

Electronic Supplementary Information

Selective colorimetric sensing sub-nanomolar Hg²⁺ based on its significantly enhancing peroxidase mimics of silver/copper nanoclusters

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1. Supplementary figures:

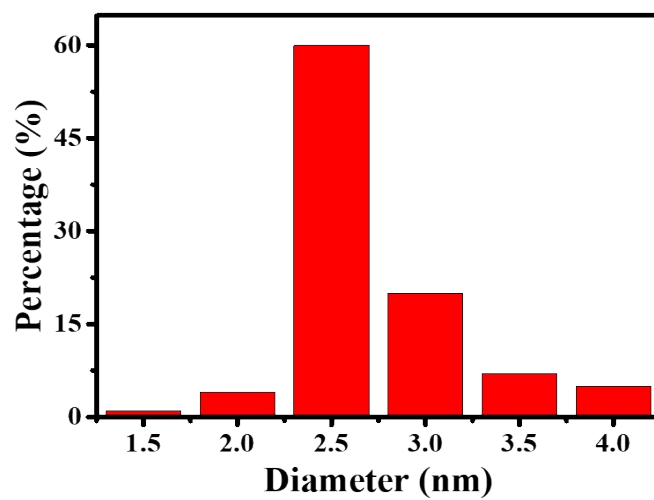


Fig S1. The size distribution of Ag/Cu NCs (the reaction molar ratio of Ag⁺ to Cu²⁺ is 1/0.5).

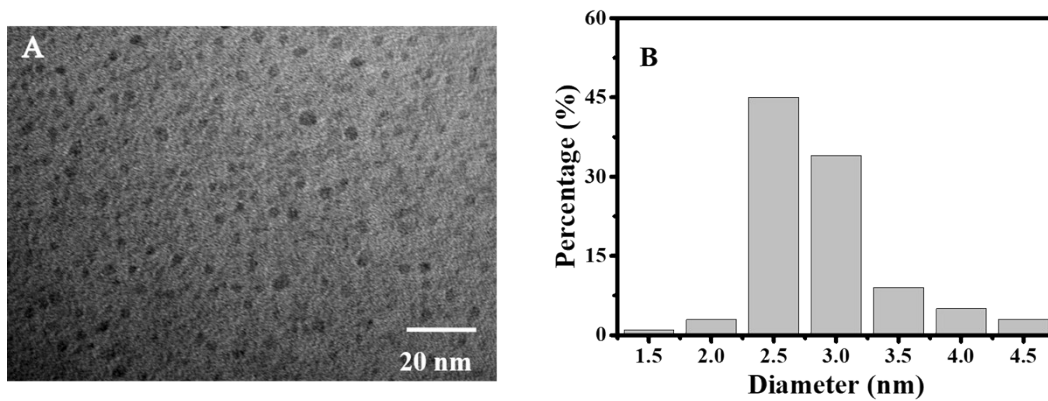


Fig S2. (A) TEM image and (B) the size distribution of the Ag/Cu NCs with Hg^{2+} (Hg^{2+} concentration, 700 nM).

