

Influence of different SBM Co-Polymer binder on the electrochemical properties of Dye-Sensitized Solar Cells

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A new kind of SBM co-polymer binder as styrene, n-butyl acrylate, and methacrylic acid (SBM) monodisperse co-polymer binder materials based on TiO₂ pastes was synthesized and this TiO₂ pastes were applied of dye-sensitized solar cells (DSSCs). The SBM co-polymer binder was prepared by soap-free emulsion copolymerization using a PEG-EEM macromonomer. The photoanodes were characterized by ATR-Fourier Transform spectrometer, X-ray diffraction (XRD) and morphology was investigated by field emission scanning electron microscopy (FE-SEM). The photoelectrochemical properties of the thin films and the performance of DSSCs were measured by photovoltaic-current density, AC impedance and monochromatic incident photon-to-current conversion efficiency (IPCE). DSSC based on the emulsion co-polymer binder was obtained conversion efficiency of 7.1% under irradiation of AM 1.5(100mWcm⁻²).