

عنوان مقاله:

Kinetic Studies on Simultaneous Biosorption of Divalent Copper and Hexavalent Chromium using Mallet Flower Leaf Powder

محل انتشار:

مجله بین المللی فناوری نانو در آب و محیط زیست, دوره 5, شماره 3 (سال: 1399)

تعداد صفحات اصل مقاله: 14

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خلاصه مقاله:

The aim of this work is to exploit low cost and efficient sorbent for removal of heavy metals from the aqueous solution using Mallet Flower Leaf Powder (MFLP). MFLP is processed into a fine powder and used as a bio-adsorbent. Experiments are conducted to find out the feasibility of metal recovery process to reclaim the metals. The adsorption rates of both Chromium and Copper are lowered by ۳.۴% and ۴۸.۴% respectively in contrast to those obtained when only one metal is present in the solution. The presence of Copper along with Chromium has not much affected the adsorption rates of Chromium. There is higher adsorption rate for Chromium than for Copper at different temperatures. In the binary system, the copper adsorption rate is found to be suppressed by the presence of Cr(VI). The uptake of Cr(VI) is higher in the binary system than the single system, while the uptake of Cu(II) is lower in the binary system than the single system. The effect of initial concentration on recovery of Cu(II) from loaded adsorbent decreases up to ۶۰ mg/l where about ۶۸% recovery was found. The maximum recovery for Cu(II) was found to be at an adsorbent dosage in the range ۱۵-۳۵ g. As the initial concentration of Cu(II) increases, the retention of metal on MFLP increases. The data collected are verified with the kinetic studies. The results suggested favorable removal efficiency of copper and chromium from waste water using MFLP.

کلمات کلیدی:

Chromium, copper, Fourier transform infrared Analysis (FTIR), Mallet Flower Leaf powder (MFLP), Scanning Electron (Microscopy) (SEM)

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