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We present here experimental results on polymer-inorganic nanocomposite material made of styrene with butyl methacrylate (SBMA) with isothiocyanato-chalcone (ITCC) and inorganic semiconductor CdS. Styrene with butyl methacrylate (1:1) copolymer has been prepared by the method of radical polymerization. The photoluminescent nanocomposites based on isothiocyanato-chalcone were obtained using organic solvents instead of water according to the method described elsewhere [1,2]. Thin films with good quality can be obtained for concentrations of CdS in the range 0-20 %. The cyanato-chalcone derivate was used as mechanical additive, as well as chemical bonding in the polymer, which make it more stable. As aromatic chalcones were used *n,n*-dimethylthiourea-chalcone and isothiocyanato-chalcone. The concentration of CdS semiconductor was varied in the range 0-20 %.

Thin film composite samples have been characterized by UV-VIS absorption and photoluminescent (PL) spectroscopy, atomic-force microscopy (AFM), as well as by X-ray diffraction. Examination of the thin film surface by AFM microscope showed that the surface of the composite exhibits a nanostructured morphology (Fig. 1). A characteristic feature of their surface morphology that it is characterized by an array of conic elements 30-45 nm high, which are almost regular distributed on the surface of the samples. Under the excitation of laser beam 337 nm the nanocomposite samples show a strong luminescent band in the range 400-650 nm, with the PL maximum varying slightly in dependence of the CdS concentration. Photoluminescent nanocomposite layers with nanostructured surface present interest for application in photovoltaic solar cells.

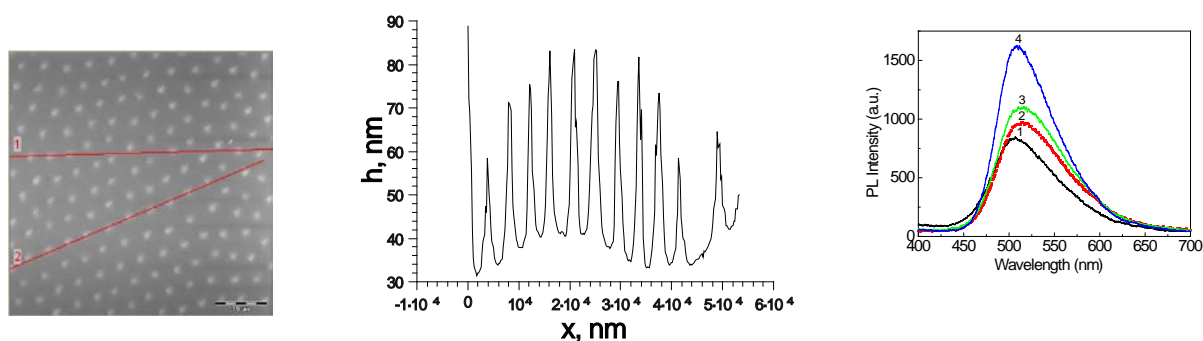


Fig. 1. Characterisation of nanocomposite thin films: (a) AFM image for the composite film SBMA+10%ITCC+10%CdS; (b) The profile of the surface morphology of the thin film sample; (c) PL spectra for the nanocomposite films at room temperature under excitation UV beam 337 nm: SBMA+10%ITCC (1); SBMA+10%ITCC+5%CdS(2); SBMA+10%ITCC+10%CdS (3); SBMA+10%ITCC+20%CdS (4).

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