

ABSTRACT

THE INFLUENCE OF TWEEN-80 ON THE TITANIA DOPED SULFUR

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Sulfur doped titania are photocatalysts. This research was aimed to study the influence of tween-80 on the titania doped sulfur by using titanium isopropoxide, isopropanol, H₂SO₄ and tween-80. Sulfur doped titania was prepared with composition of 3.4 mL; 40.15 mL; 5 mL; 4 gr respectively. Titania powder was calcined at temperature of 400 °C for 10 hours in the air. The powder was characterized by x-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM) and spectrophotometer UV-VIS analysis. XRD pattern of titania without sulfur (TiO₂) was indicated anatase phase that had sharp and small peaks, but for titania with sulfur (S-TiO₂) was indicated anatase and unknown phase which presence three new peaks. The SEM/EDX analysis revealed that exist no another composition besides TiO₂ for titania without sulfur and exist S-TiO₂ composition for titania with sulfur. TEM observations showed the vast majority of particles were spherical; the particle size of titania without and with sulfur were (13.14 ± 0.67) nm and (10.14 ± 0.52) nm respectively. Spectrophotometer UV-VIS analysis exhibited titania with sulfur more effective than titania without sulfur in degraded methylene blue 10 ppm for 60 minute. Maximum photocatalysts activity was occurred in lighting under visible light.

Key words: titania, sulfur doped, tween-80, nanostructure and photocatalysts