we obtained the Freundlich equation for the experiments under the best conditions (x / m) = 14.842 C1 / 0.3081. The equation can be used to determine the amount of adsorbent required to adsorb certain metal ions under the same operating conditions. The Freundlich isotherm theory considers a heterogeneous surface with nonuniform adsorption distribution on the surface and states that the ratio of the amount of solids adsorbed on the amount of the adsorbent mass to the final concentration of the solid is not constant at the initial concentration of the solution. [21] The Freundlich equation can be applied to the adsorption process of copper metal ions (Cu2+) and zinc (Zn2+) by using cassava peel adsorbent because the adsorbent has a heterogeneous surface according to the heterogeneous SEM morphology of the adsorbent.

IV. CONCLUSION

Based on the research that has been done, we obtained the following conclusions. The optimal particle size for the cassava adsorbent to absorb copper metal ions (Cu^{2+}) and zinc (Zn^{2+}) is 120 mesh, and the optimal operating temperature is 35°C. Under the optimal condition, adsorption of 55.19% for copper metal ions (Cu^{2+}) and 41.7% for zinc metal ions (Zn^{2+}) can be obtained. The functional groups present in the cassava peel adsorbent are O-H, N-H, C=O, and C-N, and these functional groups can bind metal ions. The Langmuir isotherm adsorption model maximum adsorption values of Cu^{2+} and Zn^{2+} ions by cassava peels activated by HNO_3 were 0.126 mg / g and 0.0580 mg / g, respectively. While the Freundlich adsorption isotherm adsorption model indicated the maximum adsorption values of Cu^{2+} and Zn^{2+} ions adsorbed by cassava peels activated by HNO_3 were 0.4475 mg / g and 0.3081 mg / g, respectively. The Freundlich model can be applied to the adsorption process of copper metal ions (Cu^{2+}) and zinc (Zn^{2+}) by using the cassava peel adsorbent.

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