DEVELOPMENT OF FLUORESCENT NANOCOMPOSITES BASED ON CdTe QUANTUM DOTS

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Abstract

Cadmium telluride (CdTe) quantum dots (QDs) are efficient fluorescence semiconductor nanoparticles with unique optical and physicochemical properties. Their incorporation into polymer matrices allows the development of materials with several applications such as in opto-eletronic devices. Nevertheless, one of the most important prerequisite of these high-efficiency nanocomposites is the fluorescence efficiency of the QDs–polymer, which is mainly related with the QDs dispersion. Even though many attempts have been made, there are little work reporting the effect of different polymer matrices on QDs dispersion and therefore, the charge transport in the final materials (Rakovich and Donegan 2013)[1].

In this work, a strategy to develop QDs/polymer nanocomposites is presented. Highly fluorescent CdTe QDs are embedded in different optically transparent commercial polymers, *via* solvent cast method.

To investigate the influence of each polymeric matrix on the final properties, optical, morphological and electrical measurements were carried out. Furthermore, the results demonstrate that the addition of a surfactant produce better dispersion of the CdTe QDs in the polymeric matrices and improve the electrical properties of the resulting materials (Fig.1).

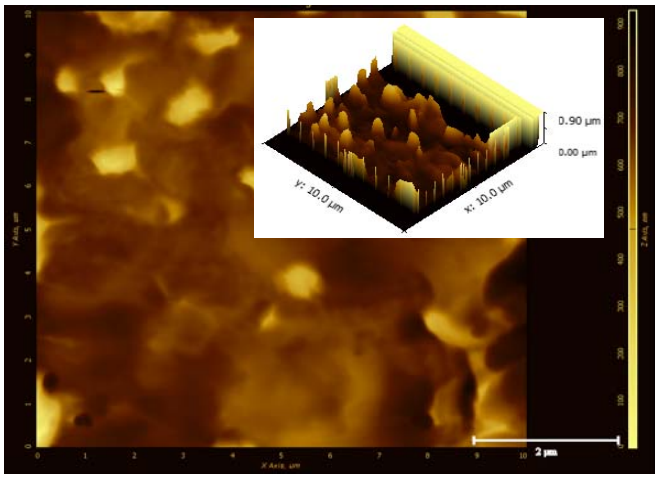

Fig. 1 Atomic force microscopy image of QDs-TPS film.

References

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