Supporting Information

pH-responsive Au(I)-disulfide nanoparticles with tunable aggregation-induced emission for monitoring intragastric acidity

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Table of Contents

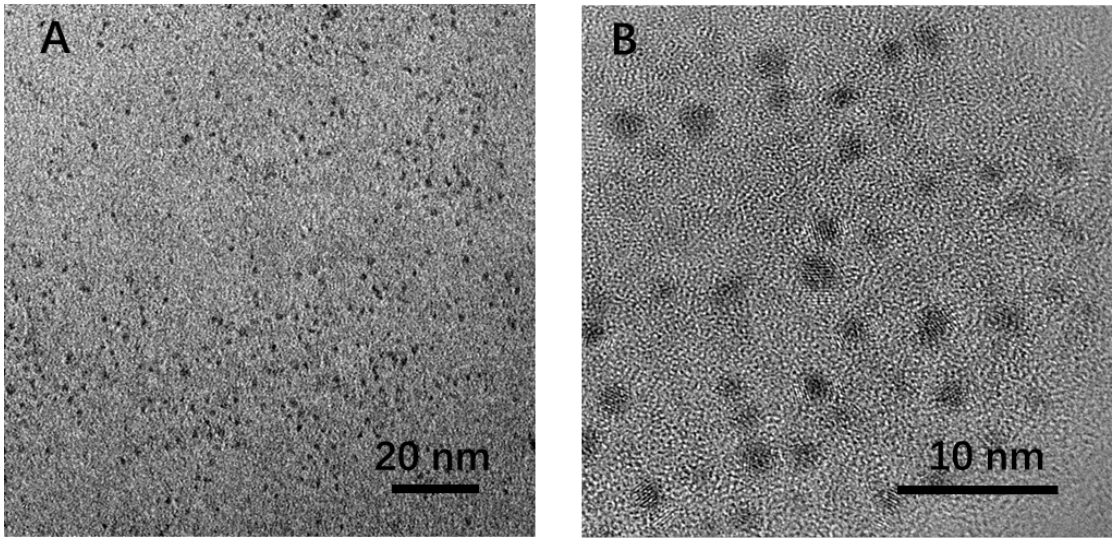

Fig. S1 TEM images of the Au(0)@Au(I) core-shell NCs at different magnifications.

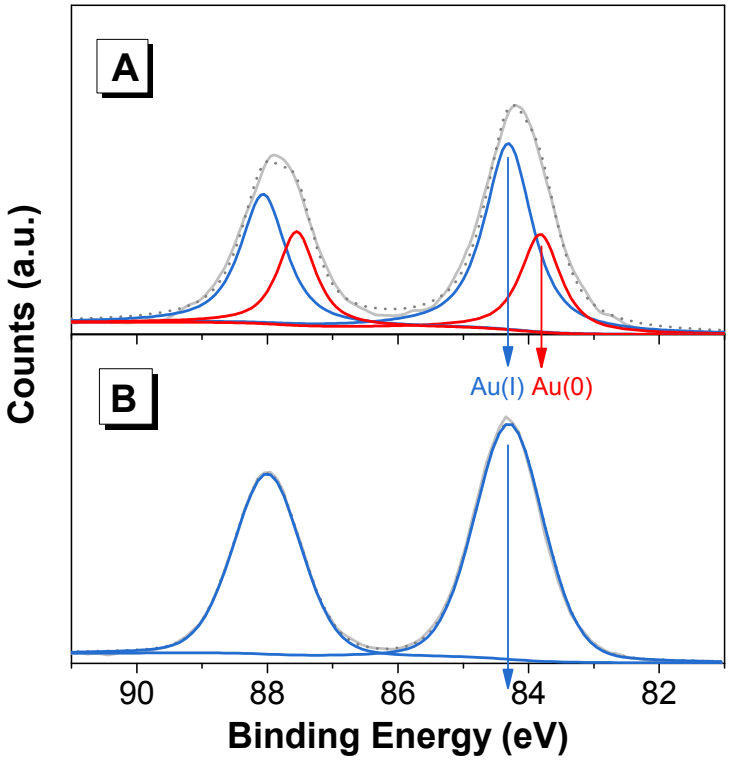

Fig. S2 The Au 4f XPS spectra of (A) Au(0)@Au(I) core-shell NCs and (B) Au(I)-disulfide NPs.

