

ABSTRAK

PENGARUH LAJU PENGINJEKSIAN DOPING FLUOR TERHADAP AKTIVITAS FOTOKATALIS NANOTITANIA MENGGUNAKAN METODE SOL GEL

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Sintesis titania doping fluor (F-TiO₂) dilakukan melalui metode sol-gel. Titanium isopropoksida (TTIP), tween-80, isopropanol dan ammonium fluorida (NH₄F) sebagai sumber doping fluor digunakan sebagai bahan utama. Penelitian ini bertujuan untuk mempelajari pengaruh laju penginjeksian doping fluor menggunakan pompa injeksi terhadap aktivitas fotokatalis F-TiO₂. Empat sampel doping fluor dipreparasi dengan laju penetesa masing-masing 0,4 ml/30 menit; 0,4 ml/60 menit; 0,4 ml/90 menit dan 0,4 ml/120 menit. 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 ukuran partikel sampel dengan laju penginjeksian 0,4 ml/90 menit menunjukkan aktivitas fotokatalis yang lebih tinggi dengan ukuran partikel sebesar (14 ± 4) nm.

Kata Kunci: Doping fluor, fotodegradasi, remazol kuning, titania.

ABSTRACT

THE INFLUENZE OF RATE FLUORINE DOPING INJECTION TOWARDS PHOTOCATALYST ACTIVITIES OF NANOTITANIA USING THE SOL GEL METHOD

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The F-doped titania was carried out through the sol-gel method. Titanium isopropoxide (TTIP), tween-80, isopropanol and ammonium fluoride (NH₄F) as sources of doping fluorine were used as the main ingredients. This research aimed to study the effect of fluorine doping injection rate using injection pumps on F-TiO₂ photocatalyst activity. Four fluorine doping samples were prepared with the respective penetration rate of 0.4 ml / 30 minutes; 0.4 ml / 60 minutes; 0.4 ml / 90 minutes and 0.4 ml / 120 minutes. The titania powder was calcined at 450 °C for 5 hours. The sintered sample was tested for photodegradation of remazol yellow under UV light. Physical characteristics were analyzed using transmission electron microscopy (TEM) and UV-Vis spectrophotometer. The results of the UV-Vis spectrophotometer showed that the particle size of samples with an injection rate of 0.4 ml / 90 minutes showed higher photocatalyst activity with particle sizes of (14 ± 4) nm.

Keywords: Fluor doped, photodegradation, remazol yellow, titania.