**Supplementary Information**

# PEGylated carbon nanoparticles for efficient *in vitro* photothermal cancer therapy

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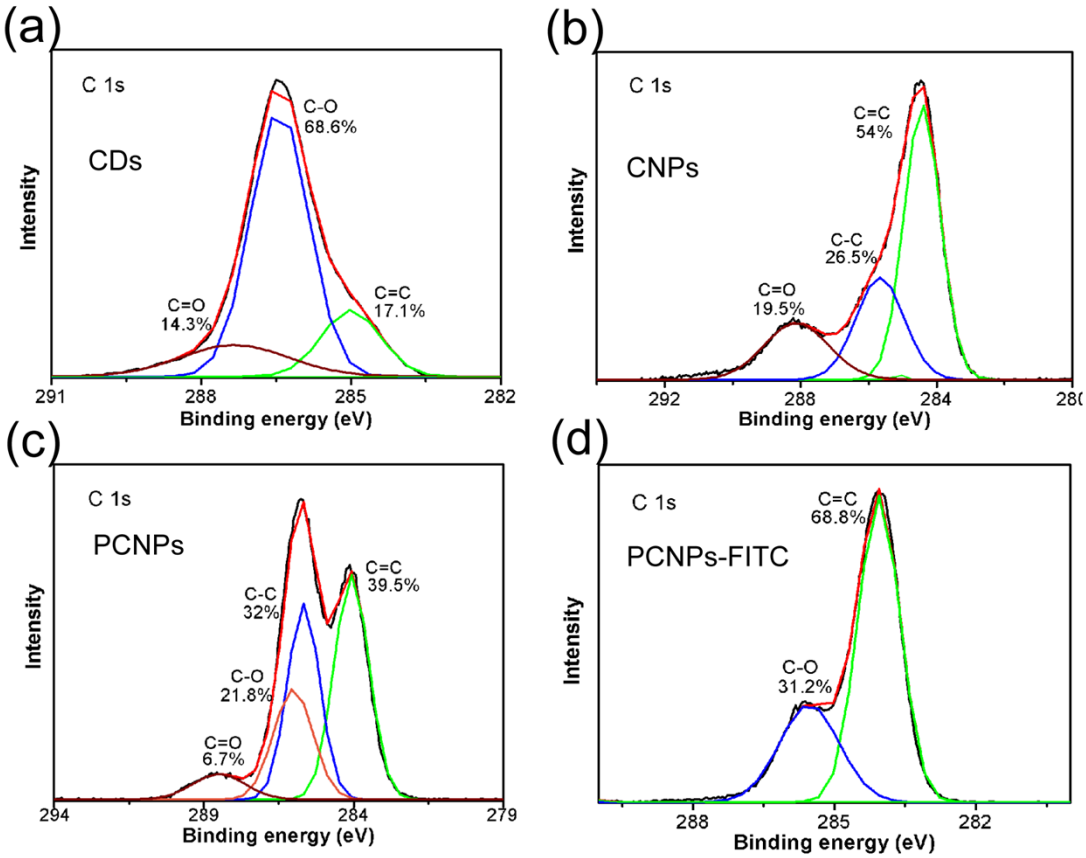


