عنوان مقاله:

Simultaneous Extraction and Preconcentration of Benzene, Toluene, Ethylbenzene and Xylenes from Aqueous Solutions Using Magnetite–Graphene Oxide Composites

محل انتشار:

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خلاصه مقاله:

For simultaneous extraction and determination of benzene, toluene, ethylbenzene, m,p -xylenes, and o-xylene (BTEX) gas chromatography -flame ionization detector (GC-FID) and magnetic dispersive micro-solid phase extraction were used for real water samples. To have an efficient sorbent, magnetic graphene oxide (Fe3O4@GO) was synthesized and utilized in the process of microextraction. The analytes were adsorbed by vortexing, supernatant was decanted using a magnet, and the sorbent was eluted using a proper solvent. Screening and optimizing significant variables in the process of microextraction were carried out following a two-stage approach, including Plackett-Burman screening design, and central composite design, accompanied by response surface analysis. The ranges of linear dynamic were 10 - 3000 ng mL– 1 and limits of detection were 3-10 ng mL– 1. The relative standard deviations of the intra-day and inter-day were blow 8.0 and 10.0% (n=5), respectively. The introduced technique was implemented in real water samples successfully, and the relative percentages of recovery determined for the spiked water samples at 200.0 ng .mL– 1 ranged from 80.3 to 103.0%

کلمات کلیدی:

graphene oxide, Magnetic adsorbent, magnetic dispersive micro-solid phase extraction, BTEX