[RWE-228] CdS SENSITIZED TiO_2 NANOCRYSTALLINE PHOTOANODES FOR SOLAR CELLS

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Dye-sensitized nanocrystalline solar cells (DSSC) are a promising alternative to conventional p–n junction solar cells. The advantage of DSSCs over other types of photovoltaic cells is the relative simplicity of their assembly. The conventional DSSC is made from a mesoporous TiO2 film with adsorbed organo-ruthenium dye molecules as light absorber. It was shown that in a mixed TiO2/CdS particle system, prior to semiconductor–electrolyte charge transfer, electrons that were photogenerated in the lower band gap CdS, were transferred to the TiO2 while the holes remained in the CdS. In this work we grown CdS sensitized TiO2 photoelectrodes and studied the photoelectrochemical properties. The photoelectrodes were made using nanoparticles of TiO2 (PM25); and nanorods based on nanofibers of TiO2 obtained by electrospinning. The TiO2 nanoparticles and nanorods were sensitized with CdS using chemical bath deposition. The grown of the photoelectrodes over the ITO plates were made using a mixture of Pechini-type sol and TiO2 sensitized; and doctor-blading and sintering. The samples were characterized by X ray Diffraction, Scanning Electron Microscopy, Current-Voltage and Electrochemical Impedance Spectroscopy. A conversion efficiency of 2.5 % was achieved.

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