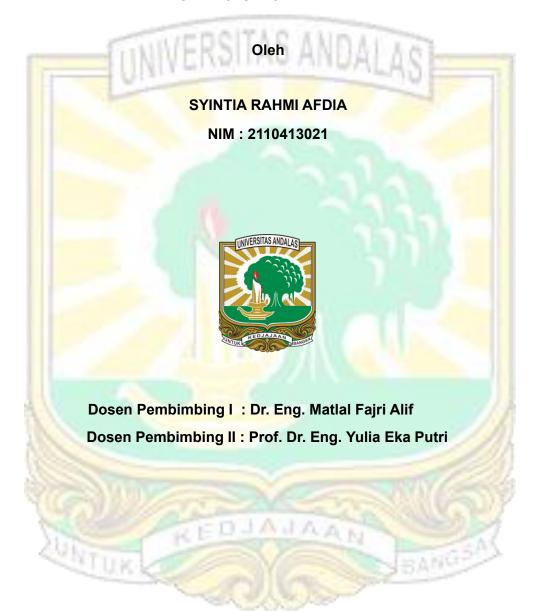# ANALISIS PENYERAPAN LOGAM Pb(II) DENGAN ADSORBEN HIDROKSIAPATIT DARI LIMBAH CANGKANG PENSI (*Corbicula moltkiana*) YANG DISINTESIS DENGAN METODE *MICROWAVE-ASSISTED*

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ABSTRACT

ANALYSIS OF Pb(II) METAL ADSORPTION WITH HYDROXYAPATITE ADSORBENTS FROM PENSI SHELL WASTE (*Corbicula Moltkiana)*) SYNTHESIZED BY MICROWAVE-ASSISTED METHOD

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Various industrial activities currently developing rapidly result in the accumulation of heavy metals such as lead metal Pb(II) in the aquatic environment. Lead is a non-essential heavy metal that is difficult to degrade so it can harm ecosystems and human health. Various heavy metal removal methods have been carried out such as electrolysis, adsorption and chemical deposition. Among these methods, adsorption is considered more efficient and simple so it is the most effective method for removing heavy metals in wastewater. Hydroxyapatite (HAp) is considered an excellent adsorbent due to its high ability to bind metal ions and its high adsorption capacity. The pensi shell (*Corbicula moltkiana*) is one of the most abundantly produced waste every year. The pensi shell is rich in calcium carbonate ($CaCO_3$) so it has the potential to be used as a precursor in the synthesis of hydroxyapatite. In this study, hydroxyapatite was synthesized using pensi shell waste by the microwave-assisted method that produced adsorbents to remove the lead metal Pb(II) in wastewater. Adsorbent characterization is carried out using various techniques such as *X-ray Diffraction* (XRD), *X-ray Fluorescence* (XRF), *Fourier Transform-Infrared Spectroscopy* (FT-IR), (*Brunnaeur Emmet Teller*) BET dan *Scanning Electron Microscopy* (SEM). In addition, several key factors that can affect adsorption efficiency such as solution pH, concentration and contact time were studied in this study. The results showed that at pH 5, the adsorption capacity of lead metal Pb(II) could reach 699.0157 mg/g and adsorption could reach equilibrium within 60 minutes with a concentration of 1400 mg/L. The process of adsorption of Pb(II) by hydroxyapatite followed the Langmuir isothermal model which showed the formation of a monolayer by following a Pseudo second order kinetics model. The results of the study showed that the synthesized hydroxyapatite succeeded in producing adsorbents that have a high adsorption capacity to adsorb Pb(II) metal in overcoming environmental pollution.

Keywords : *Pensi shell; Hydroxyapatite; Microwave-assisted; Adsorption; Lead (Pb(II))*