Supplementary Material (ESI) for Analyst

Supporting Information

Coordination of Mercury(II) to Gold Nanoparticle Associated Nitrotriazole Towards Sensitive Colorimetric Detection of Mercuric Ion with Tunable Dynamic Range

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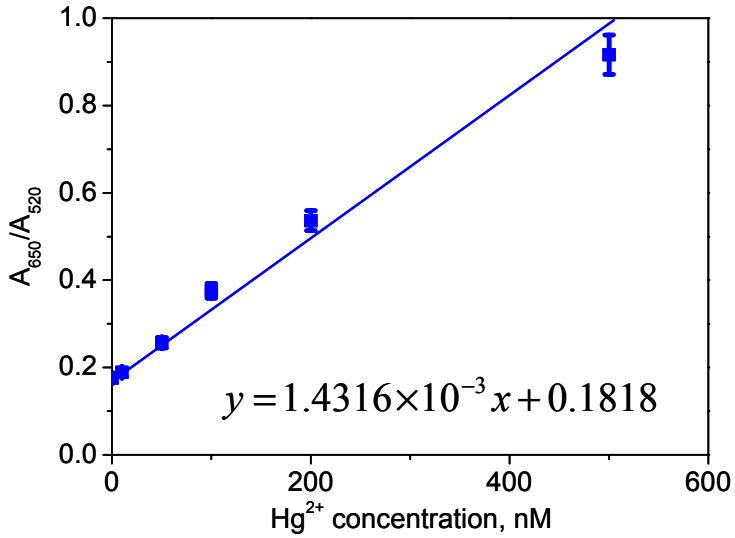
Determination of detection limit (LOD)

The Controls followed the same assay procedure with the addition of distilled-water instead of Hg^{2+} samples. The absorption ratios at 650 nm and 520 nm of the UV-vis spectra were recorded for LOD analysis.

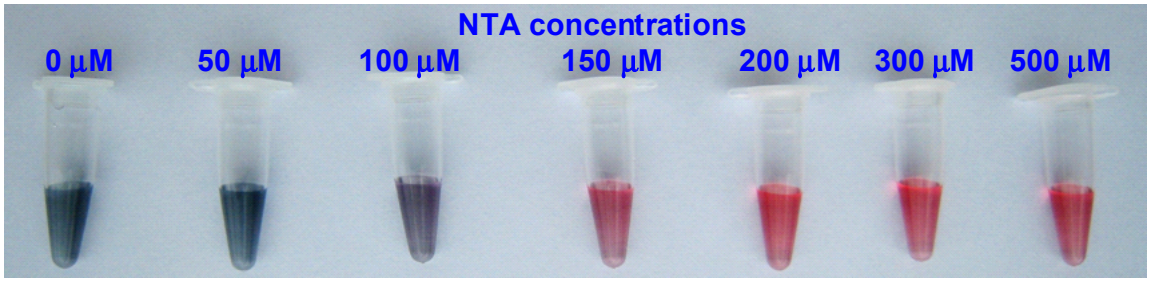
Control 1 at A_{650}/A_{520}	**Control 2 at A_{650}/A_{520}**	**Control 3 at A_{650}/A_{520}**	**Control 4 at A_{650}/A_{520}**	**Control 5 at A_{650}/A_{520}**	**Mean±SD**
0.1854	0.1761	0.1746	0.1763	0.1798	0.1785±0.0043

The calibration equation was obtained by linearly fitting the calibration curve between the Hg^{2+} concentrations of 10 nM and 500 nM.

