

Synthesis of TiO₂ by polymerizable precursor method using Titanium citrate complex as precursor

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Abstract

The fine powders of TiO₂ has been synthesized by totally alkoxide free sol gel method. The ammonium citratoperoxotitanate (IV) has been synthesized and used as molecular precursor which is highly stable in air. This starting precursor allow us to avoid the use of titanium alkoxide or titanium tetrachloride, which are extensively reported in literature. The synthesise has been carried out in ambient atmospheric conditions. The modified polymerizable precursor method has been adopted for the sol gel chemistry of TiO₂. The final powder precursor has been analysed by thermal analysis (TG and DTA) to explore the thermal kinetics. The X-ray diffraction analysis through Rietveld method confirms that the final product is highly pure rutile TiO₂ powders. The laser granulometry and SEM analysis shows the agglomeration of the fine particles and the final particle size is found to be of the order of 200 nm.

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