Short Communication

Facile Synthesis of Hexagonal CdS Nanofilm on FTO Glass Substrate via Hydrothermal Method

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In this work, the compact CdS nanofilm has been deposited on FTO glass substrate with the conductive side facing down by the hydrothermal method. The microstructure and morphology of nanofilm were respectively analyzed by X-ray diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The results exhibited hexagonal wurtzite CdS nanofilm and continuously dense. Besides, the growth mechanism of CdS nanofilm was discussed and explored in detail: the small amount of CdS nuclei can crystallize during the initial reaction and form a CdS thin layer on the conductive side of FTO glass substrate; thereafter, with increasing temperature, many CdS nuclei can crystallize and grow on the CdS thin layer. Also, the photoelectric properties of nanofilm were studied by photoluminescence spectrum (PL), Raman spectrum, transient photocurrent response and electrochemical impedance spectroscopy (EIS).

Keywords: CdS nanofilm; hydrothermal method; CdS thin layer; FTO glass substrate; growth mechanism;

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