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Modification of titanium dioxide by solution plasma

Minh-Hai Tran, Hae Kyung Jeong

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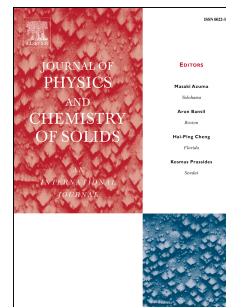
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Modification of Titanium Dioxide by Solution PlasmaMinh-Hai Tran¹ and Hae Kyung Jeong^{1,2,*}¹*Department of Physics, Institute of Basic Science, Daegu University, Gyeongsan 712-714,**Republic of Korea*²*Department of Materials-Energy Science and Engineering, Institute of Industry and**Technique, Daegu University, Gyeongsan 712-714, Republic of Korea***ABSTRACT**

A solution plasma approach for modification of phase and morphology of titanium dioxide is explored as complementary to the standard sol-gel method. Titanium dioxide powders with different proportions of anatase and rutile phases were successfully synthesized by solution plasma treatment and the photocatalytic activities investigated by solar irradiation of methylene blue. The plasma can facilitate not only the phase transition from anatase to rutile structure but also decrease of particle size significantly through a thermal shocking effect, resulting in shifting of energy bandgap from 3.2 to 3.0 eV. Degradation of methylene blue in the titanium dioxide is evident and amounts up to 50% drop in

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