Electronic Supplementary Material (ESI) for Materials Advances.

H_2O_2-Replenishable and GSH-Depletive ROS 'Bomb' for Self-Enhanced Chemodynamic Therapy

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Table S1. The content of Fe in CaO_2-Fe NPs with different feeding ratios

Feeding ratios	Fe (wt%)
10:1	1.1
8:1	2.6
6:1	3.2
4:1	4.0
2:1	-

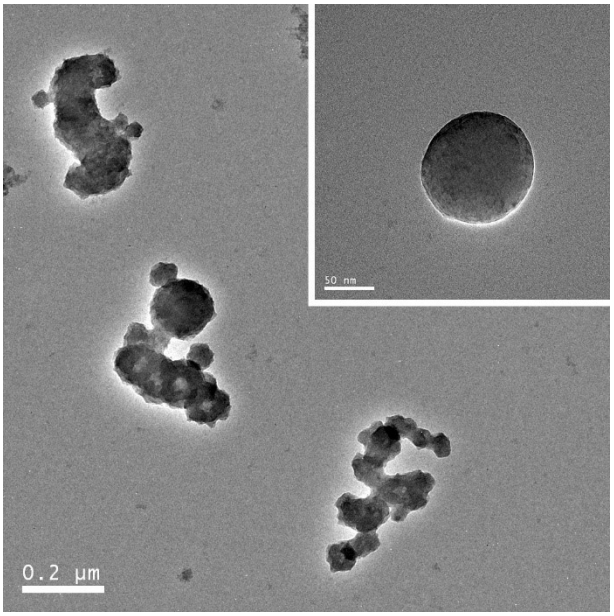

Figure S1. TEM image of CaO_2 NPs (inset: an image at a higher magnification of CaO_2 NPs).

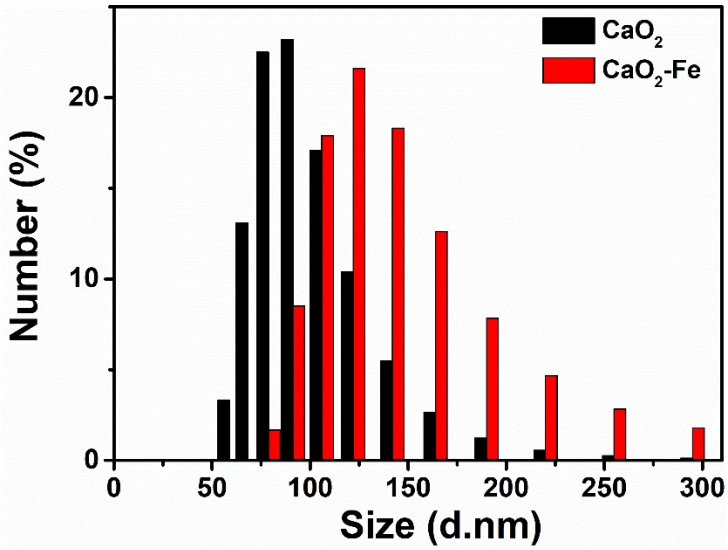

Figure S2. Dynamic light scattering (DLS) measurement of CaO_2 and CaO_2-Fe NPs.

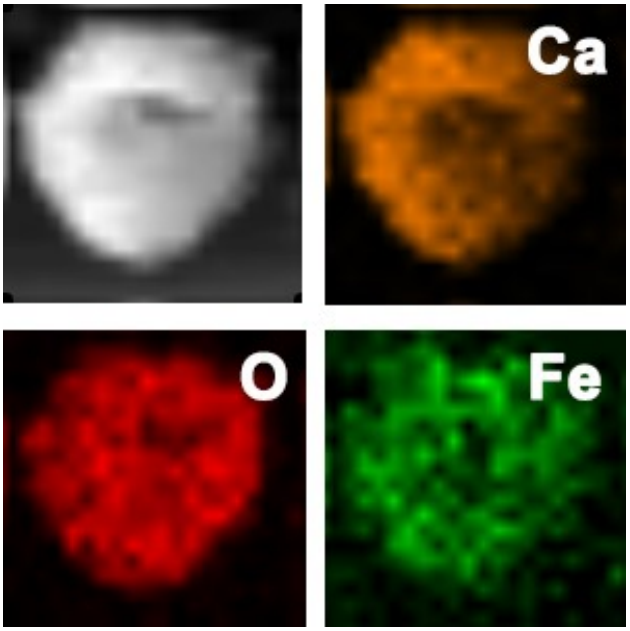

Figure S3. HAADF-STEM and elemental mapping of Fe, Ca, and O of CaO_2-Fe NPs.

