

Investigation of precursor solution concentration effect on morphology and optical properties of zinc oxide nanorods for polymer solar cells application

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Abstract: In this research, ZnO nanorods were grown via hydrothermal method on the glass substrate. The effect of precursor and the thickness of the seed layer on the structural and optical properties of grown ZnO nanorods were investigated using X-ray diffraction (XRD), field emission scanning electron microscopy (FESEM) and UV-vis spectroscopy. The XRD patterns indicated that the nanorods had wurtzite hexagonal crystalline structure with orientation of [002]. FESEM images clearly revealed that the ZnO nanorods with different solution concentration on different seed layers and precursor solution concentration were grown on substrate glass. The ZnO nanorods with solution concentration of 50 mM and 10 times the seed layer deposition are the better morphology and more optical transmittance in the range of visible. So this sample could be a suitable candidate for electron transport layer on inverted polymer solar cells.

Keywords: ZnO nanorods; precursor solution concentration; seed layer; hydrothermal method.

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