SYNTHESIS AND OPTICAL PROPERTIES OF WATER SOLUBLE CDSE/CDS QUANTUM DOTS FOR BIOLOGICAL APPLICATIONS

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TÓM TẮT:

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The water soluble CdSe/CdS quantum dots (QDs) have been synthesized directly in aqueous solution with surfactant agent of sodium citrate. The QDs are mono-dispersed in water and have strong luminescent emission intensity under excitation of ultra violet lamp. The emission maxima of the QDs can be tuned in a wider range from 555 to 615 nm in water by changing synthesis conditions. The result of the synthesis of water-soluble CdSe and CdSe/CdS QDs shows the high-quality of the QDs with the quite narrow luminescence emission band and photostability. The results show the strongest intensity of photoluminescence emission in media with the pH value at about from 8 - 8.5 which are pH physiological environments. The luminescence intensity is increased when the QDs are coated with a PEG (polyethylene glycol) or BSA protein layer, the lifetime is also increased.