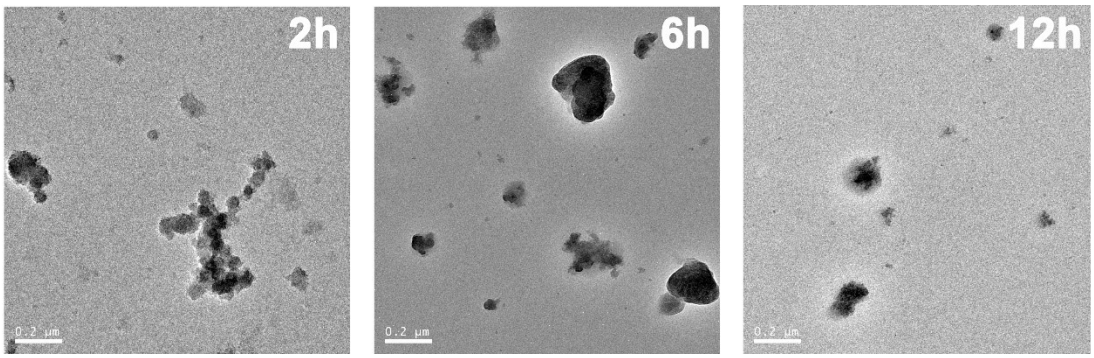

Figure S4. TEM image of CaO_2-Fe NPs by dispersing in pH 5.4 with different time.

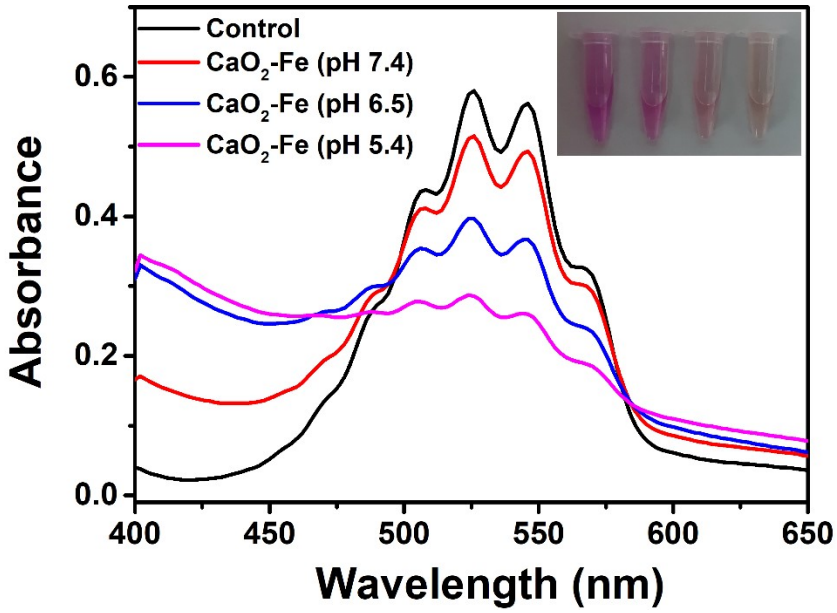

Figure S5. UV-Vis absorption spectra and photo (inset) of $KMnO_4$ after treating with CaO_2-Fe NPs in different pH environment.

