Electronic Supplementary Material (ESI) for Analyst
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Supporting Information

Colorimetric Sensing Strategy for Mercury (II) and Melamine Utilizing Cysteamine-modified Gold Nanoparticles

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-Table of Contents-

Figure S1. UV-vis spectra ratio of E650/E520 for the stoichiometric ratio of AuNPs to cysteamine **S3**

Figure S2. The pH effect to the CA-Au NPs **S3**

Figure S3. UV-vis spectra ratio of E650/E520 in the presence of cytosine, uracil, thymine, lactose, urea, Ca2+ and melamine. **S4**

Table S1 Results of the Determination of the Hg2+ in Tap Water **S4**

Table S2 Results of the Determination of the Melamine in Milk Powder **S5**

Reference **S5**

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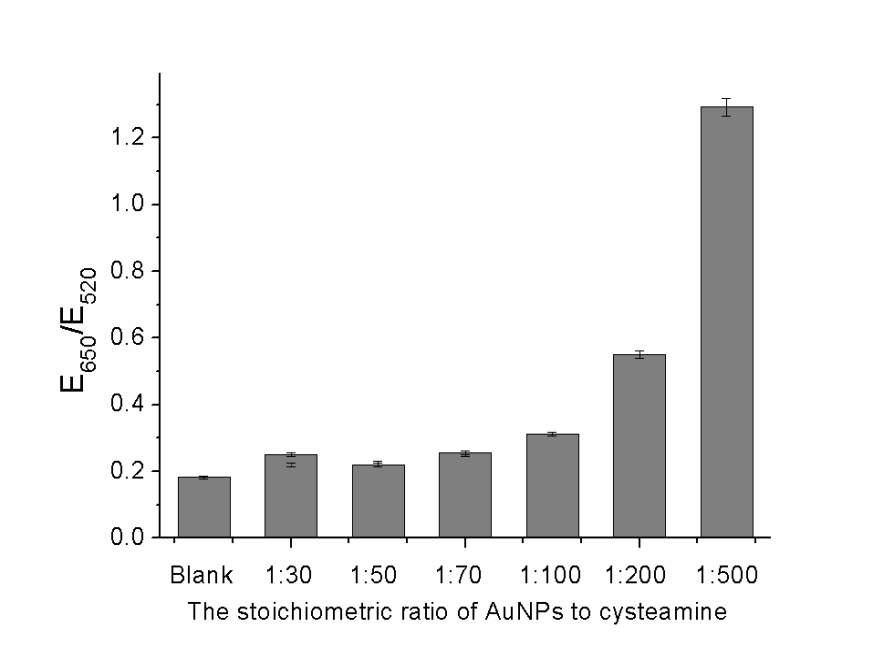

Figure S1. UV-vis spectra ratio of E650/E520 for the stoichiometric ratio of AuNPs to cysteamine

