

Author's Accepted Manuscript

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PII: S0039-9140(17)31142-6
DOI: <https://doi.org/10.1016/j.talanta.2017.11.014>
Reference: TAL18076

To appear in: *Talanta*

Received date: 17 July 2017
Revised date: 4 November 2017
Accepted date: 9 November 2017

Cite this article as: Yong Wang, Tianxia Chen, Qianfen Zhuang and Yongnian Ni, Label-free photoluminescence assay for nitrofurantoin detection in lake water samples using adenosine-stabilized copper nanoclusters as nanoprobe, *Talanta*, <https://doi.org/10.1016/j.talanta.2017.11.014>

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Label-free photoluminescence assay for nitrofurantoin detection in lake water samples using adenosine-stabilized copper nanoclusters as nanoprob

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Abstract

In this paper, we constructed a novel label-free analytical strategy for highly sensitive and selective detection of nitrofurantoin (NFT) based on adenosine-stabilized copper nanoclusters (CuNCs) as nanoprob. It was found that NFT caused a rapid decrease in the photoluminescence intensity of CuNCs. The photoluminescence quenching was likely attributed to the inner filter effect between NFT and CuNCs. The CuNCs exhibited a wide linear range of 0.05–4.0 μM with the detection limit of 30 nM (7.1 ng mL⁻¹) for detection of NFT. And it was successfully applied for NFT detection in lake water samples.

Keywords: Copper nanoclusters; Photoluminescence analysis; Nitrofurantoin

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