

Supporting Information

Gold Nanoparticles-Based Nano-probe for the Colorimetric Sensing of Cr^{3+} and $\text{Cr}_2\text{O}_7^{2-}$ by the Coordination Strategy

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1. Zeta potential changes of AuNPs on decoration of N-T

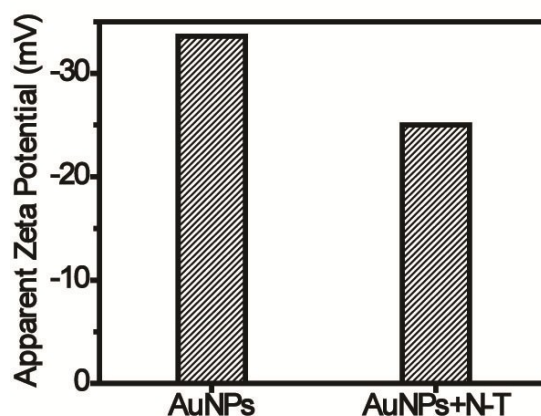


Fig. S1 The change of apparent zeta potential for the AuNPs in the absence and presence of N-T.

2. Selection of appropriate AuNPs concentration

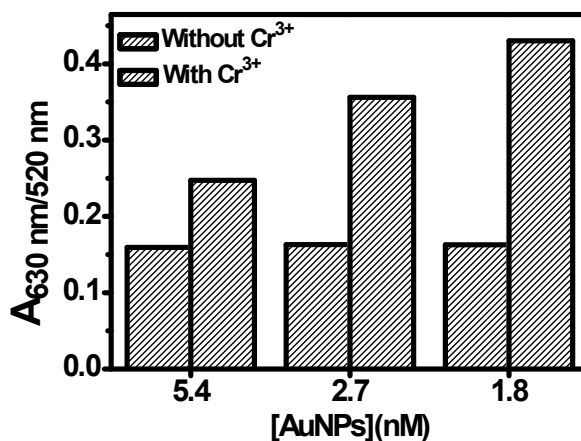


Fig. S2 The AuNPs concentrations on the absorbance ratio ($A_{630 \text{ nm}/520 \text{ nm}}$) of the N-T/AuNPs in the absence and presence of Cr^{3+} .

3. Selection of appropriate reducing agent

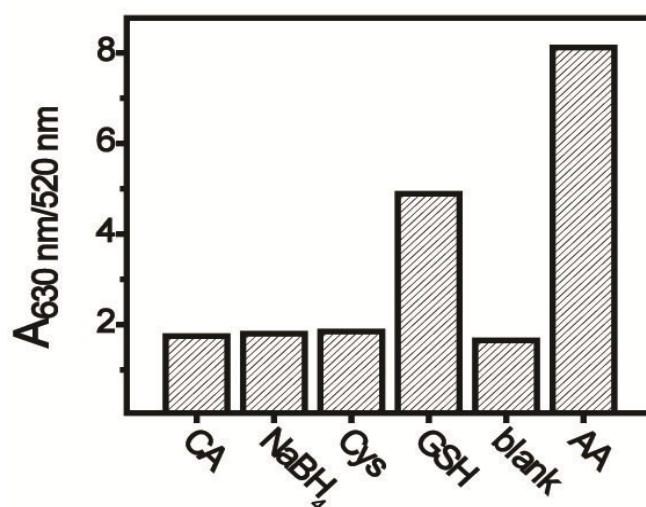


Fig. S3 The effect of different reducing agents (citric acid(CA), NaBH₄, L-cysteine, glutathione, ascorbic acid (AA)) on six valence chromium in gold nanoparticles.

