

Effect of sintering time and added-MgO of TiO₂ electrode for performance of DSSCs

Jun-Tak Kim, Sang-Ho Kim*

Dept. of Materials Engineering, Korea University of Technology and Education, 307 Gajeon-ri,
Byungcheon-myun, Cheonan, Chungnam province, 330-708, South Korea

초 록: TiO₂ is being used widely as a semiconductor electrode for dye sensitized solar cells (DSSCs). Surface area of TiO₂ give an important influence on the DSSCs efficiency. In this study, the added MgO in the TiO₂, and fabricated paste at room temperature on FTO (F-doped SnO₂) cathode using screen printing method.

The TiO₂ electrode characterized with X-ray diffraction, Brunauer, Emmett and Teller, field emission scanning electron microscopy, cyclic voltammetry and effect on the DSSC's solar energy conversion efficiency was measured. Resulting in enhancing the J_{sc} and V_{oc} of DSSC was slightly improved by 3wt% added-MgO and sintering time was 30min. BET was increasing than reference condition.

The reason of this improvement was added-MgO. It prevented thermal effect of coarsening and sinter-neck features of TiO₂ electrode.