Electronic Supplementary Information

Fast synthesis of fluorescent SiO$_2$@CdTe nanoparticles with reusability in detection of H$_2$O$_2$

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Fig. S1 FT-IR spectra of SiO$_2$ and SH-SiO$_2$.

Fig. S2 (a) The fluorescent spectrum of the pure SiO$_2$@CdTe NPs and (b-d) the fluorescent spectra of the first, second, third washing supernatant.
Fig. S3 (A) EDS and (B) XPS of the as-prepared SiO$_2$@CdTe NPs; (C) Absorption spectrum of CdTe QDs and SiO$_2$@CdTe NPs.
Fig. S4: (A) The hydrothermal time, (B) pH value and (C) the amount of SH-SiO$_2$ was respectively adjusted under other constant conditions.
**Fig. S5** The trend of the fluorescent intensity of CdTe QDs and SiO$_2$@CdTe NPs response to 0.1 mM H$_2$O$_2$ at the same conditions over time.

**Fig. S6** The fluorescence spectra of the NPs changed with 0.075 mM H$_2$O$_2$ over time.
Fig. S7 The SiO$_2$@CdTe NPs could be reused to detect H$_2$O$_2$ eight-times. Relatively, (A) the fluorescent spectra were the first time to detect H$_2$O$_2$ (0.0125 mM); (B) the fifth to detect H$_2$O$_2$ (0.015 mM); (B) the eighth to detect H$_2$O$_2$ (0.02 mM).