Inkjet printing technology for dye-sensitized solar cells

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Abstract

The task of this study is to prepare the TiO2 film electrode for dye-sensitized solar cells (DSSC) on ITO PET substrate using a general jet-printer. The results were compared with that obtained using ITO glass substrate. In this study, the dispersion of TiO2 slurry was manipulated by changing the pH value of the solution to avoid agglomeration of TiO2 particles. The average TiO2 particles used in this study were measured about 130nm. The experimental results show that it has the best performance when the thickness of the TiO2 film was about 10μm. In ITO glass substrate, the measured short circuit current was about 5.03mA, the open circuit voltage was measured to be 0.65V. In ITO-PET substrate, the measured short circuit current was about 2.73mA, the open circuit voltage was measured to be 0.68V.

Keyword：Inkjet printing technology, TiO2 ink, ITO PET substrate, ITO glass