

PREPARATION AND STUDING OF POLYMERIC NANOCOMPOSITES CONTAINING CDSE/CDS NANORODS

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Nanohybrid composites comprising polymeric organic compounds and semiconductor nanoparticles, such as quantum rods, are of great importance for various functional materials potentially promising for lasing, informational displays, light-emitting diodes, solar cells etc [N. Osada, T. Oshima, S. Kuwahara, T. Toyoda et al. // *Phys. Chem. Chem. Phys.* – 2014. – V.16 – P. 5774–5778]. However, despite of great interests, the achievement of uniform distribution of quantum rods in a polymer host and long-term stability of the composites still a challenge.

In this work, colloids of CdSe/CdS quantum rods (diameter of 2.5–4 nm, length of 40–60 nm, covered with a non-polar organic shell comprising hexadecyl of phosphonic acids) in various polymers (polystyrene, dimethyl silicone and polymethylmethacrylate) are prepared and spectral and kinetic characteristics for the colloids are studied using pulse spectrometry [V.I. Oleshko, S.S. Vil'chinskaya // *The 7th International Forum on Strategic Technology, Proceedings of IFOST.* – 2012. – V.1 – P. 304–307].

It is revealed that uniformity of distribution of quantum rods, position of PL maximum and decay strongly affected by the polymer host used. The most homogeneous distribution of nanorods is found in dimethyl silicone polymer host which is apparently attributed to the similarity in aliphatic nature of both NPs shell and polymer chains.

Keywords: CdSe/CdS nanorods, polymeric nanocomposites, photoluminescence.