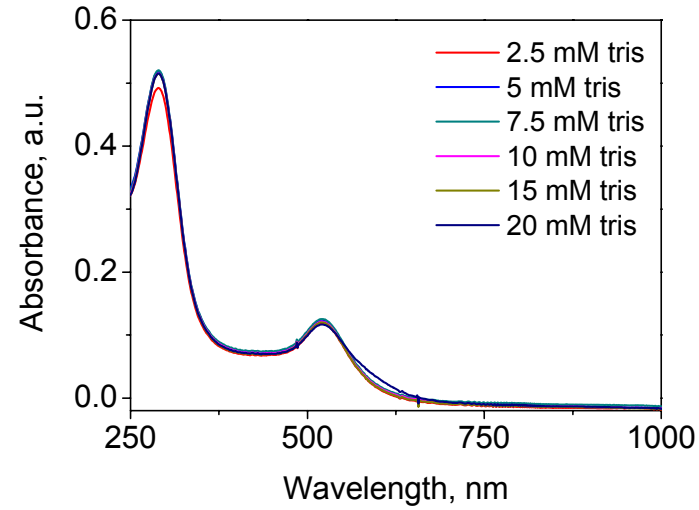


With the S/N ratio of 3, the LOD can be estimated as

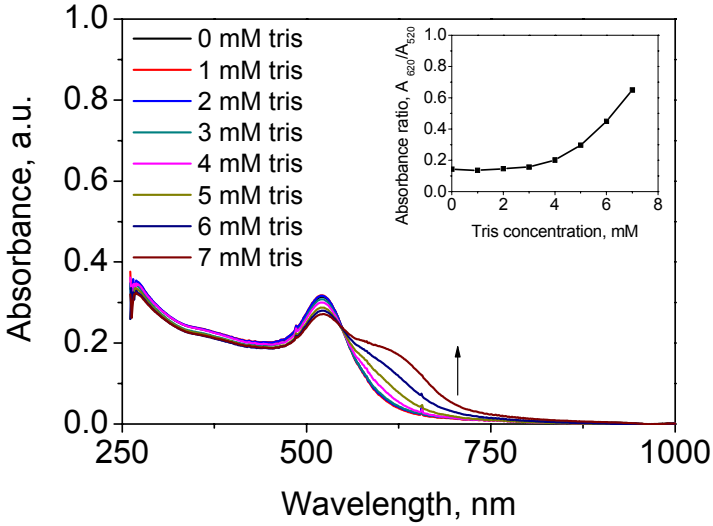
$$\frac{(0.1785+3\times0.0043-0.1818)}{1.4316\times10^{-3}}=6.7\ \text{nM}$$



(A)



(B)



(C)

Figure S1. (A) Improved stability of the AuNPs against the tris-induced aggregation as a function of NTA concentration (tris concentration: 10 mM, pH=8.0); (B) Stability of the NTA-AuNPs probe in tris buffer (NTA concentration: 300 μM); (C) Stability of the citrate-capped AuNPs in tris buffer.

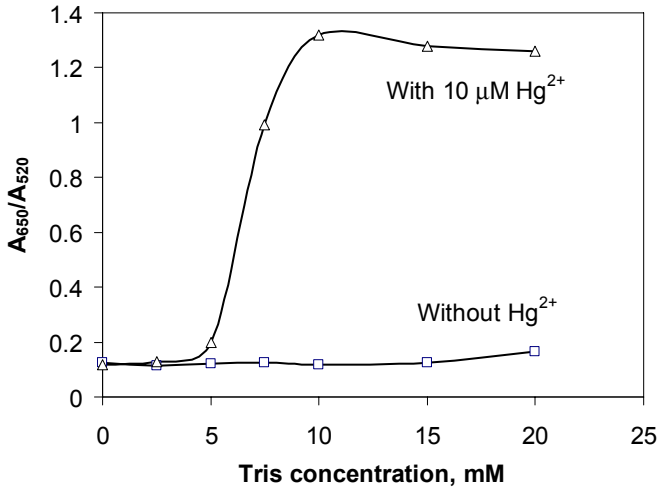


Figure S2. Effects of tris concentration on the aggregation of NTA-AuNPs probe in the absence and presence of 10 μM Hg^{2+} (NTA concentration: 300 μM).

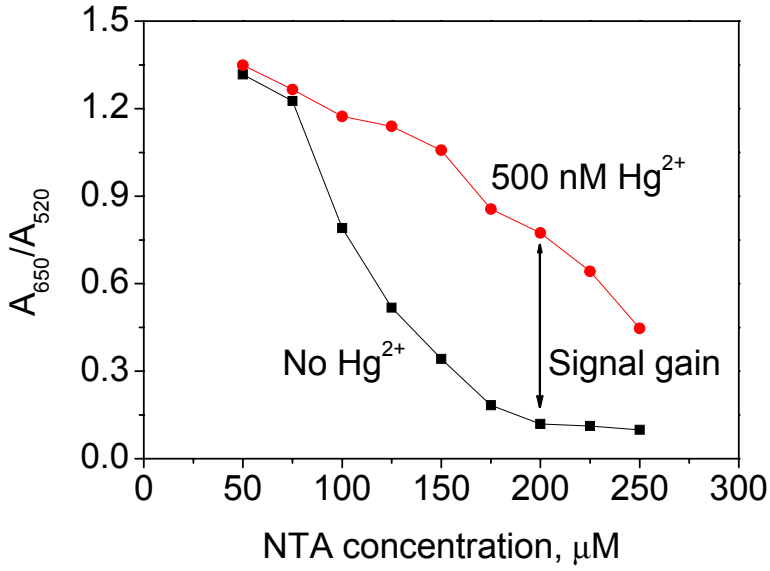


Figure S3. Absorption ratio at A_{650}/A_{520} in the absence and presence of 500 nM Hg^{2+} as a function of NTA concentration. Tris concentration: 5 mM; salt concentration: 20 mM.