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Preparation of photoelectrochemical cell of ITO/Cu_2O/PVC-$LICLO_4$/graphite using Cu_2O films as an active layer

Abstract

Cuprous oxide (Cu2O) thin films were successfully grown on indium tin oxide (ITO) coated glass by sol-gel spin coating using diethanolamine (DEA) as a solubility agent. The films were annealed at 350 °C in 5% H_2 + 95% N_2 atmosphere. The films were characterized by X-ray diffraction (XRD) and field emission scanning electron microscopy (FESEM). Based on the SEM micrograph of the as obtained film, the film shows better coverage with the four sided pyramidal shapes grain size of 108 nm. The prepared Cu_2O thin film was used as an active electrode for photoelectrochemical cell of ITO/Cu_2O/PVC-$LiClO_4$/graphite. The photoelectrochemical cell was tested using current-voltage characteristic under light illumination of 100 mW/cm^2.

Keywords — Cu_2O thin film, graphite, ITO, photoelectrochemical cell, PVC-$LICLO_4$