

Removal of lead (II) and copper (II) ions from aqueous solution by baobab (*Adononsia digitata*) fruit shells biomass

Abstract

High concentration of heavy metals in the environment can be detrimental to a variety of living species. The purpose of this research was to explore the use of baobab (*Adononsia digitata*) fruit shells in the removal of lead(II) and copper(II) ions from aqueous solutions. Batch experiments were conducted to determine the effect of varying adsorption parameters on the removal of aqueous lead and copper ions. The adsorption of Pb(II) was found to be maximum at pH 5.5 using adsorbent dose of 0.7 g. The adsorption of Cu(II) was found to be optimum at pH 6 using adsorbent dosage of 0.9 g. The adsorption data conformed to Langmuir, Freundlich and Temkin isotherms. However the Temkin isotherm showed the best fitting model with highest R² values for both lead and copper (0.9977 and 0.9967) respectively. Baobab fruit shells can be used as a cost effective adsorbent for the removal of lead(II) and copper(II) ions from aqueous solutions in the treatment of industrial effluent.