

Removal of Toxic Ni⁺⁺ Ions from Wastewater by Nano-Bentonite

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Abstract : Removal of Ni⁺⁺ ions from aqueous solution by sorption onto Nano-bentonite was investigated. Experiments were carried out as a function amount of Nano-bentonite, pH, concentration of metal, constant time, agitation speed and temperature. The adsorption parameter of metal ions followed the Langmuir Freundlich adsorption isotherm were applied to analyze adsorption data. The adsorption process has fit pseudo-second order kinetic models. Thermodynamics parameters e.g. ΔG^* , ΔS° and ΔH° of adsorption process have also been calculated and the sorption process was found to be endothermic. The adsorption process has fit pseudo-second order kinetic models. Langmuir and Freundlich adsorption isotherm models were applied to analyze adsorption data and both were found to be applicable to the adsorption process. Thermodynamic parameters, e.g., ΔG° , ΔS° and ΔH° of the on-going adsorption process have also been calculated and the sorption process was found to be endothermic. Finally, it can be seen that Bentonite was found to be more effective for the removal of Ni (II) same with some experimental conditions.

Keywords : waste water, nickel, bentonite, adsorption

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