P-A-396

CHARACTERIZATION OF NANOSTRUCTURED PHOTOSENSITIZES OBTAINED BY L-B-L METHOD

A. C. R. Faria[a], F. D. Menezes[b], R. Milani[b], M. Pereira[c], M. Giovanela[a], G. Machado[b], J. S. Crespo[a*]

[a]Centro de Ciências Exatas e Tecnologia, Universidade de Caxias do Sul, 95070-560,Caxias do Sul – RS, Brazil, [b]Centro de Tecnologias Estratégicas do Nordeste,50740-540,Recife – PE, Brazil and [c]Universidade Federal do Rio Grande do Sul, 91501-970, Porto Alegre – RS, Brazil

Corresponding author: jscrespo@ucs.br

Thin films composed of conducting polymers and inorganic semiconductors have been used to produce conversion systems and power generation. The assembly of these films by physical adsorption processes enables low cost and use of aqueous solutions in the state. This work presents a deposition process and characterization of thin films self assembly through electrostatic attraction of oppositely charged polyelectrolyte deposition using the layer-by-layer technique by dip-coating process. The cationic system is formed by polycation solution of poly(diallyldimethylammonium chloride) (PDDA) and a solution of semiconductor quantum dots of cadmium selenide (CdSe QDs). The anionic system is composed of the polyanion solution of poly (acrylic acid) (PAA) and nanoparticles solution photoactive semiconductor titanium oxide (TiO2). The thin films were obtained considering four different combinations of polymer concentration and number of layer. Analysis of samples by profilometry showed that the thicknesses of the LbL films are in the micrometer order, with absorption bands in the regions of NUV (TiO2) and visible (CdSe) defined through the spectrum of DRUV-Vis. The anatase phase is predominant TiO2 particles observed in the XRD diffractograms. Through the SEM images it is observed that the surface of the films there is agglomeration of spherical grains of various sizes, formed by CdSe and TiO2, as EDS spectra. For the TEM analysis it is possible to verify the uniform distribution of nanoparticles in the films.