

Author's Accepted Manuscript

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PII: S0039-9140(15)30055-2
DOI: <http://dx.doi.org/10.1016/j.talanta.2015.06.014>
Reference: TAL15691

To appear in: *Talanta*

Received date: 19 March 2015
Revised date: 3 June 2015
Accepted date: 5 June 2015

Cite this article as: Pengjuan Ni, Haichao Dai, Zhen Li, Yujing Sun, Jingting Hu, Shu Jiang, Yilin Wang and Zhuang Li, Carbon dots based fluorescent sensor for sensitive determination of Hydroquinone, *Talanta*, <http://dx.doi.org/10.1016/j.talanta.2015.06.014>

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Carbon dots based fluorescent sensor for sensitive determination of hydroquinone

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Abstract

In this paper, a novel biosensor based on Carbon dots (C-dots) for sensitive detection of hydroquinone (H₂Q) is reported. It is interesting to find that the fluorescence of the C-dots could be quenched by H₂Q directly. The possible quenching mechanism is proposed, which shows that the quenching effect may be caused by the electron transfer from C-dots to oxidized H₂Q-quinone. Based on the above principle, a novel C-dots based fluorescent probe has been successfully applied to detect H₂Q. Under the optimal condition, detection limit down to 0.1 μM is obtained, which is far below U.S. Environmental Protection Agency estimated wastewater discharge limit of 0.5 mg/L. Moreover, the proposed method shows high selectivity for H₂Q over a number of

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