4. Selection of appropriate ascorbic acid concentration

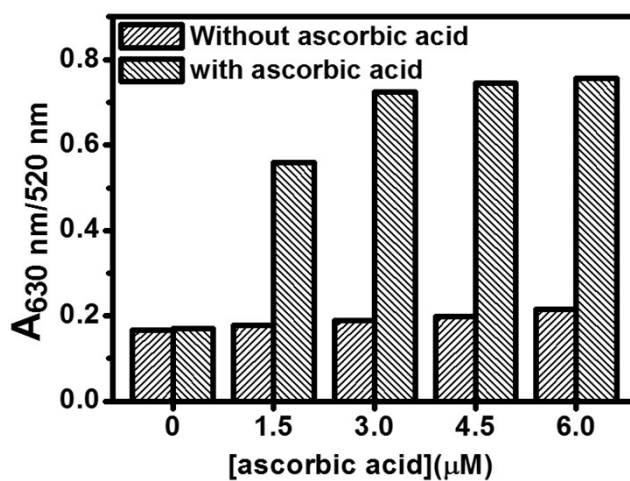


Fig. S4 The effect of different ascorbic acid concentrations when the Cr₂O₇²⁻ concentrations was 2.5 μM (the AuNPs was 1.8 nM, and the N-T was 0.8 μM).

5. The addition of ascorbic acid to $\text{Cr}_2\text{O}_7^{2-}$ solution

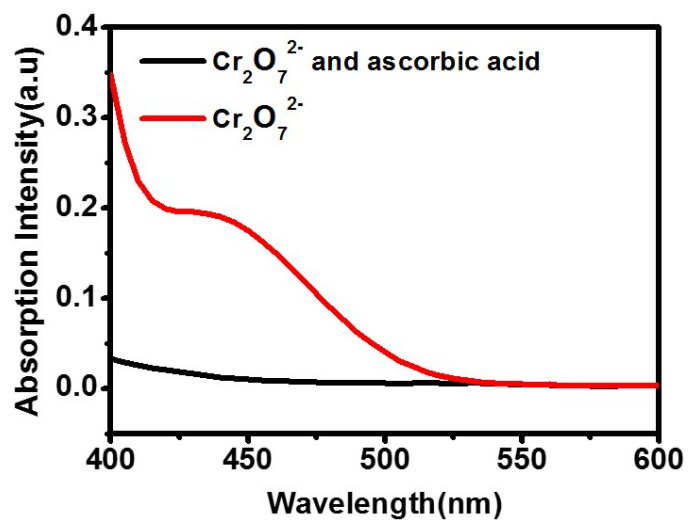


Fig. S5 UV-Vis spectra of $\text{Cr}_2\text{O}_7^{2-}$ in the absence (red) and the presence (black) of ascorbic acid in the aqueous media (ascorbic acid and $\text{Cr}_2\text{O}_7^{2-}$ were 0.15 mM and 0.05 mM respectively).

6. $\text{Cr}_2\text{O}_7^{2-}$ detection in the water

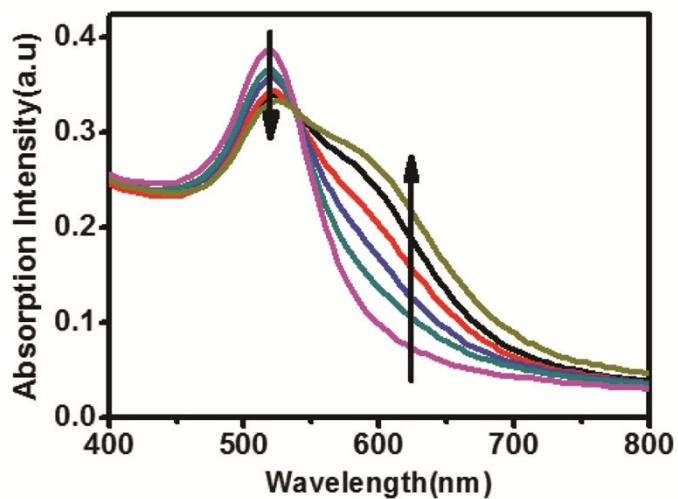


Fig. S6 UV-Vis spectra of the N-T/AuNPs generated in the presence of different concentrations of $\text{Cr}_2\text{O}_7^{2-}$ after adding different amount of ascorbic acid (0, 0.5, 1.0, 1.5, 2.0 and 2.5 μM) in the optimized condition (ascorbic acid was 3 μM).