**Fig. S1** XPS of C 1s analysis of (a) CDs, (b) CNPs, (c) PCNPs and (d) PCNPs-FITC.

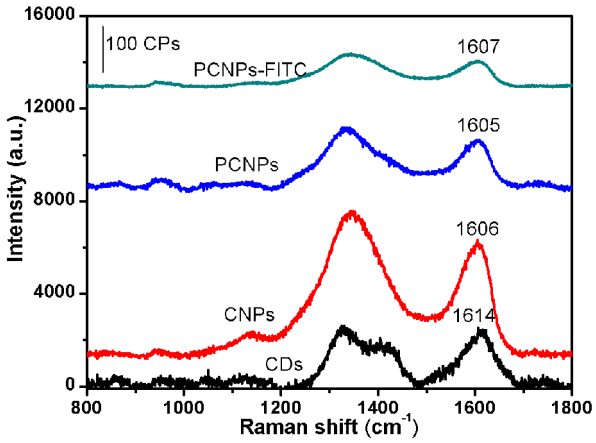


**Fig. S2** Raman spectra of CDs, CNPs, PCNPs and PCNPs-FITC.

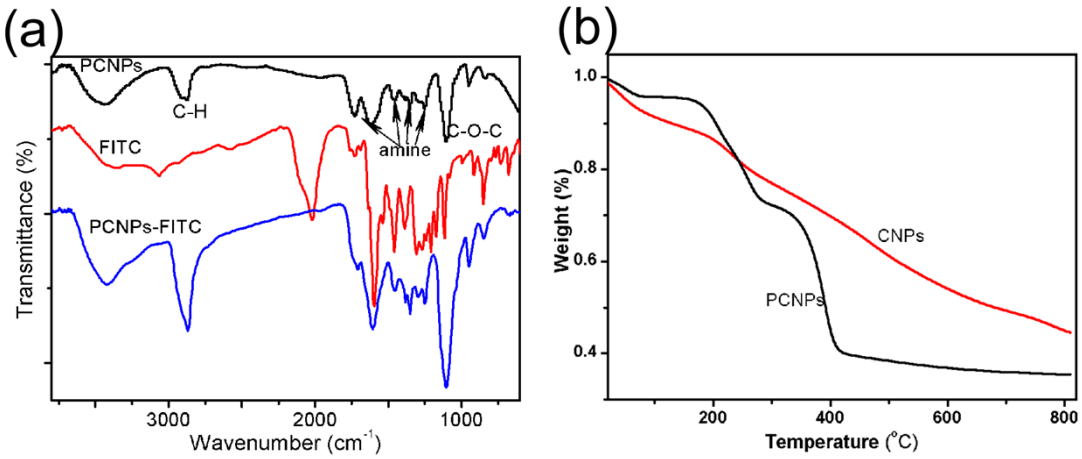


**Fig. S3** (a) FT-IR spectra of PCNPs and PCNPs-FITC. In case of FITC isothiocyanate groups (2020 $cm^{-1}$) is observed while for PCNPs-FITC this absorption disappears. The strong absorption (1603 $cm^{-1}$) is similar to that of FITC indicating the formation of PCNPs-FITC. (b) TG analysis of CNPs and PCNPs.

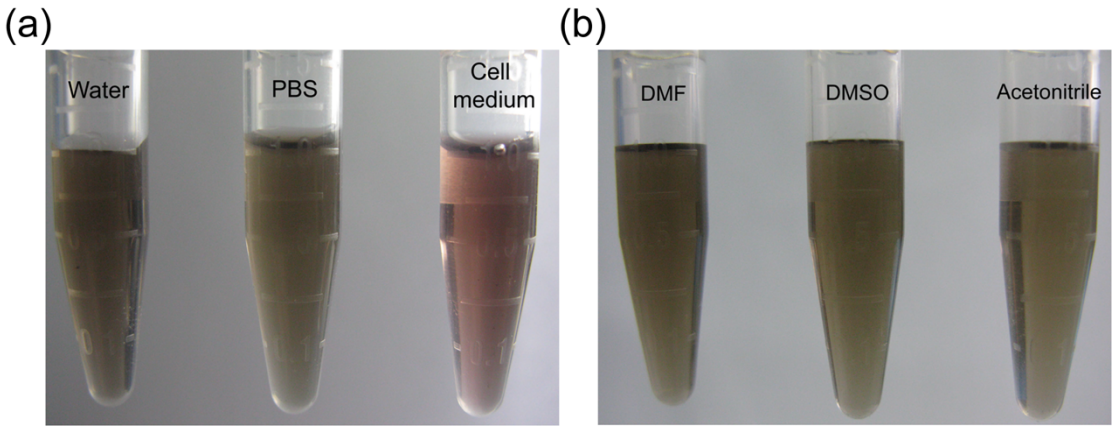


**Fig. S4** Photographs of PCNPs in (a) DI water, PBS and cell medium, and (b) polar organic solvents (DMF, DMSO and acetonitrile) after centrifugation at 10000 rpm for 5 min.

