



## Removal of lead from aqueous solutions by using chestnut shell as an adsorbent

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### ABSTRACT

Adsorption of lead from aqueous solutions on chestnut shell was studied. In order to optimize the adsorption process, 2<sup>3</sup> full-factorial design was applied to investigate the influence of the adsorbent dosage (0.5–1.0 g/50 mL), stirring speed (50–200 rpm), and pH (2–5) on the amount of lead adsorbed. Statistical analysis of the results showed the significance of the individual factors and their interactions on the adsorption process. The best conditions for lead removal were the adsorbent dosage: 1 g/50 mL, stirring speed: 200 rpm, and pH 5 for the initial concentrations essayed (150 mg/L). In addition, adsorption equilibrium was modeled by the Freundlich and Langmuir isotherm for lead. The results obtained from the study on parameters showed that as the selected variables increased the lead removal by adsorption also increased.

*Keywords:* Adsorption; Heavy metal; Removal; Chestnut shell; Low-cost adsorbent

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