

عنوان مقاله:

Removal of Palladium by Sodiumdodecyl Sulphate coated magnetite nanoparticles from water samples

محل انتشار:

اولین همایش ملی و تخصصی پژوهش های محیط زیست ایران (سال: 1392)

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خلاصه مقاله:

A rapid, sample and sensitive magnetic solid phase extraction method was developed for the preconcentration and determination of palladium ions in water samples. In this study, palladium ions from complexes with 5-(4-Dimethylaminobenzylidene) rhodanine (DMR) and then are quantitatively extracted to the surface of sodium dodecyl sulfate (SDS) – coated magnetite nanoparticles (Fe₃O₄NPs) in a batch process and then analysis by flame atomic absorption spectrometry (FAAS). The effect of different parameters such as pH of sample, concentrations of DMR, amounts of SDS and Fe₃O₄NPs, contact time and interfering ions on the removal of palladium ions were studied. Salt addition has a negative $\mu\text{g L}^{-1}$ with $R^2=0.9985$. Detection and relative standard deviation of the proposed method were $20 \mu\text{g L}^{-1}$ and 2.87% respectively. The adsorption data were analyzed by Langmuir and Freundlich isotherm models and a maximum adsorption amount of 344.83 mg g^{-1} and a Langmuir adsorption equilibrium constant of 0.0115 Lmg^{-1} and Freundlich constant (Kf) 5.84 and (n) 1.26 were obtained. Finally, this adsorbent was successfully used for removal of palladium from several environmental water samples.

کلمات کلیدی:

palladium, Magnetitie nanoparticles, Wastewaters, Removal, Sodium dodecyl sulphate

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