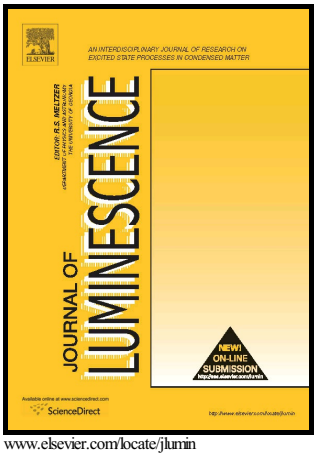

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Completely quenching of the trap states emission of CdSe QDs by CdS/ZnS shell growth using a one pot photochemical approach and application for dye photo-degradation

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Abstract

In this research CdSe QDs was grown by microwave activated approach. Then using UV-sensitivity of TGA, CdS shell was grown on the CdSe cores and subsequently ZnS was shelled on the CdSe/CdS QDs. Synthesized QDs were characterized by means of XRD, FTIR, EDAX, UV-Vis and PL analysis. CdSe QDs indicated a broad band surface trap states emission between 500 to 800 nm with a peak at about 600 nm. This emission was decreased after CdS shell growth and was completely quenched after ZnS shell growth and a narrow band edge emission confirming successfully growth of the shell. Photocatalyst activity of the synthesized QDs was investigated by using methyl orange (MO) and methylene blue (MB) as pollutant. The CdSe indicated good photocatalyst activity for photo-degradation and it's activity was considerably increased after CdS shell and CdS/ZnS shell growth.

Keywords:

CdSe, CdSe/CdS, CdSe/CdS/ZnS, Photochemical, Photocatalyst