

## عنوان مقاله:

Thallium extraction in urine and water samples by nanomagnetic ۴-Aminothieno[۲,۳-d] pyrimidine-۲-thiol functionalized on graphene oxide

## محل انتشار:

فصلنامه روش های تجزیه در شیمی محیط زیست, دوره 4, شماره 3 (سال: 1400)

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## خلاصه مقاله:

Thallium is a water-soluble metal and extra dosage has toxicological effect in human body. Thallium is readily absorbed by inhalation, ingestion and skin contact. The symptomatology of thallium toxicity was seen in patients with hemorrhage, bone/gastrointestinal problems, delirium, convulsions and coma. So, accurate determination of thallium in water and human urine is necessary. In this research, a novel and applied method based on ۲۵ mg of nanomagnetic ۴-Aminothieno[۲,۳-d] pyrimidine-۲-thiol functionalized on graphene oxide (Fe<sup>۳</sup>O<sub>۴</sub>-ATPyHS@GO) was used for thallium extraction in ۵۰ mL of water, wastewater and urine samples by dispersive magnetic micro solid-phase extraction (DM-μ-SPE). After extraction and back-extraction of solid phase by ۱ mL of nitric acid solution, the concentration of thallium ions determined by flame atomic absorption spectrometry (F-AAS). The working/linear range, the limit of detection (LOD), and preconcentration factor (PF) were achieved (۴-۱۴۰۰ μg L<sup>-۱</sup>; ۴-۳۰۰ μg L<sup>-۱</sup>), ۰.۹ μg L<sup>-۱</sup>, and ۵۰, respectively (Mean RSD%=۱.۸ water; ۲.۱ urine). The absorption capacity of GO and Fe<sup>۳</sup>O<sub>۴</sub>-ATPyHS@GO adsorbent were achieved ۷.۲ mg g<sup>-۱</sup> and ۱۳۷.۵ mg g<sup>-۱</sup> for ۵ mg L<sup>-۱</sup> of thallium, respectively. The procedure was validated by ICP-MS analyzer.

## کلمات کلیدی:

Thallium, Water and urine, Nanomagnetic ۴-Aminothieno[۲,۳-d] pyrimidine-۲-thiol functionalized on graphene oxide, Dispersive magnetic micro solid-phase extraction

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