INFLUENCE OF CD:SE PRECURSOR RATIO ON OPTICAL PROPERTIES OF COLLOIDAL CDSE TETRAPODS PREPARED IN OCTADECENE

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TÓM TẮT:

Colloidal CdSe tetrapods were synthesized by chemical method in octadecene with the initial Cd:Se precursor ratios from 6:1 to 1:10 and the different monomer concentrations. Their stoichiometry and optical properties were investigated using the energy dispersion X-ray, absorption and photoluminescence spectroscopy. It was found that the CdSe tetrapods are Cd rich for all of the obtained sizes. Their stoichiometry was almost not changed during the growth and depends on the initial precursor ratio. The double-peak structure corresponding to the optical transitions in the core and arms of CdSe tetrapods was observed clearly in both the optical absorption and photoluminescence spectra for the Cd:Se precursor ratios from 2:1 to 1:2. The influence of the initial Cd:Se precursor ratio and monomer concentration on the growth of CdSe tetrapods and their optical properties has been analysed and discussed.