عنوان مقاله:

Preparation of Nanohybrid CuO-Fe۳O۴ /Zeolite Nanocomposite as Potential Adsorbent for Toxic As (V) and Pb(II) .from Water Solution

محل انتشار:

مجله علم مواد و مهندسی ایران, دوره 19, شماره 3 (سال: 1401)

تعداد صفحات اصل مقاله: 13

نویسندگان:

Abdullah Alswata - *aDepartment of chemistry, Faculty of education and Applied Science -Arhab, Sana'a University, Yemenalswat۱۹۷۸@gmail.com*

Shaimaa Ali - *d Chemistry Department, Faculty of Science, Mansoura University, Mansoura , Egypt.shaimaa_labeeb۱۹@yahoo.com*

Fares Alshorifi - *bDepartment of chemistry, Faculty of Science, University OF Saba Sheba region, Marb, YemencDepartment of chemistry, Faculty of Science, Sana'a University, Sana'a ,Yemen*

خلاصه مقاله:

ABSTRACT In this paper, novel Nanohybrid CuO-Fe۳O۴/Zeolite nanocomposites (HCFZ NCs) have been synthesized to improve the adsorption capacity and activity for removing the Arsenic and Lead cations from the contaminated water solutions. The nanohybrid ۴, ۱۰, and ۲۰ -HCFZ NC samples were investigated by XRD, FT-IR, TEM, FESEM, EDX, and BET. The characterization results of these catalysts confirmed the presence of CuO and Fe۳O۴ NPs in nanospherical shapes as Nanohybrid Cu and Fe oxides on the zeolite surface. Notably, the ۱۰-HCFZ NC sample showed the highest removal efficiency of harmful metallic pollutants from the water in comparison to the prepared neat zeolite, ۴-HCFZ NC, and ۲۰-HCFZ NC samples, with a percentage removal of (۹۷.۹ %) for Pb ions and (۹۳.۵ %) for As ions within ۳۰ minutes (۱۰۰ ppm). According to the adsorption isotherms results, R۲ values for the Langmuir isotherm were the highest, suggesting that the experimental results fit better the Langmuir isotherm model. Generally, according to the obtained results, there is a possibility of enhancing the efficiency of Nanohybrid CuO-Fe۳O۴/Zeolite NCs to .remove Arsenic and Lead ions from polluted aqueous solutions

کلمات کلیدی:

Zeolite, nanometal oxide, adsorption, nanoparticles, Nanohybrid CuO-Fe۳O۴