

## Mesoporous TiO<sub>2</sub> by Nano-casting Method for Dye Sensitized Solar Cell

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Dye-sensitized solar cell (DSSC) has been regarded as a regenerative low-cost alternative to conventional energy devices. Among various kinds of semiconducting metal oxides, titanium dioxide (TiO<sub>2</sub>) has been the most widely used for DSSC. Recently, nanocrystalline TiO<sub>2</sub> materials have been extensively investigated as the potential material for DSSC. In addition to this, a great deal of attention has been focused on developing new types of sensitizers, electrolytes and semiconducting electrode materials. In order to maximize the cell efficiency of DSSC, the TiO<sub>2</sub> material should have a high surface area where the dye can be sufficiently adsorbed. Mesoporous materials have been attracted much attention due to their high surface areas as well as regular mesoporosities in the range of 2 – 10 nm. However, mesoporous TiO<sub>2</sub> by sol-gel method using surfactant have many drawbacks such as during the crystallization and the removal of the organic template by heat treatment, the mesostructure of TiO<sub>2</sub> is usually damaged. In this study, mesoporous TiO<sub>2</sub> materials was synthesized using mesoporous silica as the template via nano-casting technique, and applied to DSSC electrode materials.