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PII: S0039-9140(15)00032-6  
DOI: <http://dx.doi.org/10.1016/j.talanta.2015.01.018>  
Reference: TAL15343

To appear in: *Talanta*

Received date: 23 October 2014  
Revised date: 6 January 2015  
Accepted date: 10 January 2015

Cite this article as: Yabin Chen, Wei Shi, Yonghai Hui, Xinhua Sun, Linxian Xu, Lei Feng, Zhengfeng Xie, A new highly selective fluorescent turn-on chemosensor for cyanide anion, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2015.01.018>

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# A New Highly Selective Fluorescent Turn-On Chemosensor for Cyanide Anion

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## Abstract

A new simple molecule, 2-((2-phenyl-2H-1,2,3-triazol-4-yl)methylene)malononitrile (**M1**), was synthesized successfully by the Knoevenagel condensation reaction between 2-phenyl-1,2,3-triazole-4-carboxaldehyde and malononitrile. The receptor **M1** is highly sensitive and selective to cyanide anion due to the nucleophilic addition of cyanide anion with **M1**. Distinct changes on UV-Vis and fluorescence spectra can be detected with the addition of cyanide anion to the DMSO solution of **M1**. Optical properties of **M1** was scarcely affected by the addition of other common background anions ( $F^-$ ,  $Cl^-$ ,  $Br^-$ ,  $I^-$ ,  $SCN^-$ ,  $OH^-$ ,  $CO_3^{2-}$ ,  $H_2PO_4^-$ ,  $SO_4^{2-}$ ,  $HSO_4^-$ ,  $AcO^-$ ,  $NO_3^-$ ) under the same condition. The detection limit of  $CN^-$  reaches  $\sim 1.43 \mu M$  by **M1** and the presence of background anions brought very slight interference for the detection of  $CN^-$ .

**Keywords:** Fluorescence; Nucleophilic addition; Cyanide anion; Interference

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