

## Adsorption and desorption performances of *Eichhornia crassipes* (water hyacinth) roots and leaves powder towards metal ions in industrial wastewater

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**Abstract.** This study investigated the adsorption and desorption performances of water hyacinth leaves powder (WHLP) and water hyacinth roots powder (WHRP) towards Pb<sup>2+</sup>, Co<sup>2+</sup>, Zn<sup>2+</sup> and Ni<sup>2+</sup> in industrial wastewater. The parameters influencing the process were assessed, models were proposed to explain the both the equilibrium and kinetics of the sorption process and desorption study was conducted using different HNO<sub>3</sub> and NaOH concentration. The results showed that comparatively, the metal uptake capacity of water WHLP was higher than WHRP as examined by the investigated parameters. The biosorption data fitted to both Langmuir and Freundlich isotherms. The kinetics of the process follows a pseudo-second order reaction model because it provides good linearization of the experimental data. In addition, relatively successful metal ions desorption from the biosorbents were recorded with both NaOH and HNO<sub>3</sub> solutions.

**Keywords:** water hyacinth; adsorption; industrial wastewater; desorption.

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