

**Effect of light scattering TiO<sub>2</sub> particles on the performance of flexible dye sensitized solar cells**

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In this paper, the efficient flexible dye sensitized solar cells (DSSCs) were constructed by using TiO<sub>2</sub> nanoparticles (P-25) with light scattering TiO<sub>2</sub> nanoparticles (200–300 nm) based thin film electrodes. The flexible electrodes were prepared by mixing of TiO<sub>2</sub> nanoparticles and light scattering TiO<sub>2</sub> particles into the solution of titanium tertaisopropoxide and ethanol and deposited on indium tin oxide Polyethylene Naphthalate (ITO-PEN) substrates. It was found that dye absorption of TiO<sub>2</sub> increased as increasing the amount of light scattering TiO<sub>2</sub> particles in TiO<sub>2</sub> paste. The reasonable high conversion efficiency of 2.25% with J<sub>SC</sub> of 5.4 mA/cm<sup>2</sup>, V<sub>OC</sub> of 0.768 V and FF of 0.54 was obtained with the flexible DSSC fabricated with optimized TiO<sub>2</sub> coated ITO-PEN electrode. The significant improvement in photovoltaic performance is attributed to efficiently improved dye absorption and light harvesting efficiency via light scattering TiO<sub>2</sub> particles. The detail morphological, optical, absorption and photovoltaic properties would be discussed.