

## ABSTRACT

Lapindo mud has a high silica and alumina content so it can be used as a source of good mesoporous products. Mesoporous silica-alumina (SAM) was synthesized using the solvothermal method using CTAB (Cetyl trimethylammonium bromide) and gelatin templates. Mesoporous silica-alumina (SAM) was synthesized using the solvothermal method because it allows greater control over the shape, size, and crystallinity distribution compared to the hydrothermal method. In this study, SAM was applied as an adsorbent of methylene blue (MB) and congo red (CR) dyes with variation of pH parameters of the adsorbate to determine adsorption at optimum pH. The results of SAM characterizations have a diameter, surface area, and average pore volume of 8.869 nm, 75.261 m<sup>2</sup>.g<sup>-1</sup>, and 0.167 cm<sup>3</sup>.g<sup>-1</sup>, respectively. The kinetic model of pH 9 methylene blue adsorption on SAM follows the pseudo 2nd order kinetic model with an adsorption rate constant of 0.2941 g.mg<sup>-1</sup>.min<sup>-1</sup>, while the kinetic model of pH 3 congo red adsorption on SAM follows the pseudo 2nd order kinetic model with an adsorption rate constant of 0.0262 g.mg<sup>-1</sup>.min<sup>-1</sup>.

**Keywords :** Lapindo Mud, Mesoporous Silica-Alumina, Adsorption, Methylene Blue, Congo Red