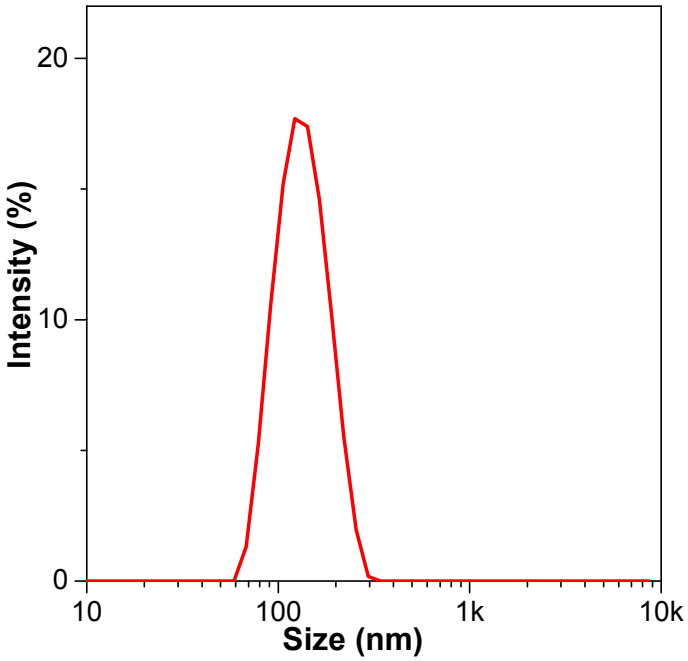

Fig. S3 Hydrodynamic diameter (measured by dynamic light scattering) of Au(I)-disulfide NPs in water.

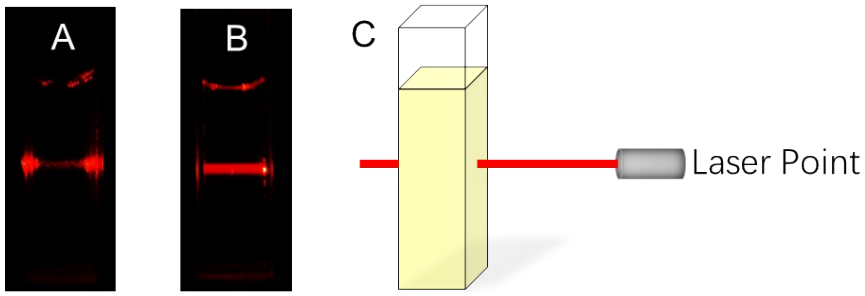

Fig. S4 Digital photos of solutions containing (A) Au(0)@Au(I) core-shell NCs and (B) Au(I)-disulfide NPs. Cuvettes in (A) to (B) were irradiated by the same red laser beam. The test setup for the Rayleigh scattering is shown in (C).

