

Fabrication of bi-monomer copolymer of pyrrole-indole for highly efficient solid phase microextraction of benzene derivatives

Jie Zhang, Baizhao Zeng, Faqiong Zhao



PII: S0039-9140(17)30853-6  
DOI: <http://dx.doi.org/10.1016/j.talanta.2017.08.035>  
Reference: TAL17831

To appear in: *Talanta*

Received date: 29 May 2017  
Revised date: 3 August 2017  
Accepted date: 9 August 2017

Cite this article as: Jie Zhang, Baizhao Zeng and Faqiong Zhao, Fabrication of bi-monomer copolymer of pyrrole-indole for highly efficient solid phase microextraction of benzene derivatives, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2017.08.035>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Fabrication of bi-monomer copolymer of pyrrole-indole for highly efficient solid phase microextraction of benzene derivatives

Jie Zhang, Baizhao Zeng, Faqiong Zhao\*

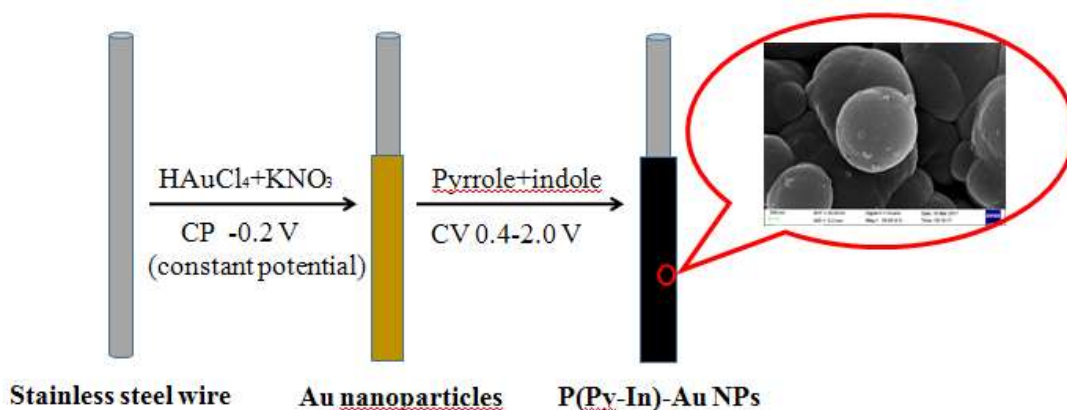
Key Laboratory of Analytical Chemistry for Biology and Medicine (Ministry of Education),  
College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, Hubei Province,  
P. R. China

\*Corresponding author. Tel: 86-27-68752701, Fax: 86-27-68754067. [fqzhao@whu.edu.cn](mailto:fqzhao@whu.edu.cn)

## Abstract

A procedure for direct electrochemical deposition of poly(pyrrole-indole) on gold nanoparticles coated stainless steel wire was established, and the formation of copolymer was confirmed by infrared spectroscopy. The synthesized coating showed unique microstructure, excellent extraction efficiency (2-10 times of corresponding single-component coating), high thermal stability (up to 300 °C) and good durability (could be used for more than 200 times). As a novel and promising extraction coating, it was used for the headspace solid phase microextraction–gas chromatography detection of some benzene derivatives, including chlorobenzene, bromobenzene, p-bromotoluene, m-nitrotoluene and p-nitrotoluene. Under the optimized conditions, their GC peak areas were linear to their concentrations in the ranges of about 0.05-100  $\mu\text{g L}^{-1}$ , and the detection limits were 0.012-0.029  $\mu\text{g L}^{-1}$  (S/N=3). The run-to-run RSDs were lower than 3.9% (n=4), the fiber-to-fiber RSDs were 4.3%-7.8% (n=4). The proposed method was successfully applied to the determination of benzene derivatives mentioned above in real samples with good recoveries from 88.3% to 103.7%.

## Graphical abstract



Download English Version:

<https://daneshyari.com/en/article/5140646>

Download Persian Version:

<https://daneshyari.com/article/5140646>

[Daneshyari.com](https://daneshyari.com)