

عنوان مقاله:

The effect of influent concentration on the breakthrough curve of zinc sorption by magnetic nanocomposite in a fixed-bed column

محل انتشار:

پانزدهمین کنگره ملی مهندسی شیمی ایران (سال: 1393)

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خلاصه مقاله:

In the present study, maghemite (γ -Fe₂O₃) nanoparticles were synthesized in one step by co-precipitation method and then coated by polyrhodanine via chemical oxidation polymerization. The prepared magnetic nanocomposite was used as an effective adsorbent to separate zinc ions from aqueous solution in a fixed-bed column. The effect of influent Zn concentration on the breakthrough characteristics of the adsorption system was determined. Various initial Zn concentrations from 50 to 150mg/L were used. The breakthrough time, exhausted time and treated volume decreased with the increase of influent concentration. The maximum percentage of Zn adsorption on γ -Fe₂O₃/polyrhodanine nanocomposite was 59.5% at 50mgL⁻¹ influent concentration of Zn ions. The amount of maximum adsorption capacity increased from 20.59mg/g to 33.6mg/g with increasing influent concentration from 50mg/L to 150mg/L. The increase of maximum capacity with increasing of initial Zn concentration may be due to the higher driving force which led to decrease of mass transfer resistance.

کلمات کلیدی:

nanocomposite, Zn ions, column, effluent, breakthrough

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