

## عنوان مقاله:

Performance of keratin nanoparticle and its magnetic nanocomposite for Zn(II) removal from its aqueous solution

## محل انتشار:

فصلنامه پیشرفت ها در فناوری محیط زیست, دوره 6, شماره 1 (سال: 1399)

تعداد صفحات اصل مقاله: 9

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## خلاصه مقاله:

The comparative sorption studies were carried out to investigate the performance of keratin nanoparticles (KNPs) and magnetic KNPs (MKNPs) for Zn(II) uptake. MKNPs showed remarkably higher Zn(II) removal due to the lower keratin weight percent in its structure (۸.۴%). MKNPs revealed relatively uniform Zn(II) removal within pH range between ۴.۰ to ۶.۰ at the temperature of ۲۵°C rather than KNPs. Both KNP and MKNP exhibited two-stage kinetic behavior and reached to their equilibrium adsorption capacity within ۳۰ min. The adsorption of Zn(II) on KNPs and MKNPs followed pseudo second order kinetic model. It was found that the experimental data were best fitted to Sips or Redlich-Peterson isotherm when KNP was used as biosorbent. Unlike KNP, MKNP conformed better to Langmuir model. The maximum adsorption capacity of MKNP at two doses of ۳.۰ and ۵.۰ g/L was calculated to be ۳۰ and ۱۸ mg/g, respectively. As the dosage of MKNP raised from ۳.۰ to ۵.۰ g/L, the value of KL increased from ۰.۰۴۵ L/mg to ۰.۱۵۴ L/mg, confirming more biosorbent tendency to adsorb metal ions.

## کلمات کلیدی:

Keratin nanoparticles, Magnetic keratin, Zn(II) removal, adsorption isotherm, Adsorption kinetic

## لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1227096>