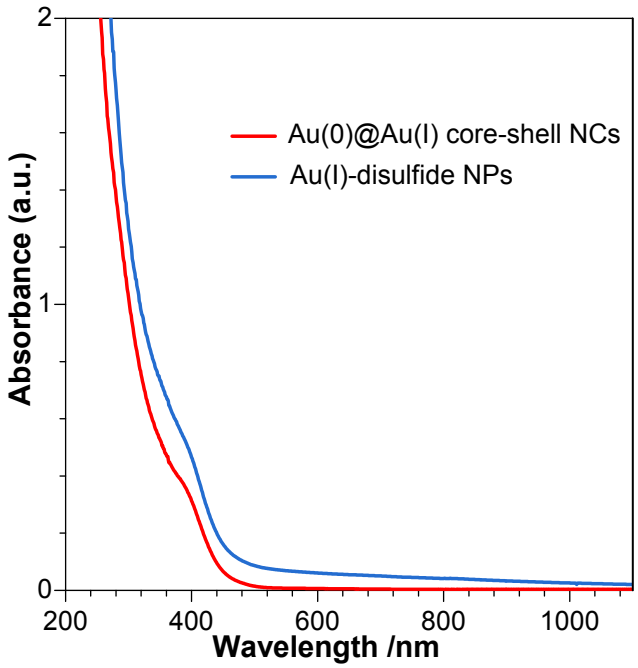

Fig. S5 UV-vis absorption spectra of Au(0)@Au(I) core-shell NCs (red line) and Au(I)-disulfide NPs (blue line).

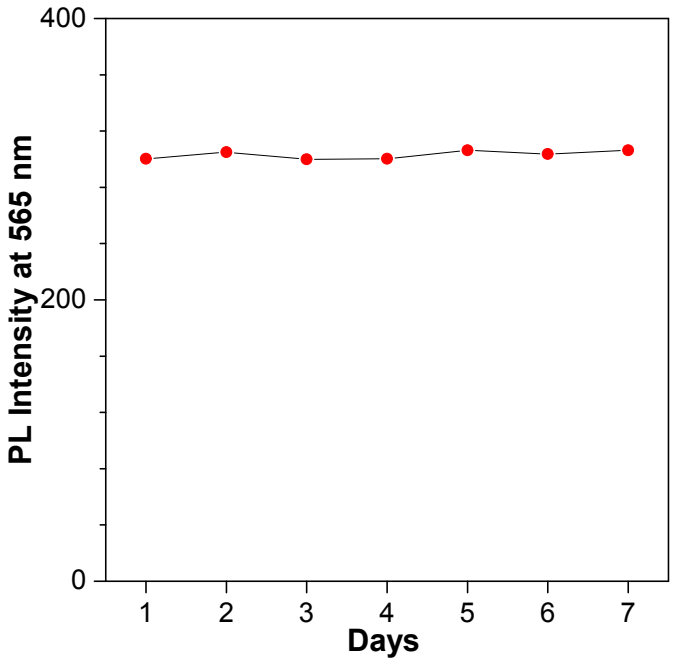

Fig. S6 The PL stability of Au(I)-disulfide NPs for a week.

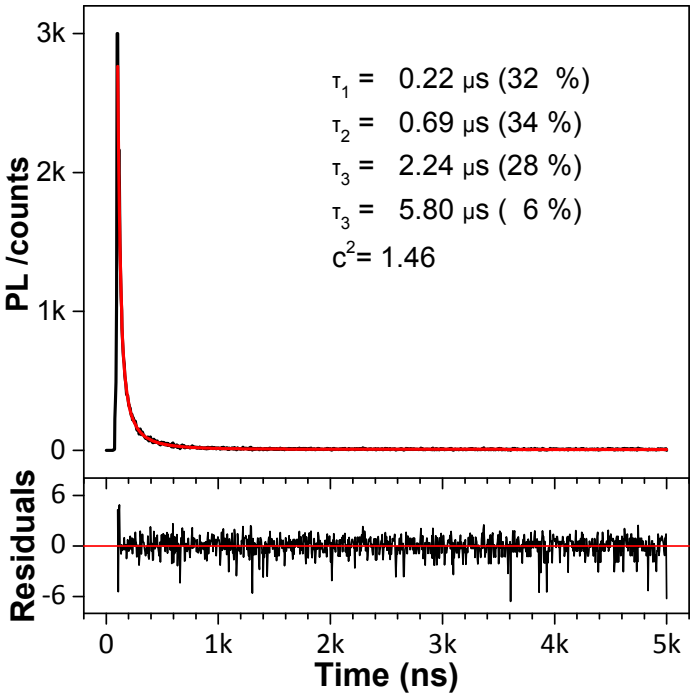

Fig. S7 PL lifetime decay profiles [5.8 μs (6 %), 2.24 μs (28 %), 0.69 μs (34 %), 0.22 μs (32 %)] of Au(I)-disulfide NPs.

