

Electronic Supplementary Information

A Fluorimetric Testing Strip for Visual Evaluation of Mercury in Blood Using Copper Nanoclusters with DMSO-Enhanced Fluorescence and Stability

Yuanyuan Cai^a, Fengxiang Wang^a, Yue Hua^a, Huan Liu^a, Mengyuan Yin^a, Chunxian Zhang^a, Yun Zhang^b, Hua Wang^{a*}

^aRizhao Key laboratory of Marine Medicine and Materials Application Technologies, College of Chemistry and Chemical Engineering, Qufu Normal University, Qufu, Shandong 273165, P. R. China. E-mail: huawang@qfnu.edu.cn.

^bGuangxi Key Laboratory of Electrochemical and Magnetochemical Functional Materials, Guilin University of Technology, Guilin City, Guangxi Province 541004, P. R. China.

*Corresponding Author: E-mail addresses: huawang@qfnu.edu.cn; Tel: +86 537 4456306; Fax: +86 537 4456306; Web: <http://wang.qfnu.edu.cn>.

Abstract

Supplementary information includes the figures are provided for the TEM of Cu NCs, EDX analysis, the optimization of analysis conditions, detection effects of anions, the environmental robustness and storage stability of Hg²⁺ test strips and the table of fluorimetric analytical results of different methods for Hg²⁺.

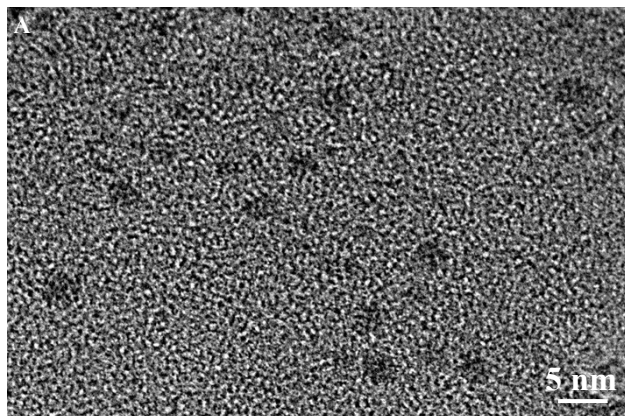


Fig. S1 TEM image of Cu NCs

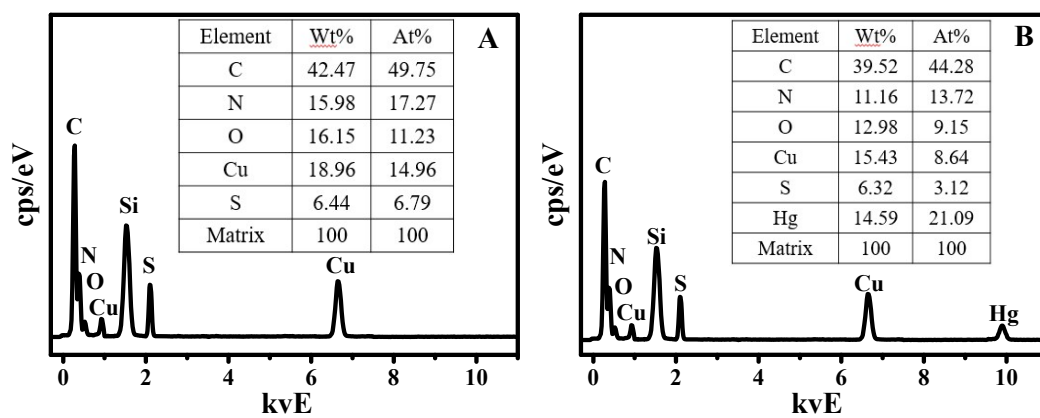


Fig. S2 EDS analysis results of Cu NCs containing DMSO in the (A) absence and (B) presence of Hg^{2+} ions.

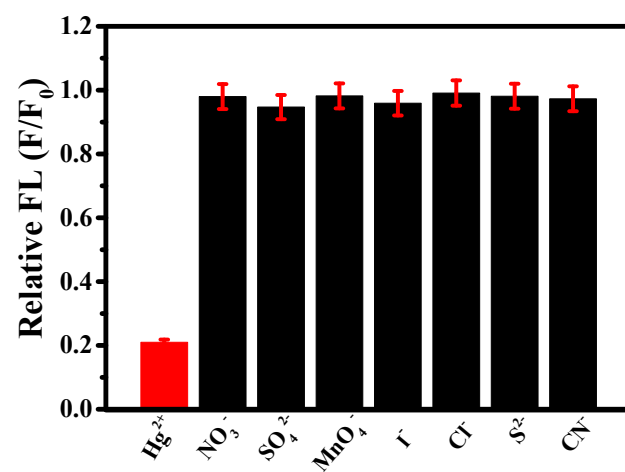


Fig. S3 Relative fluorescence intensities of test strips coated with Cu NCs containing DMSO for different cations alone (from the left to right: Hg²⁺, NO₃⁻, SO₄²⁻, MnO₄⁻, I⁻, Cl⁻, S²⁻, and CN⁻ ions).

