Supporting information for

Novel switchable sensor for phosphate based on the distance-dependant fluorescence coupling of cysteine-capped CdS quantum dots and silver nanoparticles

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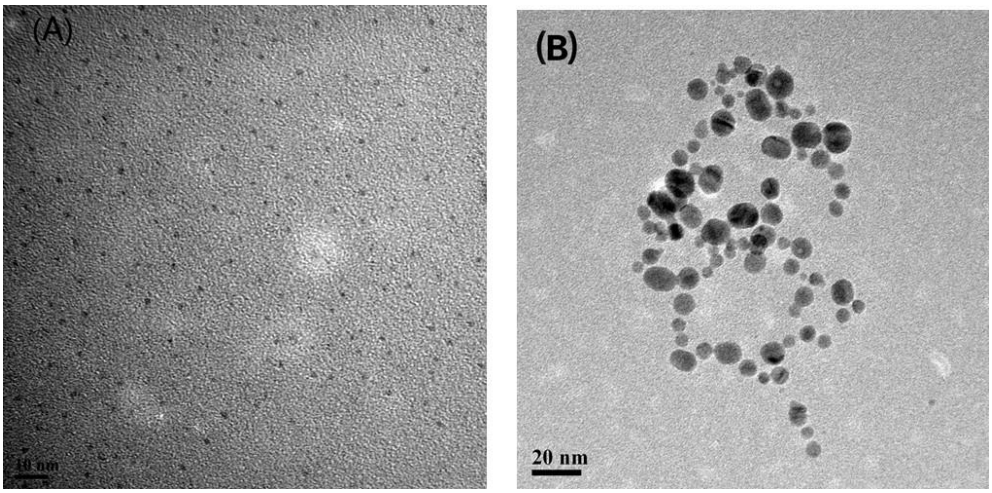

Fig.S1. The HRTEM images of Cys-capped CdS (A) and Cit-capped AgNPs (B).

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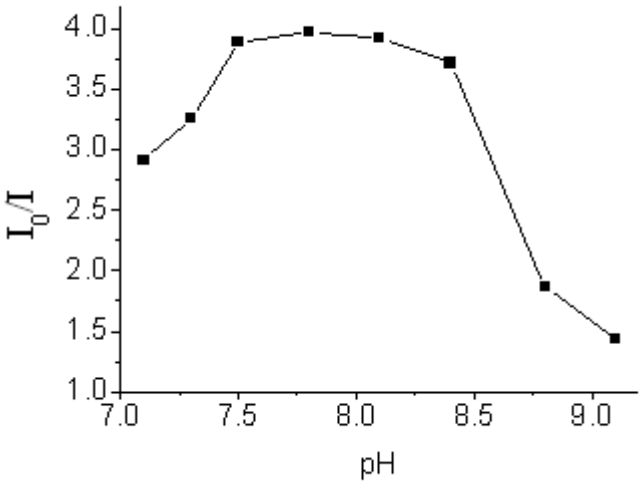

Fig.S2. Effects of pH of the Tris-HCl buffer solution on fluorescence decrease (I_0/I) of CdS QDs.

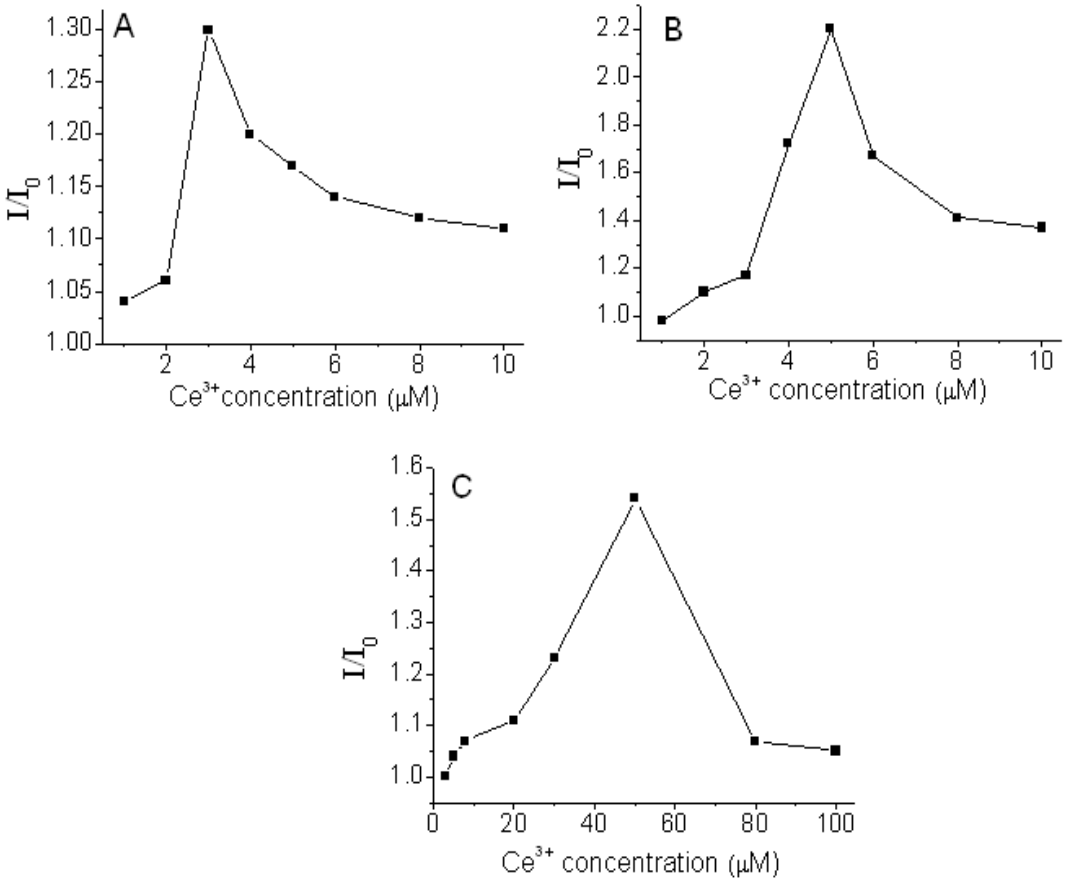

Fig.S3. Effect of different concentration of Ce^{3+} on fluorescence enhancement of CdS (A), Cys-capped AgNPs-CdS (B) and Cit-capped AgNPs-CdS (C) in the presence of 5×10^{-6} M HPO_4^{2-}.