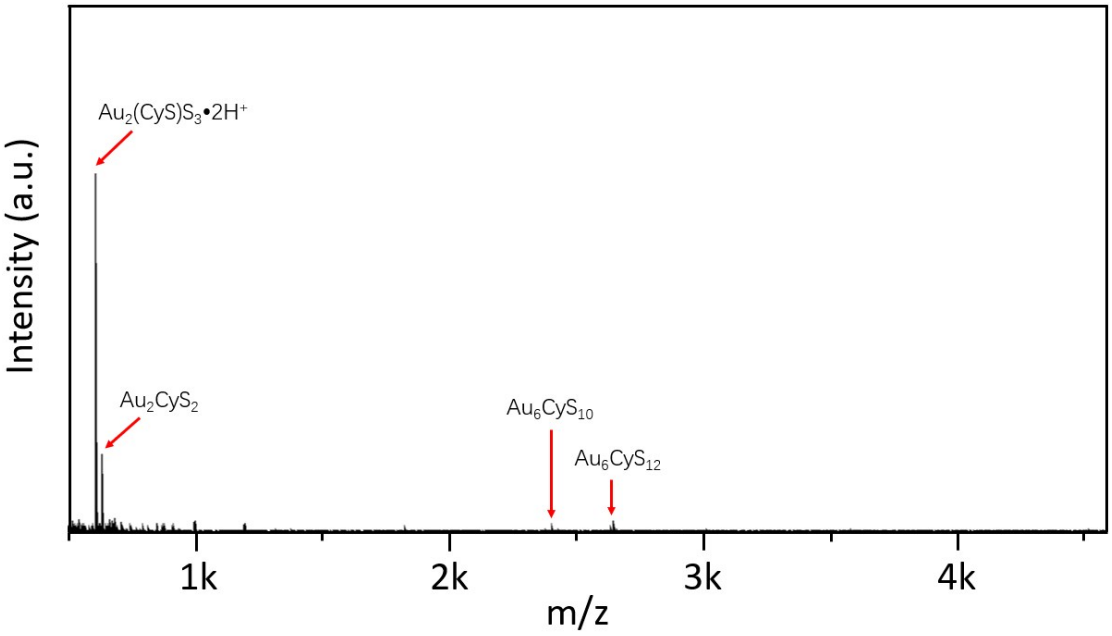

Fig. S8 High-revolution ESI-mass spectrum of Au(I)-disulfide NPs.

