

## Supporting Information

### **Dispersion-aggregation-dispersion colorimetric detection for mercury ions based on an assembly of gold nanoparticle and carbon nanodots**

Feiyang Wang<sup>a#</sup>, Jingwei Sun<sup>a#</sup>, Yuexiang Lu<sup>b</sup>, Xunxue zhang<sup>a</sup>, Panshu Song<sup>c</sup>,  
Yueying Liu<sup>a\*</sup>

<sup>a</sup> *Department of Chemistry, Capital Normal University, Xisanhuan North Rd. 105, Beijing, 100048, P. R. China*

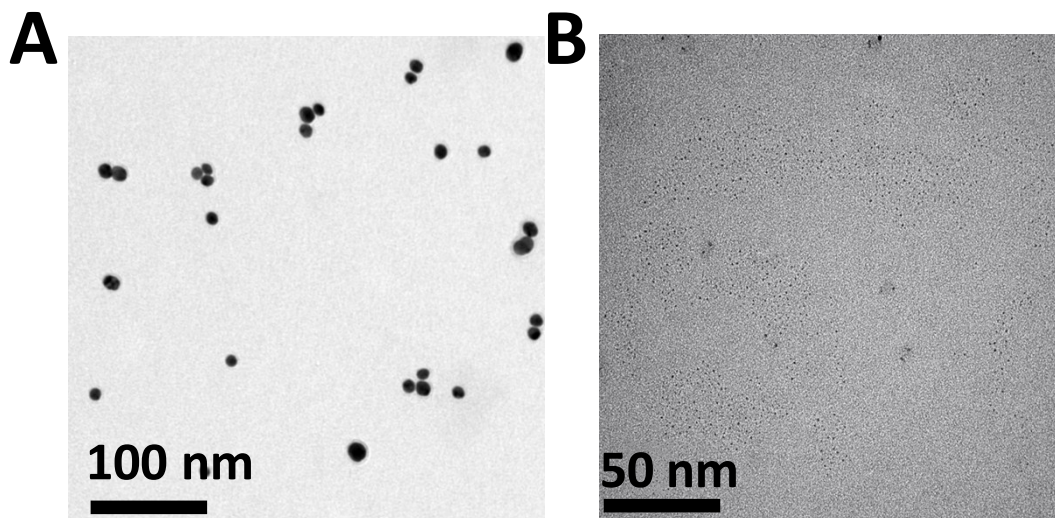
<sup>b</sup> *Institute of Nuclear and New Energy Technology, Collaborative Innovation Center of Advanced Nuclear Energy Technology, Beijing Key Lab of Radioactive Waste Treatment, Tsinghua University, Beijing, 100084, P. R. China*

<sup>c</sup> *National Institute of Metrology China, Beisanhuan East Rd. 18, Beijing, 100029, P. R. China*

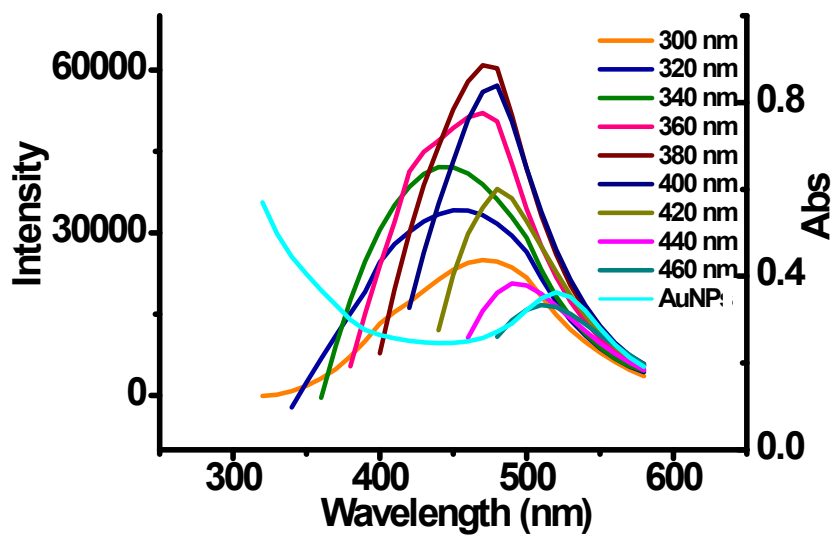
#Feiyang Wang and Jingwei Sun contributed equally to this work

\* Dr YueyingLiu is corresponding author.

