Colloidal Synthesis and Characterization of Luminescent Inorganic Nanocrystals

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Colloidal nanocrystals are widely used in various applications such electronic devices, phosphors, lasers, magnets, and catalysts. The synthesis of highly uniform nanomaterials with controlled size, shape, and compositions is paramount to precisely understand their size—, shape—dependent physical and chemical properties. Here, I will describe novel materials chemistry to synthesize metal oxide and perovskite nanocrystals with precise control of the size and shape, and to engineer their optical properties. In addition, optical, structural, and photoluminescent properties of size— and shape—controlled nanocrystals are investigated.