

Sol-gel prepared ZnO nanostructured films for dye-sensitized solar cells.

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Zinc Oxide is a II-VI group semiconductor which is well known for being one of the best alternatives of TiO₂ in several applications such as photocatalysis, solar cells etc. ZnO has attracted special attention as it has similar to TiO₂ band gap energy level and it possesses enhanced electron mobility, large surface area and good transparency. In addition, the low toxicity and cost makes it an ideal material for applications such as dye sensitized solar cells (DSSCs). In this work, DSSCs have been developed based on crystalline ZnO film via a simple aqueous solution process. According to this novel facile method, we fabricated ZnO photoelectrodes using Zinc Nitrate as a precursor of Zinc which reacted with polypropylene glycol-bis(2-aminopropyl) ether oligomer (BPPG). For the deposition of the oxide on conductive glass substrate, the sol-gel method was used. The formation of the ZnO nanocrystals was defined by the polypropylene oligomers which were used as template. Extensive studies of the structural and morphological properties of the prepared electrodes were conducted using various precursor formulations and characterization techniques.

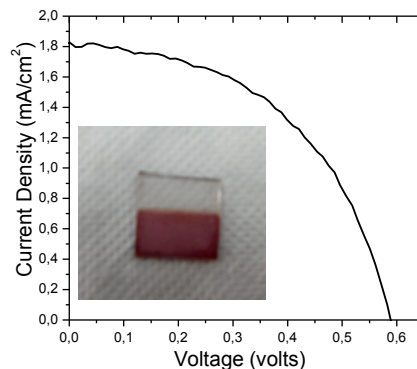


Figure 1: *J-V* characteristic curve for a ZnO based DSSC. A sensitized ZnO photoelectrode with N-719 dye is presented as an inset.

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