

Fluorescent and nonlinear optical features of CdTe quantum dots

Abstract

The study of photoluminescence and nonlinear optical properties of red (emitted at 650 nm), yellow (emitted at 570 nm) and green (emitted at 530 nm) CdTe quantum dots (QD) spin coated on quartz substrate that had been prepared by changing the ratio between octadecylphosphonic acid and octadecene within 0.1:1-1:1 was carried out. Spectral width of the emission spectra indicates an enhancement with the increasing of QDs sizes, namely ca. 25, 28 and 50 nm for the QD size of 2.5, 3.5 and 5 nm, correspondingly. The entire QDs samples feature a spherical morphology with a relatively narrow size distribution. The optical second harmonic generation (SHG) stimulated by coherent bicolor treatment at 1,540 nm and its second harmonic generation was studied versus the laser light power density and incident angle.