

Part 1

Improving the tuning phenomenon of CdS quantum dot by Fe³⁺ Doping

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Abstract

We synthesize CdS and Fe³⁺ doped CdS (CdS:Fe) quantum dots via chemical route at room temperature. In this technique, specimens are produced by simple chemical reactions embedded on polyvinyl alcohol (PVA). The samples have been characterized by high resolution transmission microscope (HRTEM), X-ray diffraction study, UV/VIS absorption spectroscopy and atomic force microscopy (AFM). These characterizations indicate the formation of quantum dots within 9 nm. Further, Impedance analyses of the samples are carried out to reveal the variations of admittance (impedance) with frequency. These results have been utilized to test CdS:Fe as nano tuned device with better quality factor in comparison to that of undoped CdS.

Keywords: Impedance analysis, iron center, nano tuned device, quality factor, resonance frequency.

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