

## Adsorption and Photocatalytic Characteristics of TiO<sub>2</sub> nanoparticles

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TiO<sub>2</sub> is one of the most widely studied metal oxides and attracted significant attention Following. TiO<sub>2</sub> nanoparticles have been proposed for a wide range of uses including solar energy conversion, hydrogen storage, improved catalysis, and environmental pollution remediation. TiO<sub>2</sub> nanoparticles have been studied for their high photocatalytic activity, high dielectric, and semi-conducting properties, good biocompatibility, but also due to their potential as catalyst or active supports. These properties are different relative to the TiO<sub>2</sub> phases and are closely related to its crystal structure, which makes phase transformation one of the most important issues in practical application of the compound. Amorphous TiO<sub>2</sub> is of interest for photocatalysis because of its high surface area and high adsorption. Moreover, simple synthesis with elimination of the calcination step would mean lower costs for chemicals and energy consumption. In this study, Amorphous and crystalline TiO<sub>2</sub> nanoparticles were probe reaction for comparing adsorption and photocatalytic effect. The TiO<sub>2</sub> nanoparticles were characterized using XRD, SEM and FT-IR.