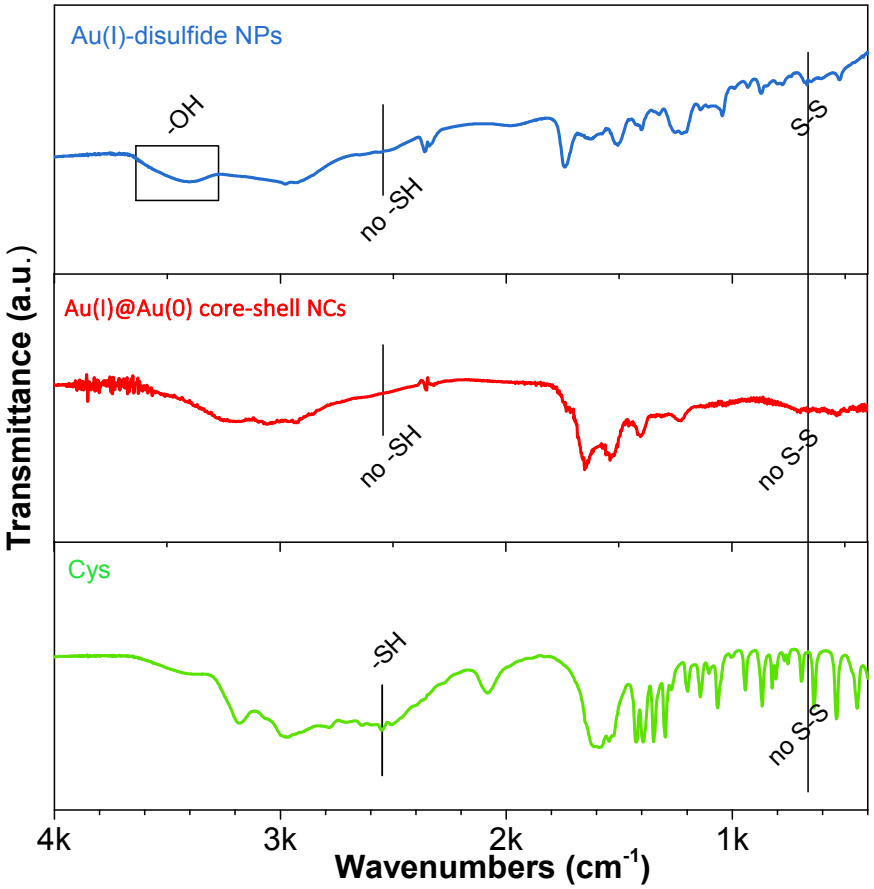

Fig. S9 FT-IR spectra of Au(I)-disulfide NPs, Au(0)@Au(I) core-shell NCs and Cys.

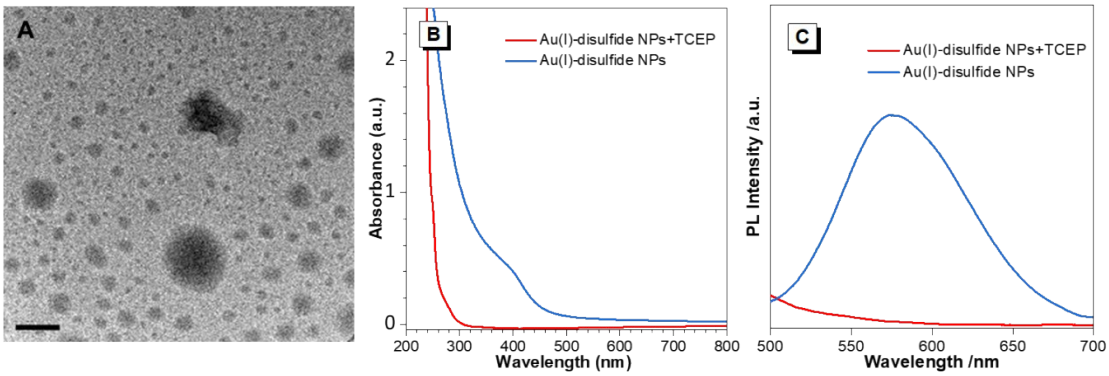

Fig. S10 Cleavage of disulfide bonds in Au(I)-disulfide NPs. (A) TEM images after adding TCEP into the Au(I) nanoparticles. (B) UV-vis absorption spectra of Au(I)-disulfide NPs before (blue line) and after (red line) addition of TCEP. (C) Photoemission spectra of Au(I)-disulfide NPs before (blue line) and after (red line) addition of TCEP.

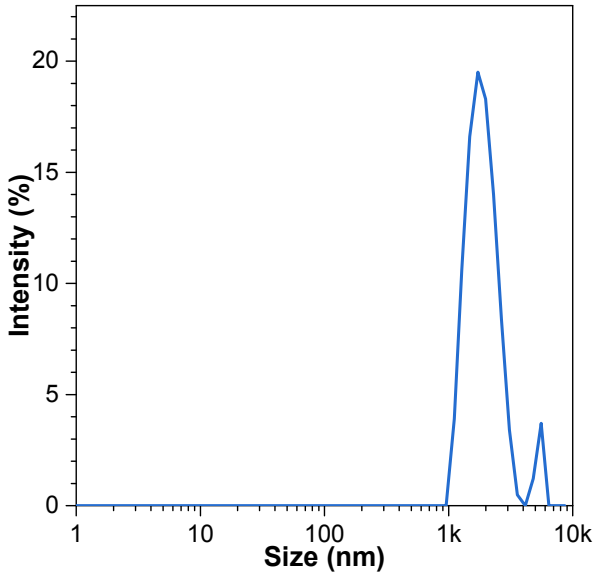

Fig. S11 Hydrodynamic diameter (measured by dynamic light scattering) of Au(I)-disulfide NPs in a water/ethanol mixture with the ethanol fraction (f_e) of 70 %