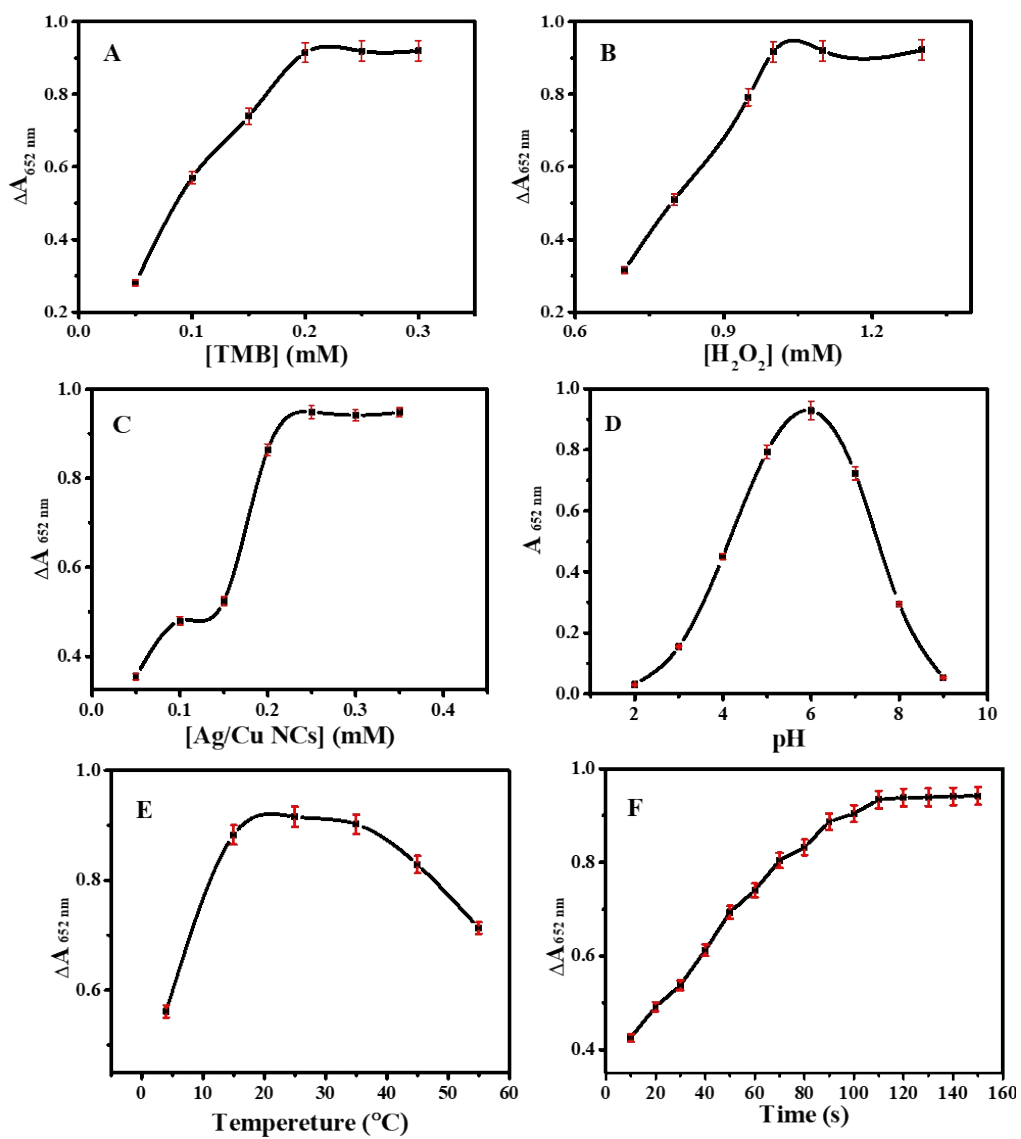


Fig. S3 Effect of the concentration of (A) TMB, (B) H_2O_2 , and (C) Ag/Cu NCs dosages, (D) pH, (E) temperature, and (F) response time on Ag/Cu NCs Hg^{2+} (Ag/Cu NCs and Hg^{2+} ions concentration, 0.25 mM and 700 nM, respectively).

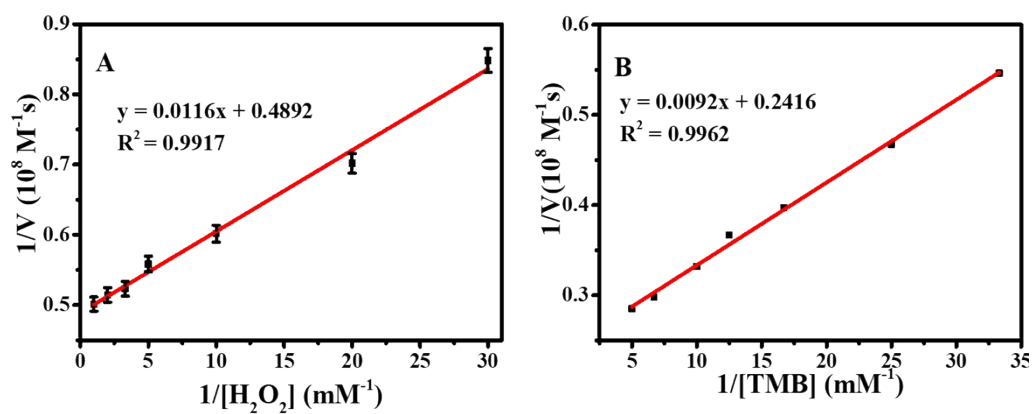


Fig. S4 Steady-state kinetic analyses using the Lineweaver–Burk model for Hg²⁺-Ag/Cu NCs (0.25 mM) (A) by changing H₂O₂ concentration and fixed TMB concentration (0.2 mM), (B) changing TMB concentration and fixed H₂O₂ concentration (1.0 mM).

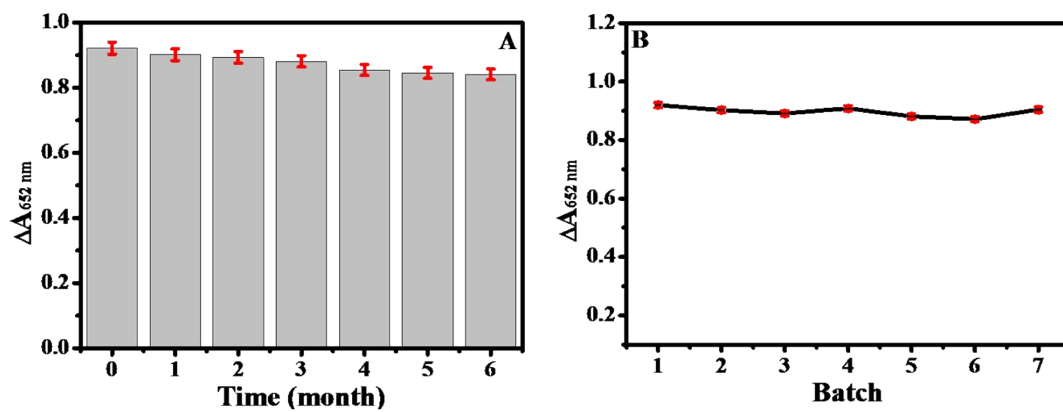


Fig. S5 The storage stability (A) and reproducibility (B) of Ag/Cu NCs for the colorimetric Hg^{2+} analysis.

2. Supplementary table:

Table S1. Comparison of analytical performance for Hg²⁺ ions based on different nanomaterials

Nanomaterial	Analysis method	Linear range (nM)	LOD (nM)	References
N-CQDs	Fluorimetry	0.0–50000	250	1
aptasensor	Fluorimetry	10–9000	7.7	2
polypyrrole decorated graphene/-cyclodextrin	Electroanalysis	1.0–51560	0.47	3
PEG-SH/SePs/AuNPs	Electroanalysis	70–17500	5.0	4
Au NPs	Colorimetry	10–20000	10	5
Cu NPs	Colorimetry	500–3500	43	6
Ag/Cu NCs	Colorimetry	0.1–700	0.05	This work

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