

Size-controlled synthesis and optical properties of doped nanoparticles prepared by soft solution processing

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Abstract

In this review, we outline the synthesis and luminescence properties of metal-ion-incorporated doped nanoparticles and surface-passivated doped nanoparticles. The synthetic routes we describe are limited to those involving soft solution processing. The doping effects are discussed in this review on the semiconductor nanoparticles confining the size range near to the 'quantum dot size.' The effects on luminescence with respect to ionic valance of dopants and the luminescence phenomena on mismatching of ionic radii between the host-guest are also provided. In addition, we discuss the role of passivated organic surfactants and the necessity of surface passivation of doped or undoped nanoparticles with other semiconductor materials that possess larger band gaps. Bio- compatible semiconductor nanoparticles and some of their applications are also mentioned briefly.