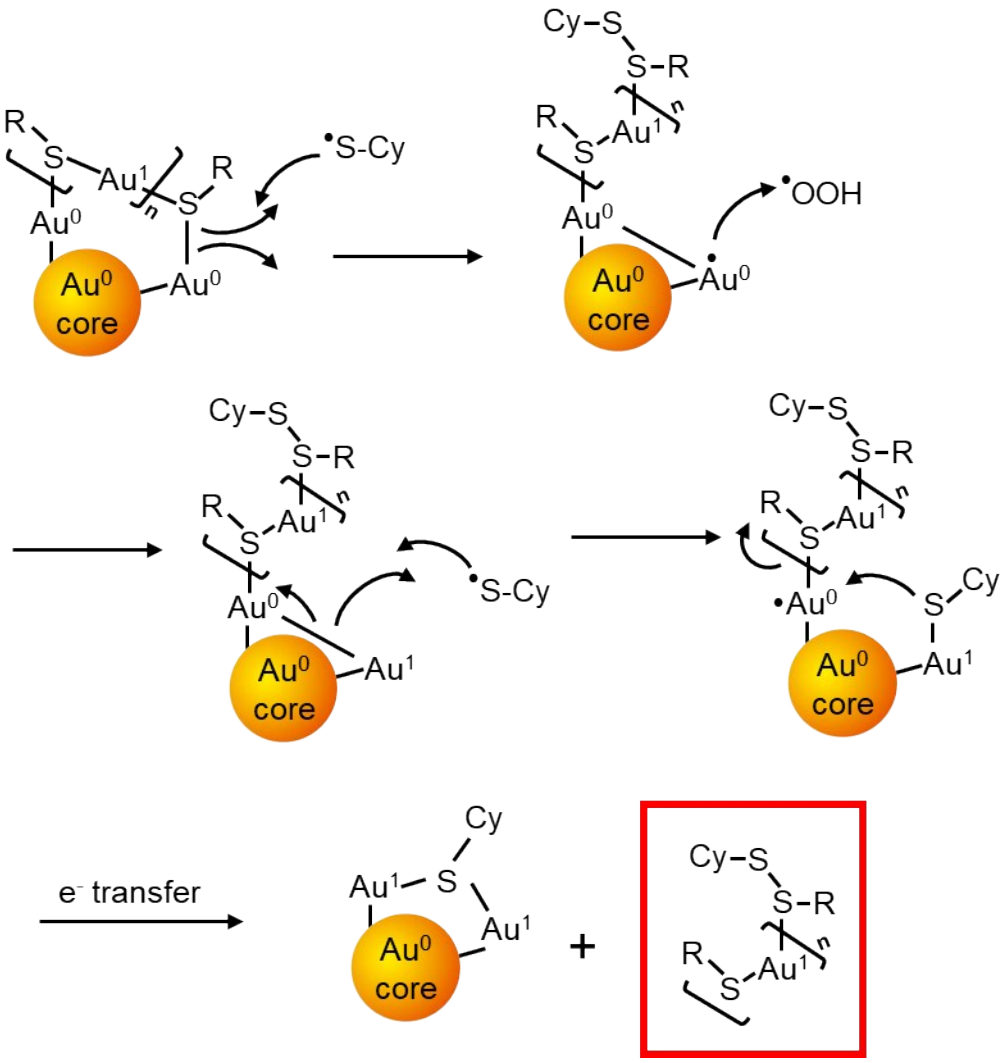

Fig. S12 The proposed radical-based formation mechanism of Au(I)-disulfide structure.

