

## Low Temperature Synthesis of TiO<sub>2</sub> Films for Application to Dye-sensitized Solar Cells

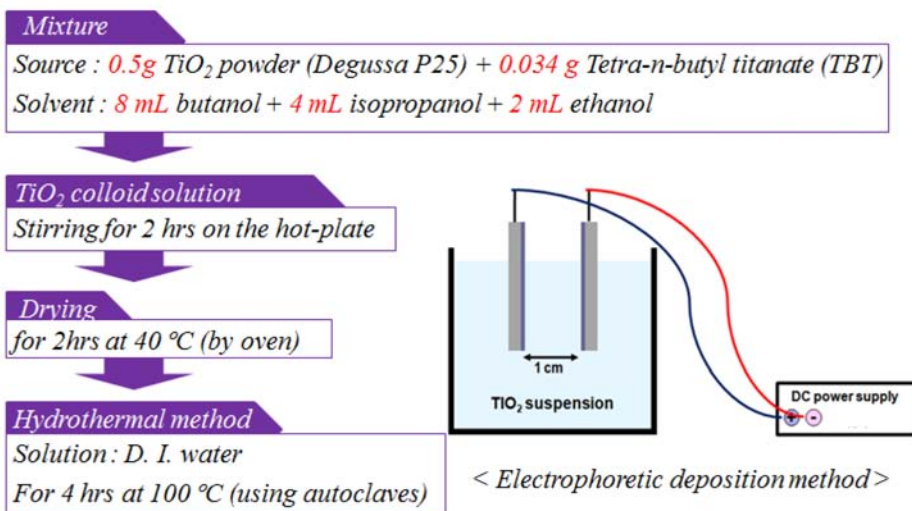
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Dye sensitized solar cells (DSSCs) are regarded as potential inexpensive alternatives to conventional solid-state devices. The flexible version, employing conductive-plastic-film substrates, is appealing for commercialization of DSSCs because it not only reduces the weight and cost of the device but also extends their applications. However, the need for high temperature does not permit the use of plastic-film substrate. So, development of low-temperature methods is therefore realization of flexible DSSCs. In this work, the electrophoretic deposition combined with hydrothermal treatment was employed to prepare nanocrystalline TiO<sub>2</sub> thin film at low temperature. We confirmed the prepared TiO<sub>2</sub> thin films with different voltages and deposition times in the electrophoretic deposition process. Properties of the TiO<sub>2</sub> films were investigated by various analysis method such as X-ray diffraction, field emission scanning electron microscopy (FESEM) and UV-visible spectrophotometer.

**Keywords:** TiO<sub>2</sub>, DSSC

- Electrophoretic Deposition method
- TiO<sub>2</sub> suspension fabrication



*Weiwei Tan et al., J solid State Electrochemical (2009) 13, 651*

- Conditions of the electrophoretic deposition

Parameters	conditions
Voltage	40, 50, 60 V
Deposition time	1, 5, 10 min