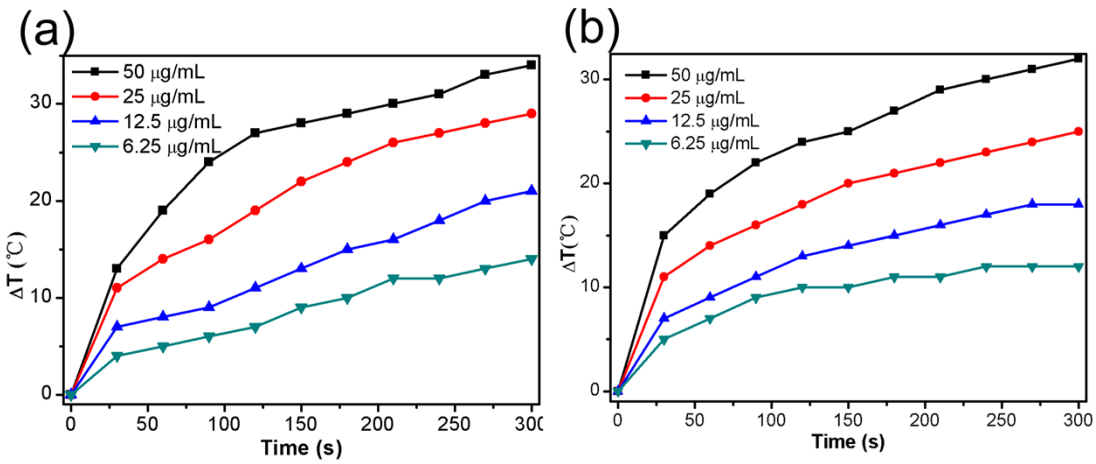


**Fig. S5** Photothermal effect of (a) gold nanorods and (b) graphene oxide of different concentrations (6.25, 12.5, 25 and 50 μg/mL) under NIR irradiation (808 nm, 3 W) for 5 min. ΔT refers to the temperature difference of gold nanorods (or graphene oxide) and DI water under equal irradiation.

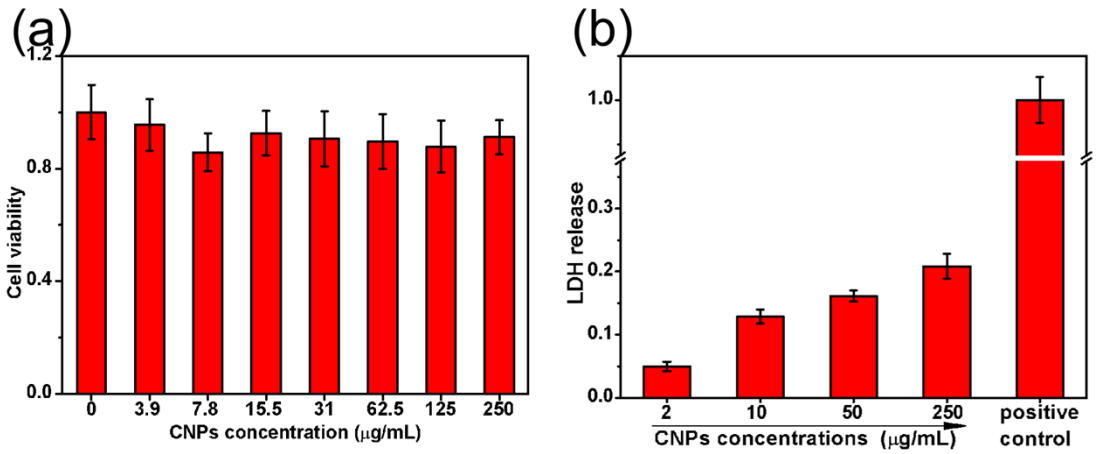


**Fig. S6** (a) MTT assay of MCF-7 cell viability treated with PBS or CNPs of different concentrations (3.9, 7.8, 15.5, 31, 62.5, 125 and 250 μg/mL) for 24 h. (b) LDH release assay of MCF-7 cells treated with PBS or CNPs of different concentrations (2, 10, 50 and 250 μg/mL) for 24 h. Positive control refers to the maximum LDH release after cell lysis.

