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

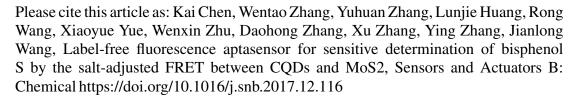
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Label-free fluorescence aptasensor for sensitive determination of bisphenol S by the salt-adjusted FRET between CQDs and MoS2

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 μM to 2 μM and a detection limit of 2 nM. It is

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