Fabrication and Characterization of CNT/ZnO Thin Film Junction for Photovoltaic Application

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Abstract

Concern about energy supply and climate change has been brought into the essential discussion. There is a clear need to make energy cheap, readily accessible and green. The Photovoltaic cell (PV) is the energy source in the development of solar cell technology that can deliver low cost electricity generation. Therefore, this research work is conducted on the fabrication and characterization of CNT/ZnO thin films junction for photovoltaic application. The preparation procedure includes two parts: deposition of ZnO by the electrodeposition technique and coating of CNTs by the doctor-blade technique. Effect of different deposition temperatures at 60 degrees C, 75 degrees C and 90 degrees C on the structural and morphological ZnO films was studied and the optimum deposition conditions have been outlined. XRD shows that the product presents a good crystallinity. The characterization of structural and morphological of CNT films were studied by using XRD and FESEM. The XRD results showed the crystalline size of CNTs in nano size. CNTs have been used as the component devices to help the charge conduction, improve electrode flexibility and in some cases as active light absorbing materials. The ultimate goal is to gain deeper understanding of the cathodic processes involved and to facilitate the optimization of operating conditions.

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