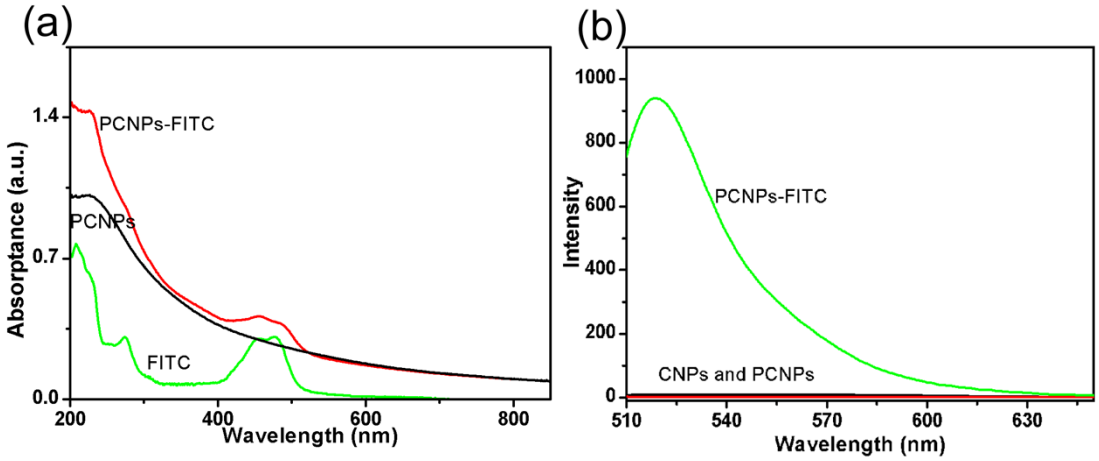


**Fig. S7** (a) UV-Vis absorption spectra of PCNPs, PCNPs-FITC and FITC in aqueous solutions. (b) PL spectra of CNPs, PCNPs and PCNPs-FITC in aqueous solutions.

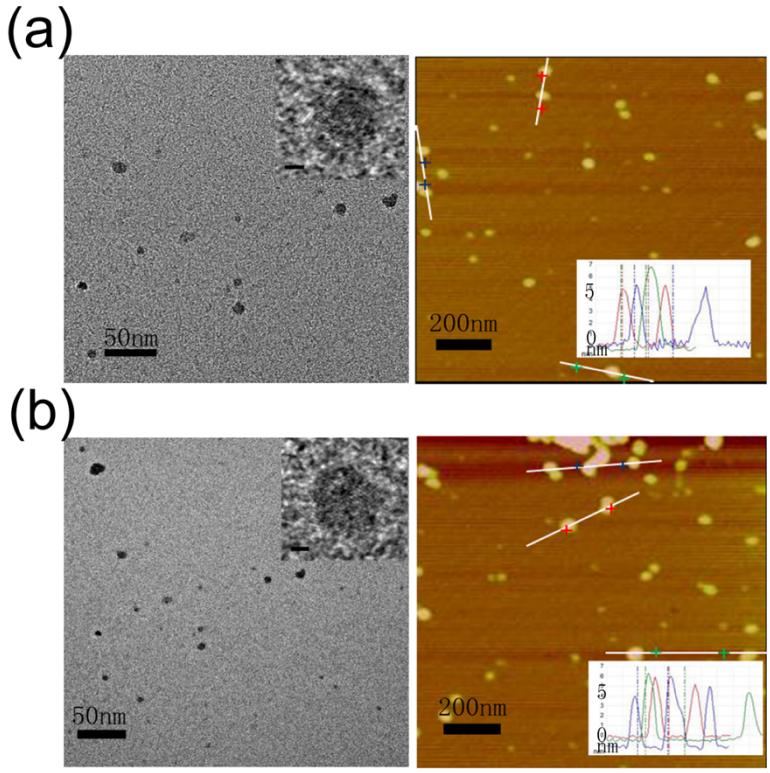


**Fig. S8** TEM (left) and AFM (right) images of (a) PCNPs and (b) PCNPs-FITC samples, respectively. The insets in TEM images of (a) and (b) are the HR-TEM of PCNPs and PCNPs-FITC samples (scale bar 2 nm), respectively, and the insets in AFM images are height diagrams of PCNPs and PCNPs-FITC samples, respectively.