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Adsorption kinetics and adsorption isotherm studies of chromium from aqueous solutions by HPAM-chitosan gel beads

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ABSTRACT

HPAM-chitosan gel beads were utilized as an adsorbent in removing Cr(VI) and Cr(III) from aqueous media. The high percentage of removal for Cr(VI)—82.9% and Cr(III)—67.6% suggests the great potential for HPAM-chitosan gel beads as an adsorbent for the removal of chromium (Cr) ion from aqueous solution. The kinetic data has been tested in the process of adsorption for Cr(III) and Cr(VI), and proved that it follows the pseudo-second-order rate equation. Both Langmuir equations and Freundlich equations were used for explaining the experimental data of adsorption isotherm, which demonstrated a better fit to the Lagmuir model. Thus, it suggests a monolayer adsorption process onto the gel beads. Moreover, Chromium adsorption profile onto HPAM-chitosan gel beads is suggested through the schematic representation.

Keywords: Adsorption; Kinetics; Isotherms; Chromium; Gel beads; Hydrolyzed polyacrylamide

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