A colorimetric detection of Pb$^{2+}$ by using sodium thiosulfate and hexadecyl thimethyl ammonium bromide modified gold nanoparticles

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**Fig. S1** (a) Effect of the concentration of Na$_2$S$_2$O$_3$ on the color of Au NPs solutions in the presence of 10 μM Pb$^{2+}$ ([Na$_2$S$_2$O$_3$]=0.4, 0.2, 0.1, 0.05, 0.025 M) (b) Effect of pH on the color of Au NPs solutions in the presence of 3 μM Pb$^{2+}$ (pH=8, 8.5, 9, 9.5, 10).
Fig. S2 (a) The corresponding photo images (b) UV-vis absorption spectra of samples with different concentrations of Pb$^{2+}$ (8, 10, 12, 15, 20, 25 μM).
Fig. S3 XPS data of Pb (a) and S (b).
**Fig. S4** The photo images of CTAB-Au solutions in the presence of Pb$^{2+}$ with different concentrations (blank, 2 μM, 4 μM, sample, 6 μM, 8 μM).