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COPPER(II) ADSORPTION ONTO HYDROXYAPATITE

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Abstract

In this study, the adsorption of Cu(II) ions on the uncalcined and calcined nanocrystalline hydroxyapatites was investigated. The nanohydroxyapatites were prepared by wet coprecipitation method and their physicochemical properties were investigated using XRD, BET and SEM-EDX analysis. The uncalcined and calcined hydroxyapatite samples have crystal sizes smaller than 100 nm and a specific surface area of 325 m²/g and 69 m²/g, respectively. The effects of solution pH, adsorbent dose, initial solution concentration and contact time have been studied in the batch adsorption experiments. At pH = 7 and ambient temperature, the uncalcined and calcined hydroxyapatite samples have high Cu(II) removal rates of about 94.62 % and 90.31 %, respectively. The Cu(II) adsorption on both uncalcined and calcined nanohydroxyapatites followed a pseudo-second order model. The results obtained showed that the hydroxyapatite, especially as the uncalcined form, possessed good adsorption ability towards Cu(II).

Keywords: adsorption, copper ion, hydroxyapatite, nanoparticle

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