

# Author's Accepted Manuscript

A new voltammetric sensor for sensitive and selective determination of xanthine based on DNA and polyaniline composite Langmuir-Blodgett film

Lina Zou, Yinfeng Li, Shaokui Cao, Baoxian Ye



[www.elsevier.com/locate/talanta](http://www.elsevier.com/locate/talanta)

PII: S0039-9140(14)00452-4  
DOI: <http://dx.doi.org/10.1016/j.talanta.2014.05.057>  
Reference: TAL14817

To appear in: *Talanta*

Received date: 17 March 2014  
Revised date: 28 May 2014  
Accepted date: 30 May 2014

Cite this article as: Lina Zou, Yinfeng Li, Shaokui Cao, Baoxian Ye, A new voltammetric sensor for sensitive and selective determination of xanthine based on DNA and polyaniline composite Langmuir-Blodgett film, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2014.05.057>

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.

**A new voltammetric sensor for sensitive and selective determination  
of Xanthine based on DNA and Polyaniline composite**

**Langmuir-Blodgett film**

Lina Zou<sup>a</sup>, Yinfeng Li<sup>a,b</sup>, Shaokui Cao<sup>a,\*</sup>, Baoxian Ye<sup>a,\*</sup>

<sup>a</sup> College of Chemistry and Molecular Engineering and School of Material Science & Engineering, Zhengzhou University, 450001, P R China

<sup>b</sup> School of Chemical and material Engineering, Henan University of Urban Construction, Pingdingshan 467036, PR China

\*Corresponding author: Prof. Baoxian Ye, College of Chemistry and Molecular Engineering, Zhengzhou University, Zhengzhou, 450001, P. R. China, E-mail: yebx@zzu.edu.cn, Tel: +86 0371 67781757, Fax: +86 0371 67763654

\*Corresponding author: Prof. Shaokui Cao, School of Material Science & Engineering, Zhengzhou University, Zhengzhou, 450001, P. R. China, E-mail: caoshaokui@zzu.edu.cn, Tel: +86 0371 67763561, Fax: +86 0371 67763523

**Abstract:** DNA-Polyaniline (PAn) complex Langmuir-Blodgett film modified glassy carbon electrode (GCE) was used as a new voltammetric sensor (DNA/PAn-LB/GCE) for xanthine (XA) detection. The characteristic of DNA/PAn-LB film was studied by electrochemical impedance spectroscopy and scanning electron microscope. Electrochemical behaviors of XA at the sensor were studied in pH 7.0 phosphate buffer solutions by cyclic voltammetry and differential pulse anodic voltammetry. The results showed that this new modified electrode exhibited an excellent immunity from uric acid and hypoxanthine interference and a new sensitive and selective electroanalytical method for XA was proposed with wider linear range. Under the optimum conditions, the calibration curve for XA was obtained over the range of  $7.0 \times 10^{-8} \sim 1.0 \times 10^{-5}$  mol L<sup>-1</sup>, with the detection limit of  $3.0 \times 10^{-8}$  mol L<sup>-1</sup>. The practicability of this method was demonstrated by determining the concentration of XA in human serum samples.

Download English Version:

<https://daneshyari.com/en/article/7680009>

Download Persian Version:

<https://daneshyari.com/article/7680009>

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