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Chromium(VI) sorption from dilute aqueous solutions using wool

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ABSTRACT

Removal of chromium(VI) from a dilute aqueous solution was investigated using the sorption technique. Locally available wool from merino sheep was used as an sorbent for the removal of chromium(VI). The influence of operating parameters such as sorbent amount, contact time, pH and initial metal concentration in solution on the sorption capacity were studied in a batch system. Optimum conditions for sorption were determined as wool amount, 50 g L^{-1}; pH 2; and contact time, 20 min. It was seen that when initial metal concentration in solution was increased, the uptake of Cr(VI) increased. Chromium(VI) sorption for different types of wool was also examined. Kinetic data were processed using the intraparticle diffusion model. The results suggest that the Cr(VI) uptake process seems to be controlled by external mass transfer at earlier stages and by intraparticle diffusion at later stages.

Keywords: Wool; Chromium(VI); Sorption; Kinetics; Isotherm

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