by controlling their components and their interactions.

Here, several heterogeneous nanocrystals and nanocomposites were fabricated by different synthetic techniques, such as wet-chemical, surface modification, layer-by-layer deposition, and self-assembly, which can be used in various applications due to their special properties, such as bicomponent nanocrystal/MOF-nanocrystal for catalysts/photocatalysts, dimer nanojunctions for sensing, and plasmonic nanocrystal-emissive material composite for photoluminescence devices.