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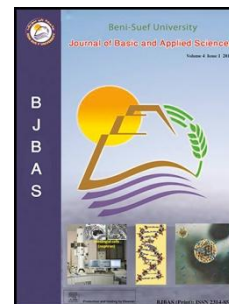
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Removal of hexavalent chromium from aqueous solutions by adsorption on modified groundnut hull

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Abstract

There is an emerging serious threat to the environment from indiscriminate release of heavy metals into the wastewaters and soil from human industrial practices. In this study therefore, the uptake of hexavalent chromium, being among the major pollutants from our industries, by modified and unmodified groundnut hull was investigated. The effects of different conditions of contact time, adsorbate concentration, solution pH, and temperature, on sorption process were studied. The adsorbent materials were characterized by Fourier Transform Infrared Spectroscopy (FT-IR). Analysis of the surface morphology by Scanning Electron Microscopy (SEM) revealed a change in morphology upon chromium adsorption. The adsorption process of Cr(VI) ions onto both the unmodified groundnut hull (UGS) and the modified groundnut hull (MGS) is in good agreement with the Langmuir adsorption isotherm and follows the pseudo-second-order kinetic model. According to the equilibrium studies, chromium(VI) ions are better adsorbed by modified groundnut hull.

Key words: Adsorption, groundnut hull, hexavalent chromium, waste water, adsorption kinetics

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