## **ABSTRACT**

In Indonesia yarosit powder are one or another natural resources that has  $Fe_2O_3$  therefore we need to use it for something useful such as make a nanoparticle material for photocatalyst application. In this study yarosit powder synthesized using precipitation method with the calcination temperature 500°C produce nanoparticles  $Fe_2O_3$  then characterized using XRD (X-ray Diffractions) gained an average crystallite size of  $\pm$  47 nm and has a crystal structure of hexagonal, characterized using Surface Area Meter produce nanoparticle size of  $\pm$  70 nm. Through testing solution photodegradation MB (Methylene Blue), research shows degraded optimum exposure time for 120 minutes at a concentration of 30 mg Fe<sub>2</sub>O<sub>3</sub> nanoparticles and leaving the MB (Methylene Blue) concentration as much as 29%.

Keywords: Photocatalyst, Yarosite Powder, Methylene Blue, Fe<sub>2</sub>O<sub>3</sub>