

报告题目及摘要 / Title & Abstract \*

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报告题目  
/Title

Photocatalytic Performance of PVP-Doped TiO<sub>2</sub> Nanorod Arrays Prepared by Hydrothermal Method

摘要 / Abstract

Here we synthesized a high-density single crystal anatase phase TiO<sub>2</sub>/ITO nanorods array composite by one-step hydrothermal method. TiCl<sub>4</sub>, H<sub>2</sub>O, and HCl were used as the titanium precursor, oxygen source, and inhibitors, respectively. The TiO<sub>2</sub> nanorods array were analyzed using X-ray diffraction (XRD), energy dispersive X-ray spectrometer (EDX), scanning electron microscopy (SEM), optical contact angle tester and ultraviolet fluorescence spectrophotometer, separately. The nanorods in the composite grow along the [101] crystal plane, with a diameter of about 500 nm and a length of about 3 μm. The effect of PVP addition on the crystal phase and morphology of TiO<sub>2</sub> nanorod arrays was investigated. When the amount of PVP added is 0.5g, the diameter of nanorods is about 77-120nm, and a neat array structure appears. In the photocatalytic experiment, methyl orange and acid red were used as degraded materials, the photocatalytic degradation rate is up to about 100%. When the hydrophilicity is the best, the optical contact angle of the sample after ultraviolet light irradiation is 7.2°. These results indicate that TiO<sub>2</sub> after doping experiments has better photocatalytic properties.