

Equilibrium and kinetic studies of Pb (II) ion uptake from water by chitosan

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Recently natural biopolymers such as Chitosan are used for heavy metal separation. Chitosan has attracted much interest because of its cheap sources, higher affinity for most heavy metals; It is also harmless to humans and presents excellent biological properties such as biodegradation, immunological, and antibacterial activity. Among the many other low cost sorbents identified, Chitosan has very good sorption capacity for several metal ions because they possess a number of different functional groups such as hydroxyls and amines to which metal ions can bind either by chemical or by physical. Chitosan is prepared from chitin, a natural biopolymer extracted from crustacean shells by partially deacetylating its acetamido groups. The sorption of lead ions from aqueous solution onto chitosan has been studied. Equilibrium studies have been carried out to determine the capacity of chitosan for lead ions adsorption. The effects of solution pH and adsorption kinetic also have been studied. The results obtained from the equilibrium isotherms adsorption study of Pb(II) ion, indicated to be well fitted to the Langmuir isotherm equation under the concentration range studied. The adsorption kinetic study demonstrated that the adsorption process was followed the pseudo-second-order model equation. Lead adsorption on chitosan was found to be strongly pH-dependent and displayed a maximum uptake capacity at pH around ۶.

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