MODIFIKASI TERMAL LEMPUNG PARIAMAN SEBAGAI ADSORBEN DALAM MENURUNKAN *DISSOLVE ORGANIC MATTER* (DOM) DAN KADAR BESI DARI AIR GAMBUT

SKRIPSI SARJANA KIMIA

Oleh :

FIRMAN SANDRA HADIS MAULANA

1810411038

Dosen Pembimbing I : Dr. Syukri,M.Si

Dosen Pembimbing II : Prof. Dr. Yetria Rilda, M.S

PROGRAM STUDI SARJANA

DEPARTEMEN KIMIA

FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM

UNIVERSITAS ANDALAS

PADANG

2025

ABSTRACT

THERMAL MODIFICATION OF PARIAMAN CLAY AS ADSORBEN IN REDUCING DISSOLVE ORGANIC MATTER (DOM) AND IRON LEVEL OF PEAT WATER

By :

Firman Sandra Hadis Maulana (1810411038)
Dr. Syukri, M.Si* , Prof. Dr. Yetria Rilda, M.S**

Peat water is one of the surface water sources that is found in quite large quantities in Indonesia. However, due to its high content of dissolved organic matter (DOM), it is not suitable for direct daily use. One of the methods used for purifying peat water is adsorption utilizing clay. Clay is known to have good cation exchange capacity, making it a potential material to be used as an adsorbent. This study aims to investigate the effect of calcination on the performance of clay from Pariaman City as an adsorbent for reducing the levels of Dissolved Organic Matter (DOM) and iron (Fe) ions in peat water. The clay was calcined at temperatures of 450 °C and 850 °C. Characterization using X-Ray Fluorescence (XRF) showed that the Pariaman clay is predominantly composed of Si, Al, Fe, and small amounts of other metals. X-Ray Diffraction (XRD) analysis revealed that the main mineral composition of the clay includes montmorillonite, quartz, and kaolinite. Calcination at 850 °C caused a decrease in the intensity of kaolinite peaks, indicating structural changes. Based on UV-Vis analysis of the peat water, organic compounds from the humic acid group were identified. However, the adsorption process using the clay was not effective in reducing the DOM content. Atomic Absorption Spectroscopy (AAS) analysis showed that the clay was able to reduce the iron concentration in peat water, although not yet to a level that is considered safe for use.

Keywords : Adsorption, Clay, Peat Water, Calcination, DOM, Iron