

Author's Accepted Manuscript

An “off-on” phosphorescent aptasensor switch for detection of ATP

Yan Xiong, Yue Cheng, Lu Wang, Yan Li



www.elsevier.com/locate/talanta

PII: S0039-9140(18)30771-9
DOI: <https://doi.org/10.1016/j.talanta.2018.07.060>
Reference: TAL18889

To appear in: *Talanta*

Received date: 14 May 2018
Revised date: 17 July 2018
Accepted date: 19 July 2018

Cite this article as: Yan Xiong, Yue Cheng, Lu Wang and Yan Li, An “off-on” phosphorescent aptasensor switch for detection of ATP, *Talanta*, <https://doi.org/10.1016/j.talanta.2018.07.060>

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.

An “off-on” phosphorescent aptasensor switch for detection of ATP

Yan Xiong, Yue Cheng, Lu Wang, Yan Li*

Key Laboratory of Inorganic-Organic Hybrid Functional Materials Chemistry (Tianjin Normal University), Tianjin Key Laboratory of Structure and Performance for Functional Molecule, College of Chemistry, Tianjin Normal University, Tianjin, 300387, P.R. China

* E-mail: nkliyan398@gmail.com

Abstract:

An “off-on” phosphorescent aptasensor based on the 3-mercaptopropionic acid (MPA) capped Mn-doped ZnS quantum dots (MPA-Mn:ZnS QDs)/aptamer hybrid system was developed to detect adenosine triphosphate (ATP) in biological fluids. The phosphorescence of MPA-Mn:ZnS QDs was obviously quenched when ATP aptamer was added due to the aggregation induced effect. ATP aptamer, adsorbing on the surface of the phosphorescent MPA-Mn:ZnS QDs, has a high affinity for ATP. And then, with the addition of ATP, phosphorescence was gradually recovered because of the stronger special binding interaction between ATP and ATP aptamer than that between QDs and ATP aptamer. In this case, a high sensitivity and selectivity of phosphorescent aptasensor for the detection of ATP have constructed with a low detection limit of 0.9 nM and a wide linear range from 2 nM to 9 μ M. What's more, the phosphorescent aptasensor does not require complex pretreatments and can effectively eliminate the interference from auto fluorescence and scattering light.

Download English Version:

<https://daneshyari.com/en/article/7675260>

Download Persian Version:

<https://daneshyari.com/article/7675260>

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