عنوان مقاله:

CuFe۲O۴@poly(N-methylpyrrole) for magnetic solid-phase extraction of polycyclic aromatic hydrocarbons

محل انتشار:

شانزدهمین کنفرانس ملی پژوهش های نوین در علوم و مهندسی شیمی (سال: 1401)

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خلاصه مقاله:

A nanocomposite of poly(N-methylpyrrole) coated CuFe۲O۴ magnetic nanoparticles with a core–shell structure was prepared by chemical co-precipitation method and applied as a magnetic adsorbent for solid-phase extraction of polycyclic aromatic hydrocarbons (PAHs) in combination with gas chromatography-flame ionization detection. The nanocomposite was characterized by X-ray diffraction spectrometry and vibrating sample magnetometry for confirmation of their composition phase and magnetic properties, respectively. Important parameters influencing the coating and extraction efficiency were investigated. Under the optimized conditions, the calibration curves were linear in the concentration rangeof ۰.۰۵–۱۰۰ ng mL-۱. Limits of detection of ۰.۱–۰.۵ pg mL-۱ were achieved. The intra- and inter-day precisions (N = ۷) and reproducibilities (N = ۳) were from ۴.۶–۵.۹%, ۶.۵–۷.۴%and ۷.۹–۹.۵% at ۰.۱ ng mL-۱ concentration, respectively. The method has been successfully applied to the analysis of trace PAHs in real water samples. The experimental results showed that the proposed procedure was simple, convenient and fast to analyze PAHs.

کلمات کلیدی:

Polycyclic aromatic hydrocarbons, Nanocomposite, Magnetic solid-phase extraction.

لینک ثابت مقاله در پایگاه سیویلیکا: