

TiCl<sub>3</sub>를 이용해서 합성된 TiO<sub>2</sub>박막의 특성  
Characterisation of TiO<sub>2</sub> film synthesized using titaniumtetrachlo precursor

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Abstract

The peroxy titanic acid solution was successfully prepared using titanium trichloride as a precursor. The basic properties of the TiO<sub>2</sub> film prepared by the solution were investigated in view of phase change, bandgap energy, crystalline size etc. The film displayed amorphous TiO<sub>2</sub> at room temperature, anatase above 281°C and a mixture of anatase and rutile at 990°C. The crystalline size increases with annealing temperatures, while the bandgap energies decrease due to the quantum size effect and the formation of rutile phase which has low bandgap energy. As a result of TG-DTA, it was found that annealing treatment at 990°C for 2h formed a mixtures of anatase and rutile through three steps: (1) the removal of physically adsorbed water (2) the decomposition of peroxy group (3) amorphous-anatase or anatase-rutile phase transformation.