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## EVALUATION OF COPPER AND LEAD BIOSORPTION ON MODIFIED *Azolla pinnata* (R. Br.)

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### Abstract

This paper investigates the macrophyte *Azolla pinnata* modified with sodium hydroxide, as a bioadsorbent for  $\text{Cu}^{2+}$  and  $\text{Pb}^{2+}$  ions in synthetic solutions. Biomaterial characterization was performed using Scanning Electronic Microscopy (SEM); Energy-Dispersive X-Ray Spectroscopy (EDX); Fourier Transform Infra-red (FTIR) spectroscopy techniques and through the blocking of carboxylic and sulfonic functional groups. Kinetics of the process has highlighted a quick and efficient adsorption, even in low ion concentrations. Langmuir isotherm fitted well the biosorption equilibrium, and the maximum  $\text{Cu}^{2+}$  and  $\text{Pb}^{2+}$  uptake capacities were  $0.448$  and  $0.472 \text{ mmol g}^{-1}$  at  $25^\circ\text{C}$  and  $0.474$  and  $0.614 \text{ mmol g}^{-1}$  at  $45^\circ\text{C}$ , respectively. Desorption process was evaluated using different eluents and calcium chloride has presented the best desorption efficiency, moreover, did not cause visual damage to the material or decreased the adsorption capacity of the biomass.

**Keywords:** biosorption, desorption, heavy metal, macrophyte

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