



SORPTION REMOVAL OF CHROMATE IN SINGLE BATCH SYSTEMS BY UNCALCINED AND CALCINED Mg/Zn-Al - TYPE HYDROTALCITES

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Abstract

This work investigated the sorption removal of chromate anion, in single batch systems, from aqueous solutions. The process involves the sorption of the chromate by a series of Mg/Zn-Al - type hydrotalcites, with four Mg/Zn/Al ratios, in two forms: uncalcined and calcined at 500 °C. The calcined Mg-Al (Mg/Zn/Al = 2/0/1) material showed the highest sorption capacity: 35.7 mg/g. The three-parametered Langmuir-Freundlich model approximated the experimental equilibrium data over the concentration range to the best. The kinetic results of the anion sorption were fitted satisfactory with the Lagergren equation for the uncalcined and with the pseudo-second order model for the calcined materials, respectively. The calcined Mg/Zn-Al - type hydrotalcites were able to remove more than 50% of chromate anionic species within a wide range of concentration.

Key words: chromate, equilibrium, hydrotalcites, kinetics, water remediation

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