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## **SORPTION EQUILIBRIUM OF CHROMIUM (III) ON ROMANIAN CLAYS**

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### **Abstract**

The study and understanding of sorption process on natural clays is important for their use in the advanced treatment of wastewaters containing heavy metals. This paper aimed at characterizing sorption equilibrium of Cr(III) on three clays with various mineral compositions. The adsorption potential of this cation was assessed by using the Langmuir isotherm. Although the initial concentration range of the working solutions was 0.1 – 1.8 mmol/L, it was noticed that both fine (F<sub>1</sub>, R<sub>1</sub>) and coarse (F<sub>2</sub>, R<sub>2</sub>) fractions of the studied natural clays obey the Langmuir model over low equilibrium concentration ranges (about 0 – 0.3 mmol/L). Within Langmuir concentration range, the values of adsorption capacities did not differ significantly, a slight increase was recorded for fine fractions (e.g., 66 mmol/kg for F<sub>1</sub> as against 60 mmol/kg for F<sub>2</sub>). The fine fraction (C<sub>1</sub>) showed a different behaviour, according to the Langmuir model all over the studied concentration range; the highest adsorption capacity was of 325 mmol/kg. The evident increase of the quantity of retained Cr(III) with the increase of equilibrium concentration beyond Langmuir adsorption range was ascribed to Cr(III) precipitation in pores.

*Keywords:* natural clays, trivalent chromium sorption, equilibrium, Langmuir isotherm

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