

## عنوان مقاله:

Synthesis and Application of Amin-modified Fe<sub>3</sub>O<sub>4</sub>@MCM-41 Core-shell Magnetic Mesoporous for Effective Removal of pb<sub>2+</sub> ions from Aqueous Solutions and Optimization with Response Surface Methodology

## محل انتشار:

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تعداد صفحات اصل مقاله: 11

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## خلاصه مقاله:

In this study, a selective, fast and novel magnetic mesoporous silica sorbent Fe<sub>3</sub>O<sub>4</sub>@MCM-41-NH<sub>2</sub>, was synthesized, functionalized and has been used for the removal of Pb<sup>2+</sup> ions from aqueous solution. The characteristics of the Fe<sub>3</sub>O<sub>4</sub>@MCM-41-NH<sub>2</sub> sorbent was investigated by XRD, VSM, SEM, TEM, BET, and FT-IR. The response surface methodology (RSM) based on central composite design (CCD) was utilized for estimating the effects of parameters, namely contact time (min), pH, the quantity of adsorbent (g) and initial concentration of Pb<sup>2+</sup>. The quadratic model was used as the best model for guessing variables. The results of the analysis of variance for this model were obtained with a high F-value (50.28), very low P-value (<0.0001) and non-significant lack of fit (0.2251). The maximum adsorption capacity was obtained at 46.08 mg/L. Fitting equilibrium data with different isotherm models shows that Freundlich isotherm was the best-fitted model. The pseudo-second-order model was the best model for fitting experimental data.

## کلمات کلیدی:

Adsorption, Central Composite Design, Magnetic Mesoporous Silica Sorbent, Pb<sup>2+</sup>, Removal

## لینک ثابت مقاله در پایگاه سیویلیکا:

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