Abstract
The removal process of heavy metals in synthetic aqueous effluents by Brazilian natural sorbents was investigated to application in wastewater control. We investigated the sorption properties of the natural zeolite scolecite, the bentonite NT-25 and two commercial activated carbons. The sorption process of chromium(III), nickel(II), cadmium(II) and manganese(II) in synthetic aqueous effluents had been evaluated, including sorption isotherms and kinetics of single-metal solutions at 298 K by batch experiments. The sorption capacity of scolecite followed the series: Cr > Mn > Cd > Ni, which could be related to such properties as the radius of hydration and the hydration enthalpy of the cations. Adsorption of metals by clays is related to the cation exchange mechanism and the inner-sphere surface complexes formation. The sorption capacity of carbons could be related to complex stability on the surface functional groups, and a great enhancement in the sorption of metals occurs according the activation treatment. This study revealed that Brazilian natural materials could be used as adsorbents for the metal removal in low concentrations, especially when we consider that these materials can be obtained, employed and disposed of with little cost.

Keywords
Natural adsorbents, sorption process, metals removal, wastewater.