

## Accepted Manuscript

Fluorescent graphene quantum dot nanoprobe for the sensitive and selective detection of mercury ions

Baojuan Wang, Shujuan Zhuo, Luyang Chen, Yongjun Zhang

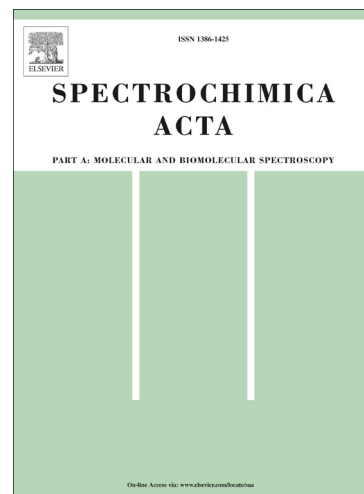
PII: S1386-1425(14)00702-1  
DOI: <http://dx.doi.org/10.1016/j.saa.2014.04.129>  
Reference: SAA 12093

To appear in: *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*

Received Date: 10 December 2013  
Revised Date: 17 February 2014  
Accepted Date: 21 April 2014

Please cite this article as: B. Wang, S. Zhuo, L. Chen, Y. Zhang, Fluorescent graphene quantum dot nanoprobe for the sensitive and selective detection of mercury ions, *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* (2014), doi: <http://dx.doi.org/10.1016/j.saa.2014.04.129>

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 proof before it is published in its final 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.



## Fluorescent graphene quantum dot nanoprobe for the sensitive and selective detection of mercury ions

Baojuan Wang<sup>a</sup>, Shujuan Zhuo<sup>b,\*</sup>, Luyang Chen<sup>b</sup>, Yongjun Zhang<sup>b</sup>

<sup>a</sup> College of Life Sciences, Anhui Normal University, Wuhu 241000, People's Republic of China

<sup>b</sup> The key Laboratory of Functional Molecular Solids, Ministry of Education, College of Chemistry and Materials Science, Anhui Normal University, Wuhu 241000, People's Republic of China

### Abstract

Graphene quantum dots were prepared by ultrasonic route and served as a highly selective water-soluble probe for sensing of  $\text{Hg}^{2+}$ . The fluorescence emission spectrum of graphene quantum dots was at about 430 nm. In the presence of  $\text{Hg}^{2+}$ , the fluorescence of the quantum dots significantly quenched. And the fluorescence intensity gradually decreased with the increasing concentration of  $\text{Hg}^{2+}$ . The change of fluorescence intensity is directly proportional to the concentration of  $\text{Hg}^{2+}$ . Under optimum conditions, the linear range for the detection of  $\text{Hg}^{2+}$  was  $8.0 \times 10^{-7}$  to  $9 \times 10^{-6}$  M with a detection limit of  $1.0 \times 10^{-7}$  M. In addition, the preliminary mechanism of fluorescence quenching was discussed in the paper. The constructed sensor with high sensitivity and selectivity, simple, rapid properties makes it valuable for further application.

Download English Version:

<https://daneshyari.com/en/article/7672142>

Download Persian Version:

<https://daneshyari.com/article/7672142>

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