

## A New Adsorbent to Remove Pb<sup>+2</sup> and Zn<sup>+2</sup> from Aqueous Solution Using Modified Bentonite Clay with *Pawlonia tomentosa* Extract (PAW/Bent)

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**Aim of the study:** In this study, the extracted *Pawlonia tomentosa* was immobilized onto natural Bentonite clay to remove Pb<sup>+2</sup> and Zn<sup>+2</sup> ions from aqueous solution.

**Material and Methods:** For this *Pawlonia tomentosa* components were extracted using methanol (1g/10ml) in a water bath stirring for 10 hours. The extracted solution was then filtered and processed to synthesize PAW/Bent adsorbent.

**Results:** The obtained results show that modified bentonite clay adsorbed more ions than that of the pure bentonite. The operational parameters such as pH, initial concentration and temperature were performed in the adsorption studies. The obtained results exhibit that adsorption process was favorable at low temperature. The optimal pH, initial concentration and temperature was found 6, 0.4 mg/L and 298 K respectively. When the effect of initial concentration was examined at different concentrations, it was observed that adsorption increased by increasing the initial concentration initially and was then held constant as the adsorption probability is higher at higher concentrations. In the present study, we found that  $q_e$  values at initial concentration of 0.1 mg L<sup>-1</sup> and 1 mg L<sup>-1</sup> were 24.78 µg g<sup>-1</sup> and 79.87 µg g<sup>-1</sup>, respectively. The evaluated isotherms possessed that Langmuir isotherms better explain the adsorption of Pb<sup>+2</sup> And Zn<sup>+2</sup> than Freundlich isotherm, as reflected in the correlation coefficient.

**Keywords:** *Pawlonia tomentosa*, Bentonite, Heavy metal removal, Langmuir isotherm.