

Accepted Manuscript

Title: Label-free fluorescence aptasensor for sensitive determination of bisphenol S by the salt-adjusted FRET between CQDs and MoS₂

Authors: Kai Chen, Wentao Zhang, Yuhuan Zhang, Lunjie Huang, Rong Wang, Xiaoyue Yue, Wenxin Zhu, Daohong Zhang, Xu Zhang, Ying Zhang, Jianlong Wang



PII: S0925-4005(17)32449-8
DOI: <https://doi.org/10.1016/j.snb.2017.12.116>
Reference: SNB 23804

To appear in: *Sensors and Actuators B*

Received date: 12-5-2017
Revised date: 17-12-2017
Accepted date: 18-12-2017

Please cite this article as: Kai Chen, Wentao Zhang, Yuhuan Zhang, Lunjie Huang, Rong Wang, Xiaoyue Yue, Wenxin Zhu, Daohong Zhang, Xu Zhang, Ying Zhang, Jianlong Wang, Label-free fluorescence aptasensor for sensitive determination of bisphenol S by the salt-adjusted FRET between CQDs and MoS₂, *Sensors and Actuators B: Chemical* <https://doi.org/10.1016/j.snb.2017.12.116>

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.

Label-free fluorescence aptasensor for sensitive determination of bisphenol S by the salt-adjusted FRET between CQDs and MoS₂

Kai Chen, Wentao Zhang, Yuhuan Zhang, Lunjie Huang, Rong Wang, Xiaoyue Yue, Wenxin Zhu, Daohong Zhang, Xu Zhang, Ying Zhang, Jianlong Wang*

College of Food Science and Engineering, Northwest A&F University, Yangling 712100, Shaanxi, China

Highlights

- The fluorescence emission of CDs could be effectively quenched by MoS₂.
- The FRET between CDs and MoS₂ was adjusted by the salt-induced aggregation and empowered as an indicator for fluorescence sensor.
- Aptamer provides a tunable protection to inhibit the salt-accelerated coagulation of MoS₂.
- The developed method greatly enhances the sensitivity of sensor for the detection of Bisphenol S with a quick and cheap pathway.

ABSTRACT Although the salt-adjusted properties of nanomaterials have been extensively used for colorimetric assays of all kinds of analytes, their applications in the design of fluorescence sensor are very limited. Herein, a novel fluorescence aptasensor was developed for the sensitive determination of Bisphenol S (BPS) by the salt-adjusted fluorescence resonance energy transfer (FRET) between the zero-dimensional emitter (CQDS) and the two-dimensional absorber (MoS₂ nanosheets) and the roles of specific discrimination and protective effect of anti-BPS aptamer to layered MoS₂. It is shown that layered MoS₂ can serve as a good fluorescent quencher towards carbon dots with decent quenching efficiency. Importantly, the established fluorescent method achieved satisfactory results for the determination of BPS with a good linear correlation from 0.05 μ M to 2 μ M and a detection limit of 2 nM. It is

Download English Version:

<https://daneshyari.com/en/article/7141109>

Download Persian Version:

<https://daneshyari.com/article/7141109>

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