7. Effect of different N-T concentrations on Hg^{2+}

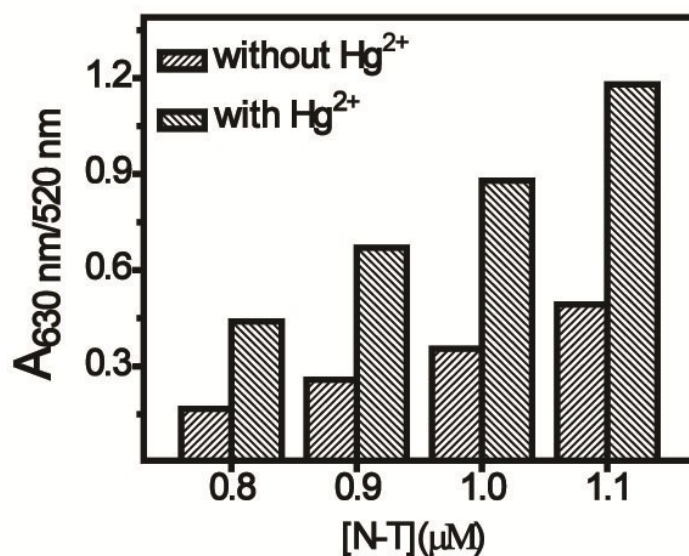


Fig. S7 Effect of different N-T concentrations on the absorbance ratio ($A_{630 \text{ nm}/520 \text{ nm}}$) of the N-T/AuNPs in the absence and the presence of Hg^{2+} (the concentrations of Hg^{2+} were 10 μM).

8. Effect of Cl^- on the N-T-AuNPs system

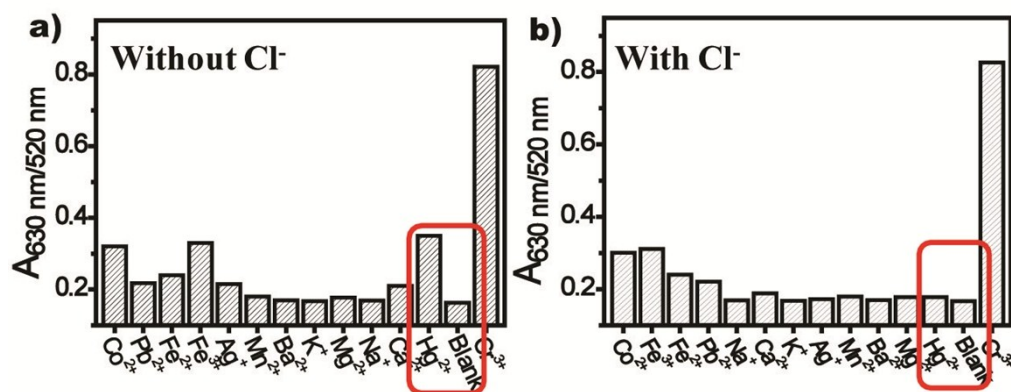


Fig. S8 Selectivity experiment of N-T-AuNPs system toward different metal ions without Cl^- (a) and with Cl^- (b) (the Cr^{3+} was 2.5 μM , K^+ , Na^+ , Ca^{2+} , and Mg^{2+} were 50 μM , others were 5 μM and Cl^- was 100 μM).

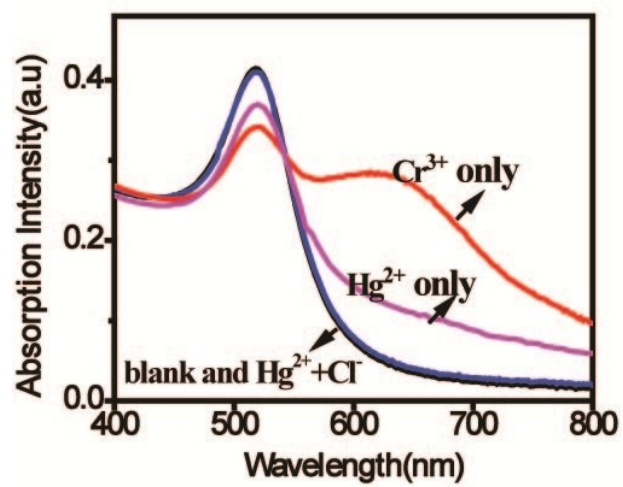


Fig.S9 UV-Vis absorbance spectra of blank, Hg²⁺+Cl⁻, Cr³⁺ only and Hg²⁺ only in N-T/AuNPs system (the concentrations of Cr³⁺, Hg²⁺ and Cl⁻ were 2.5 μ M, 5 μ M and 100 μ M, respectively).