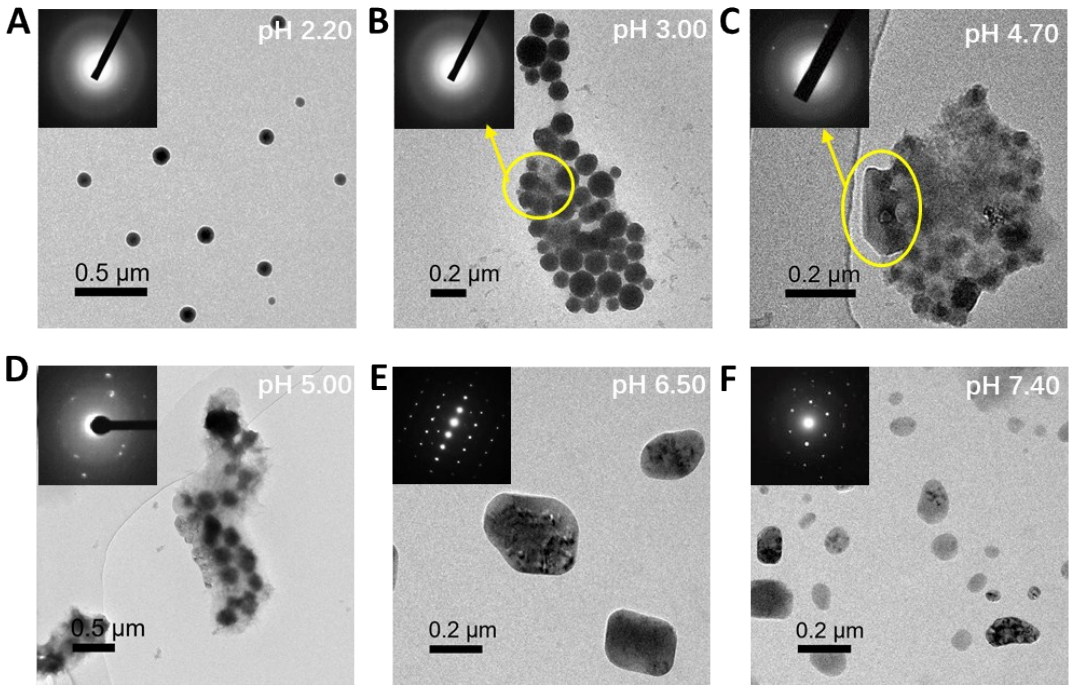

Fig. S13 TEM images of Au(I)-disulfide NPs in response to different pH values. (insets) Corresponding SAED patterns of Au(I)-disulfide NPs in response to different pH values.

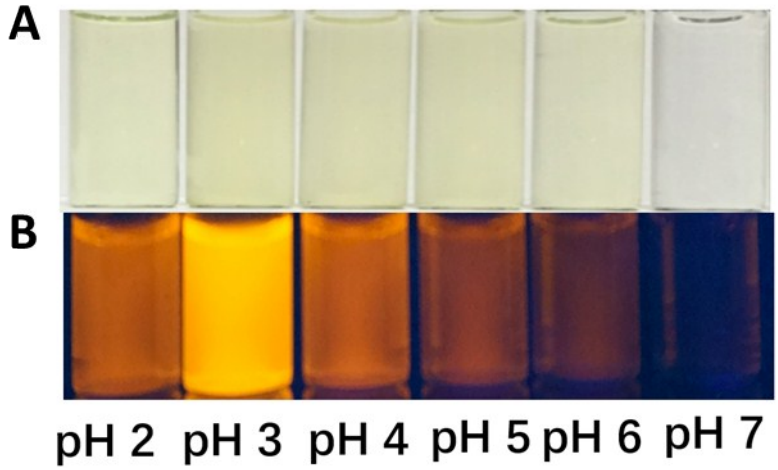

Fig. S14 Digital photos of Au(I)-disulfide NPs under (A) visible light and (B) UV light at various solution pH values.