

Effect of acid concentration and time on synthesizing the titanium dioxide from synthetic rutile waste

ABSTRACT

A fast and easy method for preparing the titanium dioxide (TiO₂), using a caustic hydrothermal decomposition conditions followed with sulphate process using sulfuric acid (H₂SO₄) are presented. The effects of acid concentration and treatment time of sulphate process to the TiO₂ growth were focused in this research. The chemical composition of the product will be characterized using Electron Dispersive (EDX), the morphology and growth of titanium were analysed using a Field Emission Scanning Electron Microscope (FESEM) and the crystallinity of sample were analysed by X-Ray Diffraction (XRD). From this research work, we found that the caustic hydrothermal decomposition method followed with sulphate process has been proven to extract a titanium nanocrystals with the average mean size < 100nm after treated with medium acid concentration and short treatment time.