

水相中CdSe与核/壳CdSe/CdS量子点的制备与发光特性研究

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摘要 以巯基乙酸为稳定剂在水相中制备了CdSe与核/壳型CdSe/CdS量子点水溶胶, 用紫外-可见吸收光谱和发射光谱研究了它们的发光特性, 并且用X射线粉末衍射(XRD)、透射电镜(TEM)和X射线光电子能谱(XPS)表征了它们的结构、形貌和化学组成, 结果表明使用该方法制备的量子点分散性良好, 而且用CdS对CdSe进行表面修饰以后的发光强度明显提高, 发射光谱和吸收光谱都有红移现象, 不同粒径颗粒的吸收峰的位置也有所不同.

关键词 [量子点](#) [水相](#) [制备](#) [表征](#)

分类号

Preparation and Luminescent Properties of CdSe and Core-Shell CdSe/CdS Quantum Dots in Aqueous Solution

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Abstract CdSe and core/shell CdSe/CdS quantum dots (QDs) were prepared in aqueous solution by using mercapto-acetate acid as stabilizer. Their luminescence characterization was studied by UV-Vis absorption and emission spectra. The nanocrystals were characterized by

X-ray powder diffraction (XRD), transmission electron microscope (TEM) and X-ray photoelectron spectroscopy (XPS), which were used to characterized their structure, shape and composition. The results indicated that the quantum dots synthesized with this method possessed better dispersibility, as well as the intensity of luminescence of the quantum dots modified the surface was enhanced greatly and the red shift was shown in the emission and absorption spectra. The position of absorption peak was different with the different quantum dots' sizes.

Key words [quantum dots](#) [aqueous solution](#) [preparation](#) [characterization](#)

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