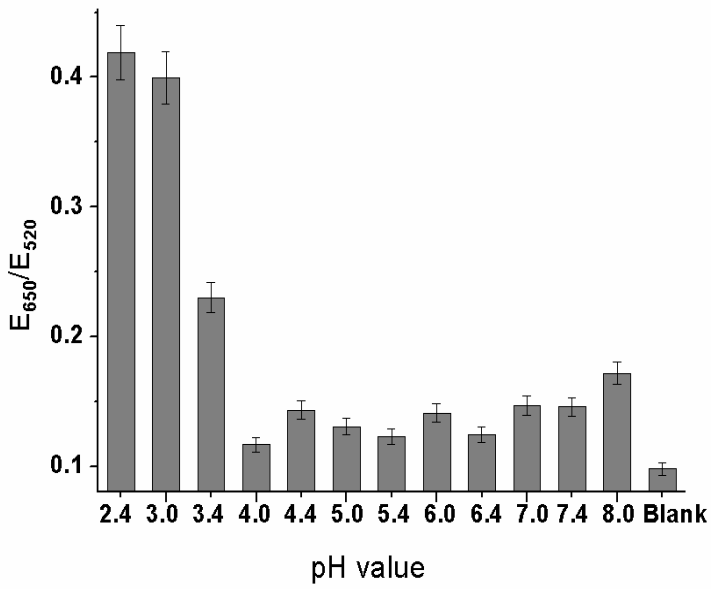

Figure S2. The pH effect to the CA-Au NPs

We evaluated the effects of solution pH change (ranging from 2.4 to 8) with 2 mM disodium hydrogen phosphate -citric acid buffer. When the pH $\geq$ 8.0 or pH $\leq$ 3.4, the free CA-AuNPs themselves aggregated easily.

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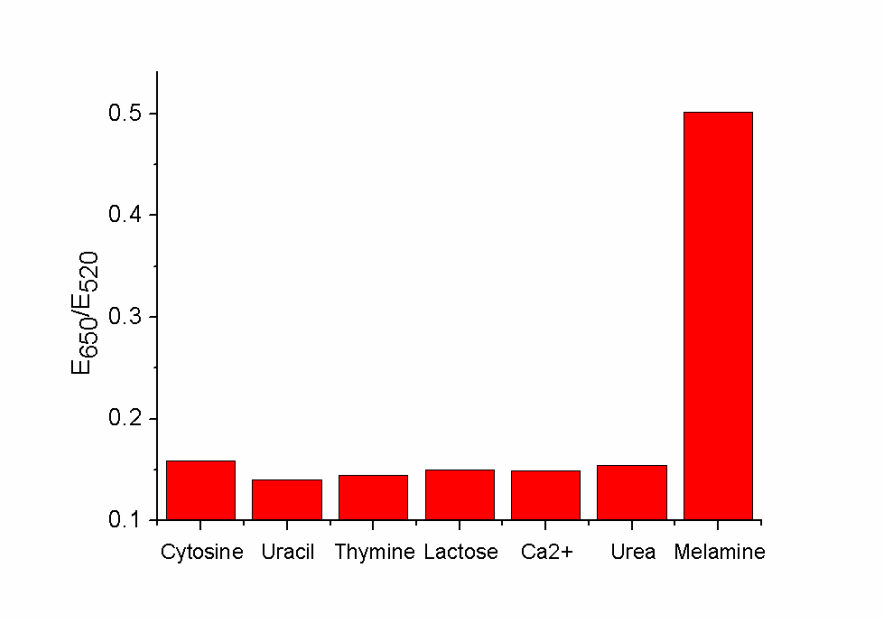

Figure S3. UV-vis spectra ratio of E650/E520 in the presence of cytosine, uracil, thymine, lactose, urea, Ca2+ and melamine. Concentration: 10 μM each.

The selectivity of this method for melamine was evaluated the ratio of E650/E520 in the presence of cytosine, uracil, thymine, lactose, urea, Ca^{2+} and melamine. The concentration of each interferent was 1.0 μM. The results showed excellent selectivity for melamine which was comparable to other detection methods[1-3] for melamine based on AuNPs.

Table S1 Results of the Determination of the Hg2+ in Tap Water

Tap water	Added (μM)	Found (μM)	Recovery (%)	RSD% (n=3)
T1	0.05	0.045	90.0	1.4
T2	0.10	0.953	95.3	1.5
T3	1.50	1.456	97.0	2.1
T4	2.50	2.417	96.7	1.7

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Table S2 Results of the Determination of the Melamine in Milk Powder

Milk powder	Added(μM)	Found (μM)	Recovery (%)	RSD% (n=3)
M1	0.08	0.772	96.5	2.1
M2	0.16	0.157	98.1	2.6
M3	0.64	0.658	102.8	1.7
M4	1.60	1.776	111.0	2.5

Reference

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3. X. Liang, H. Wei, Z. Cui, J. Deng, Z. Zhang, X. You and X.-E. Zhang, *Analyst*, 2011, **136**, 179-183.