Electronic Supplementary Information

Colorimetric Detection of Hg$^{2+}$ Using Thioctic acid Functionalized Gold Nanoparticles

**Fig. S1.** Plot of $A_{700/525}$ versus the concentration of Hg$^{2+}$ in the range of 0.01-20 μM. The error bars represent standard deviations based on three independent measurements.

**Fig. S2.** UV-Vis spectra of TA-GNPs containing 50 μM anions compared with Hg$^{2+}$ 20 μM.
Fig. S3. Photo images of samples of TA-GNPs containing different concentrations of Hg$^{2+}$ in lake water (orientation of the arrowhead: 10nM, 50nM, 100nM, 500nM, 1μM, 2μM, 3μM, 5μM, 10μM, 15μM and 20μM.)

Fig. S4. Photo images of samples of TA-GNPs containing 50 μM other metal ions (Ba$^{2+}$, Co$^{2+}$, Ca$^{2+}$, Zn$^{2+}$, Cu$^{2+}$, Fe$^{2+}$, Pb$^{2+}$, Ni$^{2+}$, Cr$^{3+}$, Mg$^{2+}$, Mn$^{2+}$, Cd$^{2+}$) compared with Hg$^{2+}$ 15 μM in lake water.