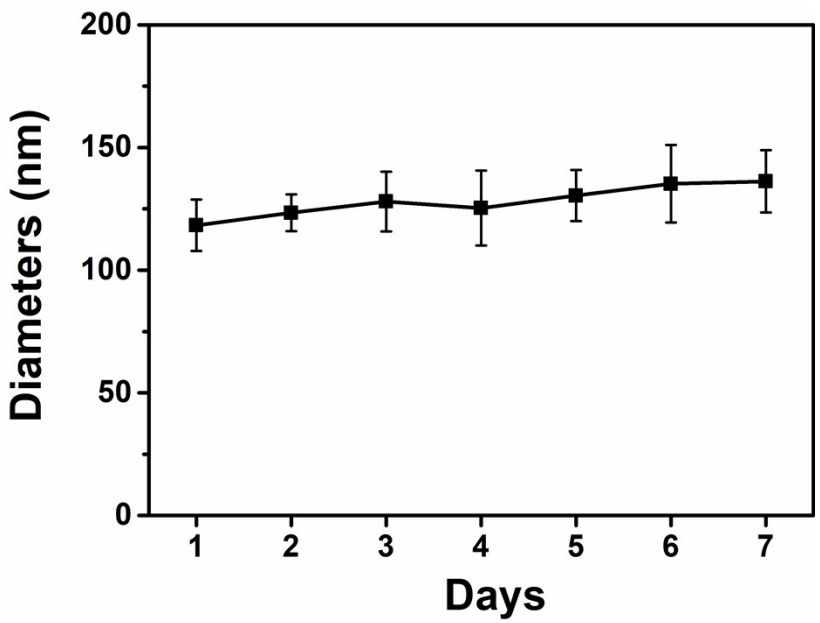

Figure S6. DLS spectrum of CaO_2-Fe NPs dispersing in PBS with different time.

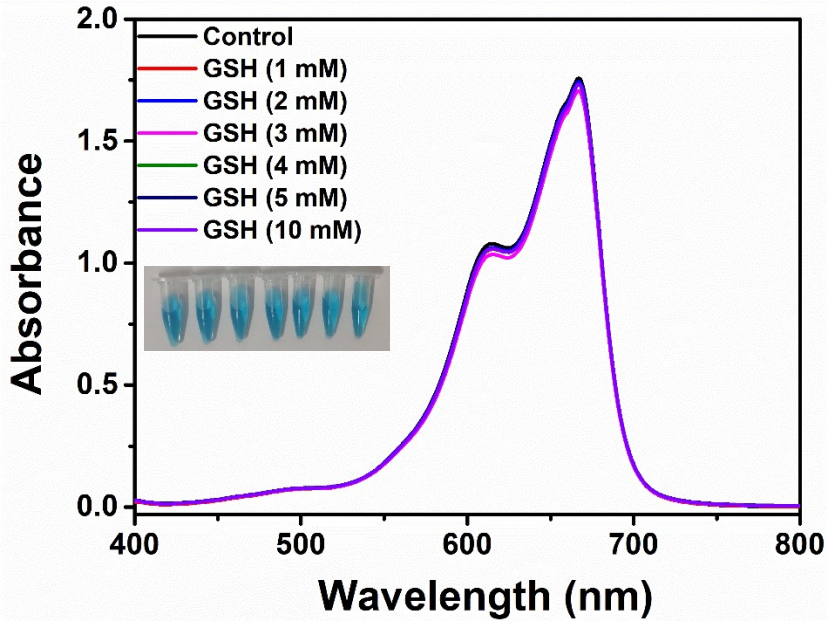

Figure S7. UV-Vis absorption spectra and photo (inset) of MB after degradation by different amount of GSH at pH 5.4.

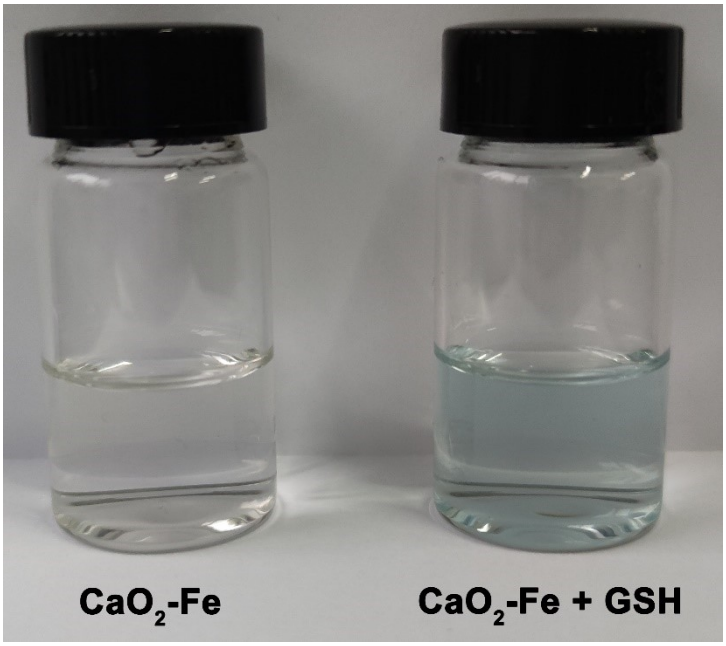

Figure S8. Photos of potassium ferricyanide (Fe^{2+} indicator) dispersed in CaO_2-Fe or CaO_2-Fe plus GSH solution.

