Supporting Information

Gold Nanocluster-Based Ratiometric Fluorescent Probe for Biosensing of Hg^{2+} ions in Living Organisms

Fanfan Yu, Hui Xiang, Shiyu He, Gan Zhao, Zheng Cao, Lina Yang* and Honglin Liu*

China Light Industry Key Laboratory of Meat Microbial Control and Utilization, School of Food and Biological Engineering, Hefei University of Technology, Hefei,230009, China.

*Corresponding author.

E-mail: liuhonglin@mail.ustc.edu.cn, yangln@mail.ustc.edu.cn

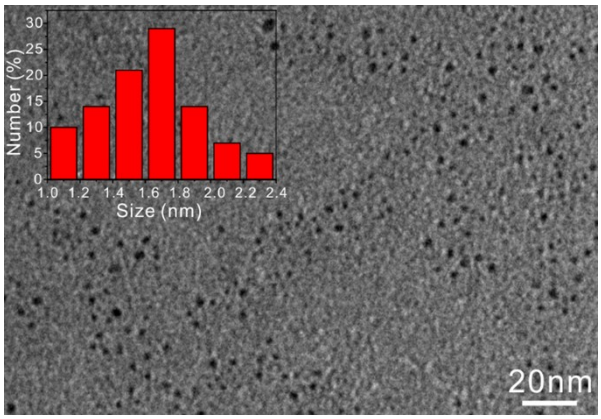

Figure S1. TEM image of Au-GSH NCs.

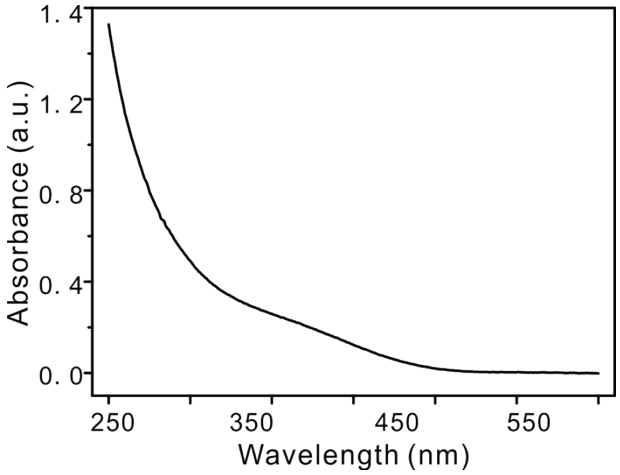

Figure S2. UV-vis spectrum of Au-GSH NCs.

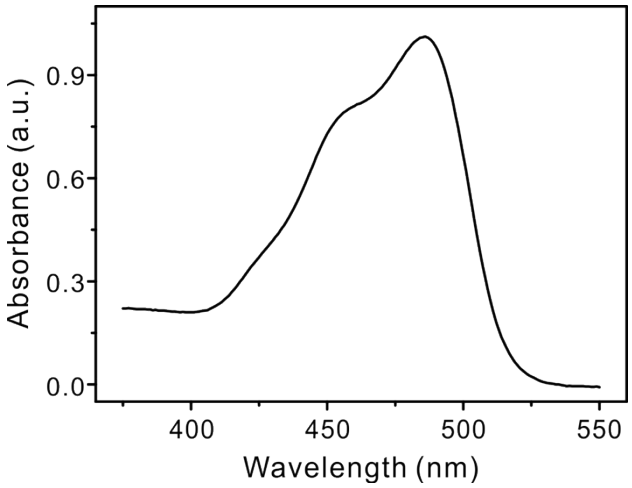

Figure S3. UV-vis spectrum of FITC molecule.

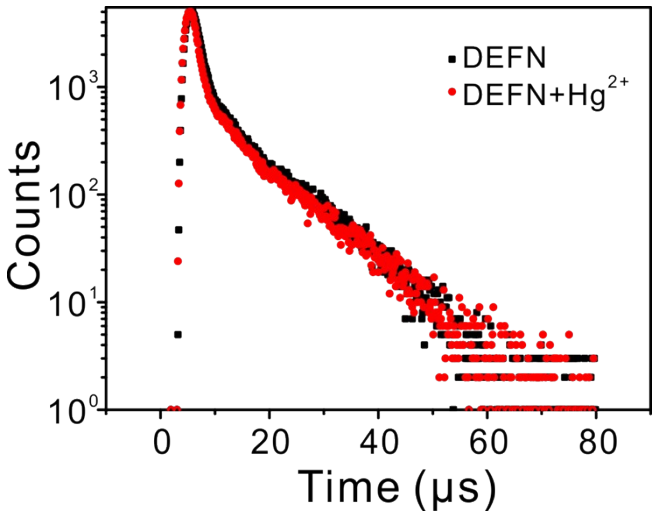

Figure S4. The fluorescence lifetime spectra for the emission peak of Au-GSH NCs before and after adding Hg^{2+}.

