GREEN SYNTHESIS SnO_2NPs DENGAN EKSTRAK DAUN BAYAM MERAH (*Amaranthus tricolor L.*) UNTUK APLIKASI FOTODEGRADASI ZAT WARNA *BROMOPHENOL BLUE*

ANNISA KHAFIYA SABA

15612068

INTISARI

Green Synthesis nanopartikel SnO_2 atau SnO_2NPs menggunakan ekstrak *Amaranthus tricolor L.* telah dilakukan melalui beberapa proses ekstraksi, pemanasan, dan penggerusan dihasilkan serbuk hitam SnO_2NPs. Serbuk dikarakterisasi dengan menggunakan instrument Spektrofotometer UV-VIS, *Xray Diffraction* (XRD), *Fourier Transform Infrared* (FTIR), *Scanning Electron Microscope Energy Diversive X-Ray* (SEM-EDX), *Transmission Electron Microscopy* (TEM) dan *Diffuse Reflektansi Ultraviolet Visible* (DR-UV). Serbuk SnO_2NPs digunakan sebagai fotokatalis untuk mendegradasi zat warna *Bromophenol Blue*. Hasil uji menunjukkan fotodegradasi zat *Bromophenol Blue* dengan variasi tanpa dan penambahan fotooksidator H_2O_2 dihasilkan degradasi terbaik pada variasi penambahan H_2O_2. Hasil % degradasi Bromophenol Blue tanpa penambahan H_2O_2 pada konsentrasi 20 ppm , 50 ppm , 80 ppm sebesar 88,96%, 80,06%, 61,77% dan variasi penambahan fotooksidator H_2O_2 pada konsentrasi 20 ppm, 50 ppm, 80 ppm sebesar 99,09%, 92,95%, 87,90%. *Green synthesis* SnO_2NPs dibuktikan dapat digunakan sebagai fotodegradasi zat warna *bromophenol blue.*

Kata Kunci *: Green Synthesis, Fotooksidator, Fotokatalis SnO_2NPs*

GREEN SYNTHESIS SnO_2NPs WITH RED SPINACH EXTRACT (Amaranthus Tricolor L) FOR THE PHOTODEGRADATION APPLICATION OF *BROMOPHENOL BLUE DYE*

ANNISA KHAFIYA SABA

15612068

ABSTRACT

Green Synthesis of SnO_2 or SnO_2NPs nanoparticles using *Amaranthus tricolor L.* extract has been carried out through several extraction, heating, and grinding processes produced by SnO_2NPs black powder. Powders were characterized using UV-VIS Spectrophotometer, Xray Difraction (XRD), Fourier Transform Infrared (FTIR), Scanning Electron Microscope Energy Diversive X-Ray (SEM-EDX), Transmission Electron Microscopy (TEM) and Diffuse Visible Reflection . SnO_2NPs powder is used as a photocatalyst to degrade the dye Bromophenol Blue. The test results showed that photodegradation of Blue Bromophenol with variations without and comparing H_2O_2 photooxidator produced the best degradation in the variation producing H_2O_2. The results of % degradation of Blue Bromophenol without adding H_2O_2 at concentrations of 20 ppm, 50 ppm at 88.96%, 80.06%, 61.77% and variations in the use of H_2O_2 photooxidator at concentrations of 20 ppm, 50 ppm, 80 ppm at 99, 09%, 92.95%, 87.90%. Green synthesis of SnO_2NPs is proven to be used as photodegradation of bromophenol blue dyes.

***Keywords** : Green Synthesis, Photooxidator, SnO_2 Photocatalyst*