

**GREEN HIDROTERMAL SINTESIS NANOPARTIKEL PERAK MENGGUNAKAN
EKSTRAK DAUN KELOR (*Moringa oleifera*) UNTUK DEGRADASI ZAT WARNA
METILEN BIRU**

SKRIPSI SARJANA KIMIA

Oleh :

AISI AZMI

BP : 1610412051



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ABSTRACT

Green Hydrothermal Synthesis of Silver Nanoparticle Using *Moringa oleifera* Leaves for Degradation of Methylene Blue

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Silver nanoparticles have been synthesized using *Moringa oleifera* leaves extract as a reducing agent and diethanol amine (DEA) as a capping agent in green synthesis of silver nanoparticles. The green synthesis technique in this research was a simple, cost effective and eco-friendly method by using leaf extract from the plant. Silver nanoparticles were synthesized by two treatments, that were hydrothermal (NpAg-H) and precipitation (NpAg-P). UV-Vis analysis results showed the presence of maximum wavelength absorption which is characteristic of the formation of silver nanoparticles at 400-422 nm. The XRD pattern exhibit that the silver nanoparticles formed have *Face Center Cubic* (FCC) phase with a crystallite size around 25 nm. The results of the Transmission Electron Microscope (TEM) have shown that the hydrothermal effect can produce smaller particle sizes than precipitation, which is around 14 nm and 17 nm for NpAg-H and NpAg-P, respectively. The particles have shown spherical morphology. Characterization of FTIR were performed for analysis of compositional and functional of the Ag nanoparticle. The catalytic activity of the silver nanoparticles was examined by degradation of methylene blue. Green synthesized silver nanoparticles were effectively degrading the dye with percent degradation by NpAg-H 93,77% and NpAg-P 71,05%.

Keywords: Degradation, green synthesis, methylene blue, silver nanoparticles