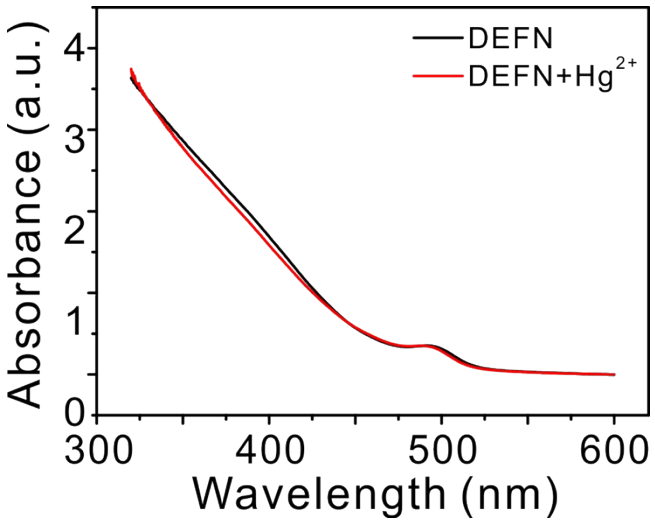

Figure S5. UV-vis absorption spectra of DEFN before and after adding Hg^{2+}.

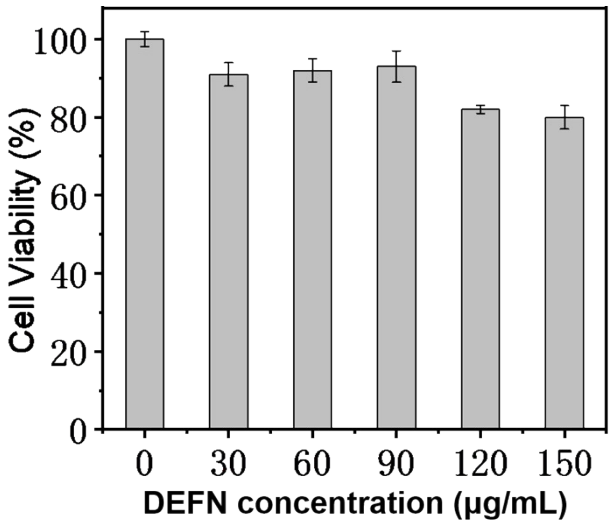

Figure S6. MTT assay of HeLa cells treated with different concentrations of DEFN for 24 h.

Table S1. Comparison of the sensitivity of different sensors for Hg^{2+}.

Sensing materials	**linear range**	**LOD/μM**	**references**
Graphene quantum dots	0.6-12 μM	0.23	Ref. 1
Sn(II)-citrate capped Au NCs	0.25-10 μM	0.05	Ref. 2
EDA capped Cu NCs	0.1-5.0 mM	33	Ref. 3
BSA capped Au NCs	20-260 μM	3.39	Ref. 4
Hoechst	0-3.75 μM	0.87	Ref. 5
pyrazoline derivative	20-200 μM	14.54	Ref. 6
DEFN	0-20 μM	0.5	this work

References

1. M. Liu, T. Liu, Y. Li, H. Xu, B. Zheng, D. Wang, J. Du and D. Xiao, *Talanta*, 2015, **143**, 442-449.

2. S. Chen, Y. Kuang, P. Zhang, Y. Huang, A. Wen, X. Zeng, R. Feng, H. Nie, X. Jiang and Y. Long, *Sensors Actuat. B-Chem.*, 2017, **253**, 283-291.

3. M. Jiao, Y. Li, Y. Jia, L. Xu, G. Xu, Y. Guo and X. Luo, *Microchimica Acta*, 2020, **187**, 545.

4. R. Guan, L. Tao, Y. Hu, C. Zhang, Y. Wang, M. Hong and Q. Yue, *RSC Adv.*, 2020, **10**, 33299-33306.

5. B. Paramanik, D. Bain and A. Patra, *J. Phy. Chem. C*, 2016, **120**, 17127-17135.

6. E. Bozkurt and H. I. Gul, *Sensors Actuat. B-Chem.*, 2018, **255**, 814-825.