

Hydrothermal synthesis of Cr and Fe co-doped TiO₂ nanoparticle

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We report here the new findings on the visible light photodecomposition activity of gaseous iso-propyl alcohol over Cr and Fe co-doped TiO₂ nanoparticles. High surface area, doped TiO₂ nanoparticles were synthesized hydrothermally and co-dopant effects are investigated. The physico-chemical properties of the co-doped nanoparticles led to efficient photocatalysts. Cr and Fe co-doped TiO₂ nanoparticles exhibited two times higher photocatalytic activity for photodecomposition of gaseous isopropyl alcohol than the individually (Cr/ Fe) doped TiO₂ nanoparticles under visible light irradiation ($\lambda > 420\text{nm}$). The activity is mainly correlated to the larger absorptions around 496nm and 563nm wavelengths by co-doped TiO₂ nanoparticles than Fe doped TiO₂ nanoparticles those possibly absorb $\leq 496\text{nm}$.