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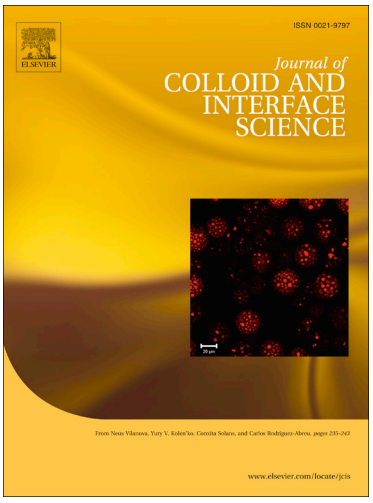

Short Communication

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Facile Preparation and Characterization of ZnCdS Nanocrystals for Interfacial Applications in Photovoltaic Devices

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ABSTRACT

Recently, ZnCdS nanocrystals (NCs) have attracted intense attention because of their specific optical properties and electrical characteristics. In this paper, a green and facile solution method is reported for the preparation of ZnCdS nanocrystals using dimethylsulfoxide as small molecular ligands. The ZnCdS nanocrystals are used as an interface modification material in the photovoltaic devices. It is found that the modification of ZnCdS on TiO_2 surface not only suppresses the recombination loss of carriers but also reduces the series resistance of TiO_2/active layer. Consequently, both of the short circuit current (J_{sc}) and the fill factor (FF) of the solar cells were significantly improved. Power conversion efficiency (PCE) of 7.75% based on TiO_2/ZnCdS was achieved in contrast to 6.65% of the reference devices based on pure TiO_2 film in organic solar cells. Furthermore, the PCE of perovskite solar cells based