

## 分子印迹聚合物为涂层的吸附萃取搅拌棒在环境水样双酚A含量测定中的应用

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## Determination of bisphenol A in environmental water samples extraction based on molecularly imprinted polymer

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摘要	参考文献	相关文章
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**摘要** 以双酚A(BPA)为单体,利用整体材料“原位”聚合技术制备以分子印迹聚合物为涂层的吸附萃取搅拌棒(MIP-SBSE),然后与高效液相色谱(HPLC)-二极管阵列检测器联用,探讨其对环境水样BPA的选择萃取性能。优化萃取过程中吸附和解吸时间、解吸液种类以及基底pH度对目标化合物的选择吸附性能。在最佳条件下,MIP-SBSE可对模板分子进行有效的选择吸附,线性范围为1.0~200  $\mu\text{g/L}$ ,检出限(信噪比S/N=10)分别为0.28 $\mu\text{g/L}$ 和0.94  $\mu\text{g/L}$ 。在实际水样分析中,具有良好的加标回收率,其值为96.0%~108.7%。研究结果表明该方法具有简便、灵敏和环境友好等特点。

**关键词:** 高效液相色谱 搅拌棒吸附萃取 分子印迹聚合物 双酚A

**Abstract:** A new stir bar sorptive extraction (SBSE) based on molecularly imprinted polymer (MIP) with bisphenol A template was prepared. Based on it, a simple, selective and sensitive method for the determination of bisphenol A was developed combined with high performance liquid chromatography (HPLC) with diode array detection. To obtain the optimum extraction performance, several main parameters, including extraction and desorption time, the desorption solvent, pH value and contents of inorganic salt in the sample matrix, were investigated. The optimum parameters for the extraction of BPA from water matrix with the MIP-SBSE are as follows: extraction and desorption time were 120 min and 10 min, respectively; the pH value of matrix was 10.0; using acetonitrile (including 1% acetic acid) as desorption solvent; no salt was added in the matrix. Under the optimized experimental conditions, the method showed a good linearity between 1.0~200  $\mu\text{g/L}$ . The detection limit (S/N=3) and quantification limit (S/N=10) of the proposed method for the BPA was 0.28  $\mu\text{g/L}$  and 0.94  $\mu\text{g/L}$ , respectively. The proposed method was successfully applied to the determination of the target compound in water samples. The recoveries of spiked target compound in real samples ranged from 96.0%~108.7%. The results indicated that the developed method possessed the advantages such as high sensitivity, simplicity, low cost and environmental friendliness.

**Keywords:** high performance liquid chromatography (HPLC) stir bar sorptive extraction (SBSE) molecularly imprinted polymer bisphenol A

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