Short Communication

Effect of Spin-Coating Cycle on the Properties of TiO₂ Thin Film and Performance of DSSC

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TiO₂ thin films based dye-sensitized solar cell (DSSC) were prepared by sol-gel spin-coating method. The number of spin-coating was varied, 1, 2, 3, 5 and 7 times to get various thicknesses of TiO₂ thin film on the ITO substrate. The phase structure of anatase exists in all samples at the diffraction angle of 25.36° corresponding with the crystal plane (101). From FESEM observation, the morphological shape of all samples is agglomerate nanoparticle. The sample with higher number of spin coating has pores with its size becomes bigger at the highest spin coating number. The thickness of TiO₂ film increases with the increase of spin coating number. The absorption window increases with the spin coating number. The DSSC with 7 times spin coating number demonstrates the best power conversion efficiency (η) which is 0.70% due to the broadest absorption window and lowest R_b and R_{ct} .

Keywords: DSSC, sol-gel, spin-coating, TiO₂

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