## **Electronic Supplementary Information**

for

A fluorescent nanoprobe based on metal enhanced fluorescence combined with

## Förster resonance energy transfer for the trace detection of nitrite ion

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Fig. S1 Particles size distribution of the Au NSs colloidal solution with different size.



**Fig. S2** (a) TEM image of typical TGA-capped CdTe QDs, inset: HRTEM image of a typical CdTe QDs, (b) The absorption and fluorescence emission spectra of CdTe QDs excited at 440 nm.





**Fig. S3** (a) The HRTEM image and (b) Fluorescence spectra of the physical mixture of CdTe QDs and Au-62.8@SiO<sub>2</sub> NPs.



**Fig. S4** (a) Normalized absorption spectra and (b) Digital photograph of Au NSs colloidal solution with different size.



**Fig.S5** The size distribution of the ionic solution added with fluorescent nanoprobe: (a) Cl<sup>-</sup>, (b)  $HCO_{3^{-}}$ , (c)  $H_2PO_{4^{-}}$ , (d)  $F^-$ , (e)  $NH_{4^{+}}$ , (f)  $SO_{4^{2^{-}}}$ , (g)  $HPO_{4^{2^{-}}}$  and (h)  $NO_{3^{-}}$ , respectively.



**Fig. S6** Absorption spectra of (a) Au NSs, (b)Au@SiO<sub>2</sub> and (c) fluorescence spectra of Au@SiO<sub>2</sub>-CdTe NPs towards the response with nitrite ion or water, respectively.