Table S1

Analytical parameters for the detection of HPO_4^{2-} using CdS, Cys-capped AgNPs-CdS and Cit-capped AgNPs-CdS as fluorescence probes.

Probe	Regression equation	Linear range(μM)	LOD (μM)
Cys-capped CdS	I/I_0=0.99+0.33lgC	4- 50	0.6
Cys-capped AgNPs-CdS	I/I_0=1.79+1.45lgC	0.1-500	0.01
Cit-capped AgNPs-CdS	I/I_0=1.23+0.58lgC	1-200	0.05

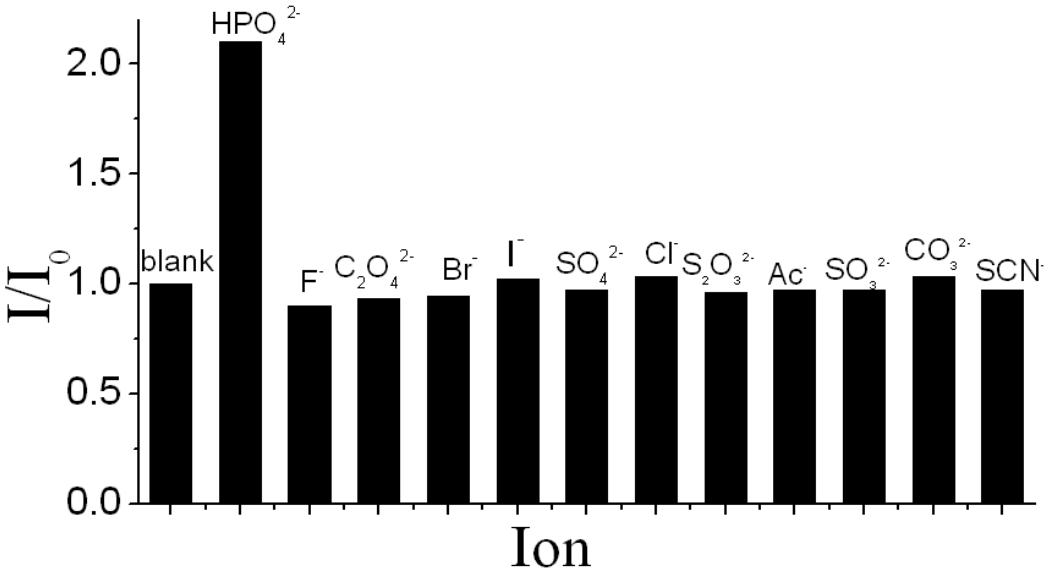

Fig.S4. Effects of different anion ions on the fluorescence of CdS-Ce^{3+} system. The concentrations of all the anion ions were 1×10^{-5} M.

Table S2
Results for the determination of HPO_4^{2-} in lake water sample

The present method mean[a] ± SD[b] (μM)	Molybdenum-blue mean ± SD (μM)	Added (μM)	Found mean±SD (μM)	Recovery
1.12±0.05	1.24±0.04	5.0	5.2±0.1	101%-106%
		10	9.9±0.3	96%-102%
		20	19.2±0.6	93%-99%

[a] Mean of three determinations; [b] standard deviation.

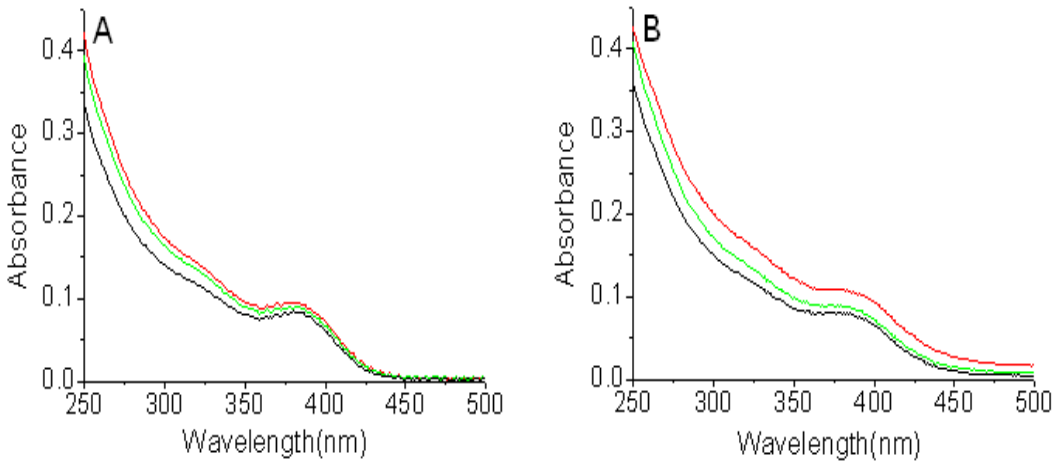

Fig.S5. Absorption spectra of Cys-capped CdS (A), Cys-capped AgNPs-CdS (B) before (black line) and after the addition of Ce^{3+} (red line) and HPO_4^{2-} (green line).