

Sorption removal of arsenic (V) by Sn-loaded poly(hydroxamic) acid chelating resin

ABSTRACT

Sorption conditions of arsenate ions onto Sn-loaded poly (hydroxamic acid) chelating resin (Sn-PHA) have been studied. Sorption isotherms data correlated well to the Langmuir model with maximum capacity of 38.46 mg g⁻¹ at pH 2. Sorption process follows pseudo-second order kinetics. Intraparticle diffusion was found to take part in sorption processes. The free energy (E) was 11.18 kJ mol⁻¹ which shows the sorption is an ion-exchange process. Thermodynamic parameters, ΔH° , ΔS° and ΔG° were also calculated from the experimental data. Standard heat of sorption was found to be endothermic and entropy change value was calculated to be positive. Negative ΔG° value indicates that the sorption process for the arsenic anions onto Sn-PHA is spontaneous.

Keyword: Tin-poly(hydroxamic acid) resin; Arsenic removal