عنوان مقاله:

Adsorption and determination of Lead in water and human urine samples based on Zn۲(BDC)۲(DABCO) MOF as polycaprolactone nanocomposite by suspension micro solid phase extraction coupled to UV–Vis spectroscopy

محل انتشار:

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خلاصه مقاله:

Today, the safety of water resource is the most important challenges which was reported by health and environment organizations. Water pollution can be created by hazardous contaminants of environmental pollutions. Lead as a heavy metal has carcinogenic effects in humans. Metal organic framework (MOF) is a highly porous material with different application. The Zn۲(BDC)۲(DABCO) is a good candidate of MOF based on zinc metal (Zn-MOF) with potential adsorption/extraction. In this work, Zn۲(BDC)۲(DABCO) MOF as polycaprolactone (PCL) nanocomposite were applied for lead adsorption/extraction from ۵۰ mL of aqueous solution by ultraassisted dispersive suspension-micro-solid phase extraction procedure (USA-S- µ-SPE) at pH=۸. The samples were characterized by the FTIR, the XRD analysis, the FE-SEM and the BET surface area. The effect of parameters was investigated on lead absorption before determined by UV–Vis spectroscopy. The linear range, the detection limit (LOD) and enrichment factor of adsorbent were obtained ۰.۰۵-۱ mg L-۱, ۰.۲۵ µg L-۱ and ۴۸.۷, respectively (r = ۰.۹۹۹۲, RSD%=۳.۶۵). The absorption capacity of Zn۲(BDC)۲(DABCO) MOF for ۵۰ mg L-۱ of standard lead solution were obtained ۱۳۳.۸ mg g-۱ for ۰.۲۵ g of adsorbent. The results indicate that this nanocomposite can have a good potential to develop different adsorbents.

کلمات کلیدی:

Lead, Metal organic framework, Polycaprolactone, Nanocomposite, Adsorption, Suspension-micro-solid phase extraction procedure