

## عنوان مقاله:

Cadmium and chromium adsorption from water using Fe<sub>3</sub>O<sub>4</sub>@SiO<sub>2</sub>@ nano-chitosan/graphene oxide composite

## محل انتشار:

بیست و یکمین سمینار شیمی معدنی انجمن شیمی ایران (سال: 1398)

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## خلاصه مقاله:

Heavy metals are the most toxic pollutants which enter the environment by diffusion through various industries and considered as a serious threat to human health due to the indissolubility and carcinogenic properties [1]. During past years, some techniques have been developed to remove heavy metal ions from water and wastewater such as ion-exchange, reverse osmosis, adsorption, photocatalytic degradation, membrane filtration, etc. The adsorption technique is used as a cost-effective and high-efficiency method. In recent decades, a variety of adsorbents including different polymers such as cellulose, chitosan, and carbonaceous matters like graphene oxide, as well as minerals as metal oxides, have attracted particular attention because of their unique properties [2,3]. In this study, we synthesized Fe<sub>3</sub>O<sub>4</sub>@SiO<sub>2</sub>@ nano-chitosan/graphene oxide composite to remove Cr<sup>3+</sup> and Cd<sup>2+</sup> ions from contaminated waters. Chemical and morphological features of the prepared adsorbent were analyzed by Fourier transform infrared and Raman spectroscopies, scanning and transmission electron microscopies and X-ray powder diffraction technique. The results showed that the adsorption kinetic and isotherm data well fitted the pseudo-second-order and Freundlich models, respectively for cadmium ions with a maximum adsorption capacity of ca. 314.44 mg/g. Initial investigation was also carried out for the chromium adsorption which confirmed the high efficiency of the removal process for Cr<sup>3+</sup> ions; the experiments will be completed. It is believed that the nanocomposite with surface functional groups such as OH, COOH, and NH<sub>2</sub> representing superior chemical properties, can be utilized as a promising candidate to remove .toxic heavy metal ions especially cadmium and chromium from water

## کلمات کلیدی:

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