

عنوان مقاله:

Batch Biosorption of Pb²⁺ ions from Aqueous Solution by Alkaline Pretreated Orange Residue

محل انتشار:

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خلاصه مقاله:

A batch adsorption method was applied to study the adsorption of Pb²⁺ ions from aqueous solution by alkaline treated orange peel. Effect of initial lead concentration, contact time, pH of solution, temperature, adsorbent dose and particle size were also investigated. A strong dependence of adsorption capacity on pH was observed as the capacity increased with increasing pH from 2 to 5.5. The amount of orange peel has a specified role in the adsorption rate and removal efficiency, adsorption rate is increased as orange peel increased from 1 to 2 g l⁻¹ but it hadn't sensible change from 2 g l⁻¹ to 4 g l⁻¹. The maximum Pb²⁺ removal efficiency was 99.8% at pH 5.5 with a contact time 25 min and 2 g l⁻¹ treated orange peel. Adsorption of lead was found to fix with increasing temperature. The kinetic data were analyzed using first order and second order kinetic model. Results show that the second order kinetic model was found to agree well with the experimental data. Equilibrium isotherm data were tested using two models-Freundlich and Langmuir. Equilibrium data agree well with Langmuir model. The maximum adsorption capacity of lead by orange treated peel from Langmuir model was 41.667 m g⁻¹ at pH 5.5. According to the results, treated orange peel is recommended as a low cost and available and harmless adsorbent to remove Pb²⁺ from lead aqueous solution.

کلمات کلیدی:

Biosorption, Pb(II), Alkaline Pretreated OR, Batch

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