

ABSTRAK

PENGARUH LAJU INJEKSI DOPING SULFUR TERHADAP AKTIVITAS FOTOKATALIS NANOTITANIA MENGGUNAKAN METODE SOL GEL

Oleh

DELFI OKTAVIA AMRANI

Sintesis titania doping sulfur (S-TiO₂) dilakukan melalui metode sol gel. Titanium isopropoksida (TTIP), tween-80, isopropanol dan asam sulfat (H₂SO₄) sebagai sumber doping sulfur digunakan sebagai bahan utama. Penelitian ini bertujuan untuk mempelajari pengaruh laju injeksi doping sulfur menggunakan pompa injeksi terhadap aktivitas fotokatalis S-TiO₂. Empat sampel doping sulfur dipreparasi dengan laju injeksi masing-masing 8,0; 4,0; 2,7 dan 2,0 ml/jam. Serbuk titania dikalsinasi pada suhu 450 °C selama 5 jam. Sampel yang disinter diuji untuk fotodegradasi remazol kuning di bawah sinar UV. Karakteristik fisika dianalisis menggunakan *transmission electron microscopy* (TEM) dan spektrofotometer UV-Vis. Hasil pengujian spektrofotometer UV-Vis menunjukkan bahwa laju injeksi doping sulfur mempengaruhi aktivitas fotokatalis nanotitania. Sampel dengan laju injeksi 8 ml/jam menunjukkan aktivitas fotokatalis yang lebih tinggi dengan ukuran partikel sebesar (7,1 ± 1,9) nm.

Kata kunci: doping sulfur, fotodegradasi, remazol kuning, titania.

ABSTRACT

THE INFLUENCE OF RATE SULFUR DOPING INJECTION TOWARDS PHOTOCATALYST ACTIVITY OF NANOTITANIA USING SOL GEL METHOD

By

DELFI OKTAVIA AMRANI

Synthesis of sulfur doped titania (S-TiO₂) was carried out through sol gel method. Titanium isopropoxide (TTIP), tween-80, isopropanol and sulfuric acid (H₂SO₄) as a source of sulfur doping were used as raw material. The aimed of this research is to study the effect of the rate of sulfur doping injection by using an injection pump toward S-TiO₂ photocatalyst activity. Four sulfur doping samples were prepared with rate injection of 8,0; 4,0; 2,7 and 2,0 ml/hour respectively. Titania powder was calcined at temperatur of 450 °C for 5 hours. The sintered samples were tested for photodegradation of remazol yellow under UV irradiation. Physical characteristics were analyzed using transmission electron microscopy (TEM) and UV-Vis Spectrophotometer. The result of the UV-Vis spectrophotometer showed that the rate of sulfur doping injection influences the photocatalyst activity of TiO₂. Sample with an injection rate of 8 ml/jam showed higer photocatalyst activity with the particle size is (7,1 ± 1,9) nm.

Keywords: *photodegradation, remazol yellow, sulfur doped, titania.*