E-mail: [yueyingliu@cnu.edu.cn](mailto:yueyingliu@cnu.edu.cn)



**Figure S1** TEM images of different systems: (A) AuNP; (B) CDs



**Figure S2** Fluorescence spectra at excitation wavelengths from 300 nm to 460 nm of CDs (30  $\mu\text{g/mL}$ ); UV-vis spectra of AuNP

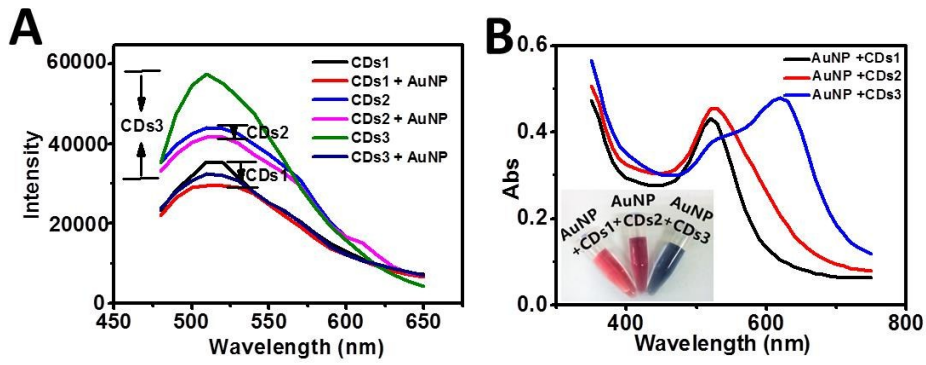


Figure S3 (A) The emission spectra; (B) UV-vis spectra of AuNP + CDs1, AuNP + CDs2 and AuNP + CDs3. Inset: the corresponding photographs.

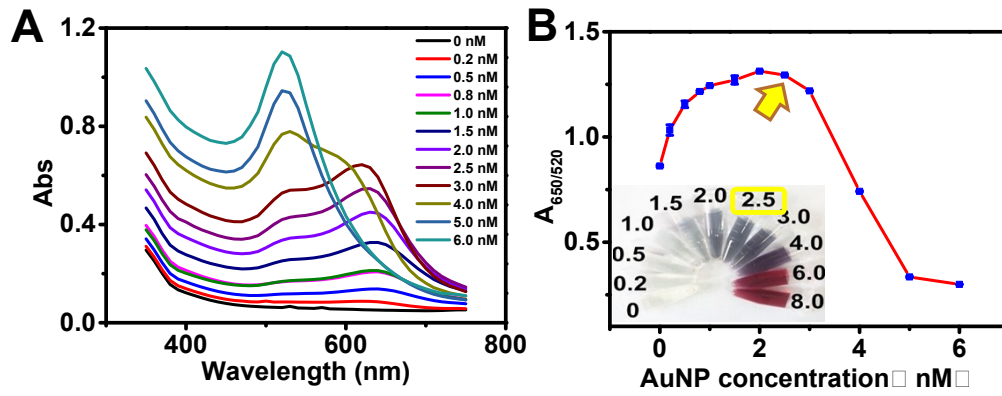
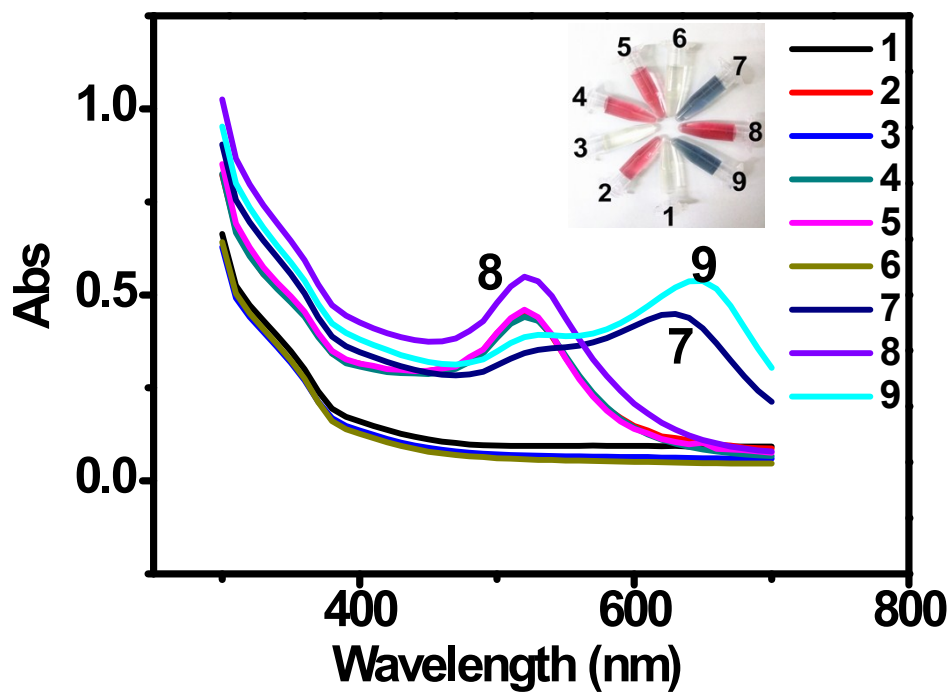


Figure S4 (A) different concentrations of AuNP; (B) Absorption ratio  $A_{650/520}$  with different concentrations of AuNP



**Figure S5** UV-vis spectra of the different system: (1) CDs; (2) AuNP; (3) CDs + GSH; (4) AuNP + GSH; (5)  $\text{Hg}^{2+}$  + AuNP; (6)  $\text{Hg}^{2+}$  + CDs; (7) AuNP + CDs; (8) AuNP + GSH + CDs; (9)  $\text{Hg}^{2+}$  + AuNP + CDs + GSH, and color changes of the corresponding solution