# EFFECT OF ANNEALING ON THE LUMINESCENT CHARACTERISTICS OF CdSe QUANTUM DOTS IN POLYMER

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S u m m a r y

The influence of low-temperature annealing in the range of 350–480 K in air on the luminescent properties of CdSe quantum dots embedded in a gelatine or polyvinyl alcohol matrix is studied. The photoluminescence (PL) spectra of the films of both types are the same and consist of two bands originating from recombination of carriers through the surface defect states. It is found that thermal annealing at 350–480 K during 10 min results in both the enhancement of the PL intensity and the shift of the PL bands to low-energy spectral region. At a long annealing time (more than 1 hour) the decrease of PL intensity is observed. All the effects relax during the storage (ageing) of samples at room temperature in air and appear after repeated annealing. The shift of the PL bands to low-energy region is explained by an increase of the density of surface defects, which act as the centres of radiative recombination and tentatively arise due to the break of the bonds of cadmium surface atoms with functional groups of gelatine molecules. The enhancement of the PL intensity is supposed to be due to the increase of the height of potential barrier for carrier transition from quantum dots to the centres of nonradiative recombination. Another possible reason of PL enhancement can be the decrease of nonradiative defect density. The mechanism of the reduction of PL intensity at long annealing time is not clear now.