Preparation and Characterization of new local clays from Ghardaïa (Algeria) for their potential uses in wastewater treatment

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Abstract. Representatif samples of natural clay materials from Ghardaia have been selected, prepared, characterized and used for the removal of heavy metal ions from aqueous solution. The structure and physicochemical properties of the raw and acid activated samples were characterized by powder X-RayDiffraction (XRD), Fourier TransformInfraRed (FT-IR) spectroscopy technics and Scanning electron microscopy (SEM).

Physico-chemical parameters such as adsorbent dose, equilibrium contact time, was studied in a serie of batch adsorption experiments at 25˚C. The obtained results revealed that the removal percentages of Cu^{2+} and Ni^{2+}ions were varying between 90 % and 70 % for 35 min. The values of thermodynamic parameters, ΔH°, ΔS° and ΔG° indicated that the adsorption of these ions was spontaneous and exothermic process in nature.

Keywords: Natural clay, Cu^{2+}, Ni^{2+}, Removal, Kinetic, thermodynamic