

研究论文

Tenax采样管富集气相色谱-质谱法测定空气中的痕量酚类化合物

杨丽莉, 胡恩宇, 母应锋, 纪英

南京市环境监测中心站, 江苏 南京 210013

收稿日期 2006-5-29 修回日期 2006-7-21 网络版发布日期 2007-2-9 接受日期

摘要 建立了Tenax采样管富集气相色谱-质谱测定空气中痕量酚类化合物的方法。用Tenax采样管吸附环境空气中的痕量酚类化合物, 用甲醇淋洗解吸酚类化合物, 洗脱液加入萘-D8作为内标, 利用气相色谱-选择离子监测质谱(GC-MS/SIM)进行检测, 内标法定量。该方法定性、定量准确, 线性响应良好, 回归曲线的线性相关系数均大于0.999, 平均回收率为92.4%~102%, 测定干扰小, 检测灵敏度高, 按采样10 L计算, 空气中最低检测浓度可达0.001 mg/m³。用于实际样品测定, 完全能满足环境空气中痕量酚类化合物监测的要求。

关键词 [Tenax采样管](#) [气相色谱-质谱法](#) [酚类化合物](#) [空气样品](#)

分类号

Determination of Trace Phenol Compounds Using Gas Chromatography-Mass Spectrometry Coupled with Tenax Adsorption Tube for Enrichment of Air Samples

YANG Lili, HU Enyu, MU Yingfeng, JI Ying

Nanjing Environment Monitoring Center, Nanjing 210013, China

Abstract

A novel determination method for trace of seven phenol compounds in air samples has been established. They were collected with Tenax adsorption tube (180 mm×60 mm glass tube packed with 150 mg Tenax (4060 mesh)) and desorbed with methanol. Five microlitres of naphthalene-D8 (internal standard) solution was added to the eluate. One microlitre of the mixture solution was injected into an HP-5MS capillary column (30 m×0.25 mm×0.25 μm) and determined by gas chromatography-mass spectrometry with selected ion monitoring (GC-MS/SIM). The selected ions were m/z 94, 95, 66, 108, 107, 77, 90, 122, 121, 107 and 136. The quantitative ions, m/z 94 for phenol, m/z 108 for cresol, m/z 122 for xylenol and m/z 136 for internal standard, were selected. The average recoveries of phenol compounds (spiked at the levels of 0.25, 1.00, 5.00 μg) ranged from 92.4% to 102% and the relative standard deviations were less than 4.8%. When the air sample volume was 10 L, the detection limits were less than 0.001 mg/m³. Good linearities were observed in the range from 0.05 to 20.0 mg/L. The method is simple, fast, sensitive and accurate for the determination of phenol compounds in air samples.

Key words [Tenax adsorption tube](#) [gas chromatography-mass spectrometry \(GC-MS\)](#) [phenol compounds](#) [air sample](#)

DOI:

通讯作者 杨丽莉 ylylj@126.com

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(403KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ 本刊中 [包含“Tenax采样管”的相关文章](#)
- ▶ 本文作者相关文章

- [杨丽莉](#)
- [胡恩宇](#)
- [母应锋](#)
- [纪英](#)