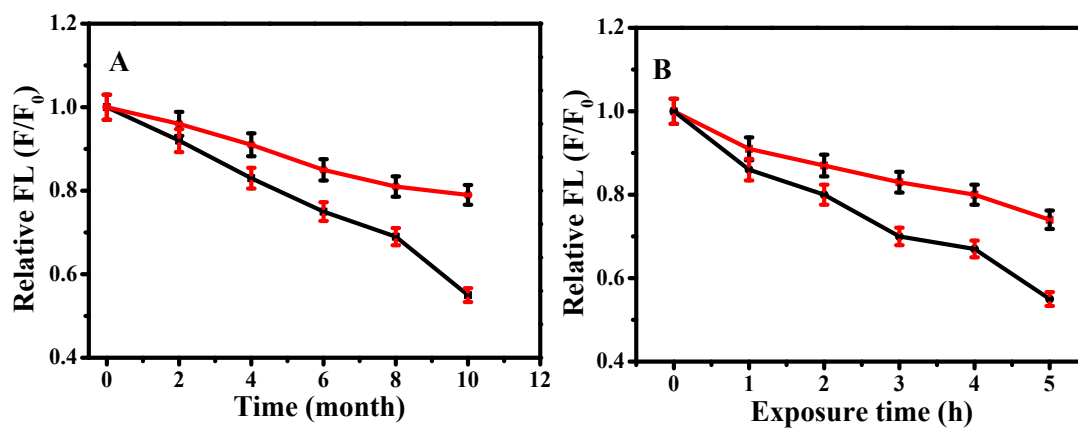


Fig. S4 Comparison of FL intensities of test strips coated with Cu NCs containing DMSO (red) and Cu NCs in water (black) over (A) different storage time in dark at 4 °C, and (B) different exposure time under xenon lamp.

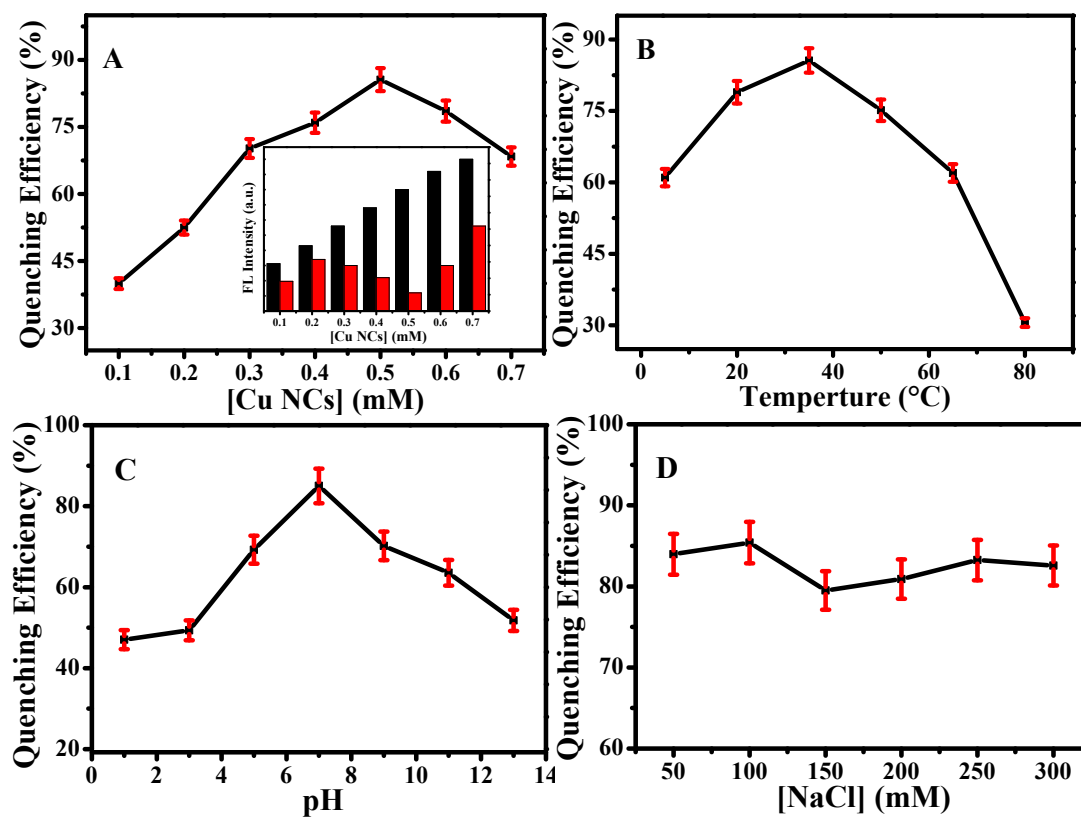


Fig. S5 The FL quenching efficiencies of test strips coated with Cu NCs containing DMSO depending on (A) Cu NCs amounts (insert: FL intensities of DMSO-containing Cu NCs without (black) and with (red) Hg²⁺ ions), (B) testing temperature, (C) pH values, and (D) ion strengths in NaCl concentrations.

Table S1 Comparison of analytical performance for Hg²⁺ ions by different analysis methods

Fluorimetry method	Linear ranges (nM)	LOD (nM)	References
Oligonucleotide	25-200	10	1
CdTe QDs	Up to 500	9.5	2
Aptasensor	10-9000	7.7	3
N-CQDs	0.0-50000	250	4
Cu NCs testing strip	0.1-1000	0.06	This work

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