

研究论文

微波辅助合成发光可调ZnS:Cu纳米晶

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摘要 以巯基丙酸(MPA)为稳定剂, 利用微波辐射加热方法制备了水溶性的Cu掺杂的ZnS纳米晶. 通过改变微波条件, 可以在460~572 nm之间实现对ZnS:Cu纳米晶发射峰位的连续调控. 通过XRD、UV-Vis、荧光及荧光衰减对ZnS:Cu纳米晶的结构和发光性质进行了详细探索, 并利用时间分辨荧光光谱对其发光机理进行了初步研究.

关键词 [纳米晶](#) [掺杂半导体](#) [微波合成](#) [发光](#)

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Microwave Assisted Synthesis of Emission-tunable ZnS:Cu Nanocrystals

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Abstract Copper doped ZnS(ZnS:Cu) nanocrystals were synthesized by using MPA(3-mercaptopropionic acid) as the stabilizer under microwave irradiation. XRD, UV-Vis and photoluminescence measurements were employed to study the crystal structure and optical properties of the ZnS:Cu nanocrystals respectively. It was found that by varying the microwave irradiation conditions, the size of nanocrystal could be changed and the luminescence could be tuned continuously within the range from 460 to 572 nm. The photoluminescence properties of ZnS:Cu were clarified by considering the quantum size effect.

Key words [Nanocrystal](#) [Doped semiconductor](#) [Microwave synthesis](#) [Photoluminescence](#)

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