



## Removal of Cr(VI) from aqueous solution onto chestnut shell: application of full factorial design and equilibrium studies

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### ABSTRACT

Adsorption of chromium VI [Cr(VI)] 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 Cr(VI) concentration (100 and 150 mg/L), contact time (2 and 6 h), and pH (2 and 5) on the amount of Cr(VI) adsorbed. Statistical analysis of the results showed the significance of the individual factors and their interactions on the adsorption process. The best conditions for Cr(VI) adsorption were pH 2 and a contact time of 6 h for both the initial concentrations tried. Adsorption equilibrium was modeled by the Freundlich and Langmuir isotherm for Cr(VI). Equilibrium adsorption data followed Langmuir isotherm. The experimental results showed that chestnut shell could be used for adsorption of Cr(VI) ions from aqueous solutions.

*Keywords:* Adsorption; Cr(VI); Removal; Chestnut shell; Experimental statistical design

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