

Synthesis and Characterization of Nitrogen-doped TiO₂ with Photocatalytic Activity under Visible Light

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Titanium oxide is widely used as photocatalyst because it has an appropriate redox potential. Nitrogen doping is known to be an effective way to reduce the band gap energy to utilize visible light. Nitrogen-doped titanium oxide samples were synthesized by several methods and were characterized by UV-Vis DRS, X-ray diffraction, Scanning electron microscopy, X-ray photoelectron spectroscopy and BET surface area analysis. All Nitrogen-doped TiO₂ synthesized can absorb visible light. But each sample shows different crystal structure. Particle size of samples was about 20nm and BET surface area was around 80-100m²/g. The amount of doped nitrogen was analyzed by chemical elemental analysis. The photocatalytic activity of nitrogen-doped titanium oxide was measured by the decomposition of organic dye (orange II) under visible light irradiation.