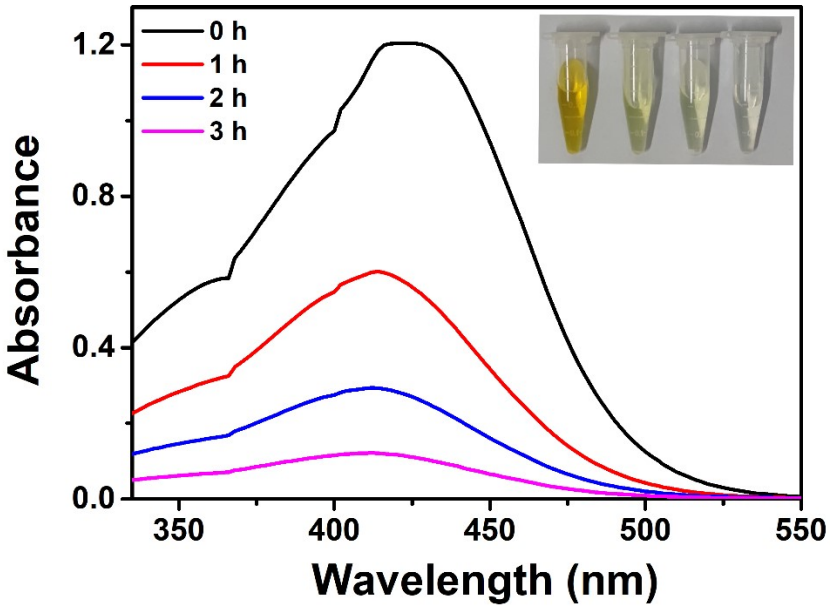

Figure S9. UV-vis absorption spectra and photo (inset) of DTNB (GSH indicator) after treating with CaO_2-Fe NPs and GSH at pH 5.4 in different time.

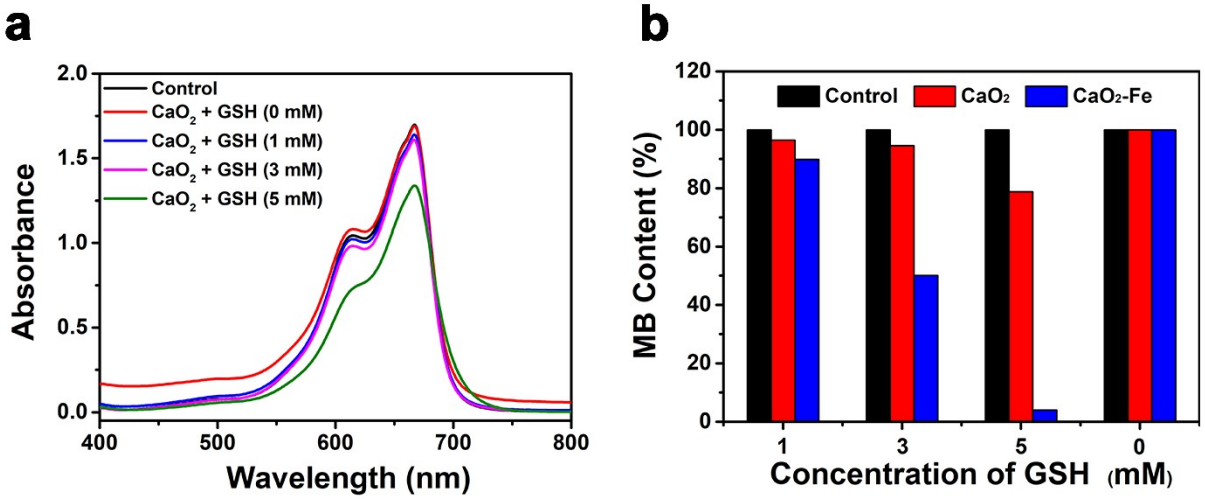

Figure S10. (a) UV-Vis absorption spectra of MB after degradation by CaO_2 NPs treated with different amount of GSH at pH 5.4. (b) Bar graph of the degradation percent of MB by CaO_2-Fe NPs or CaO_2 NPs treated with different amount of GSH at pH 5.4.

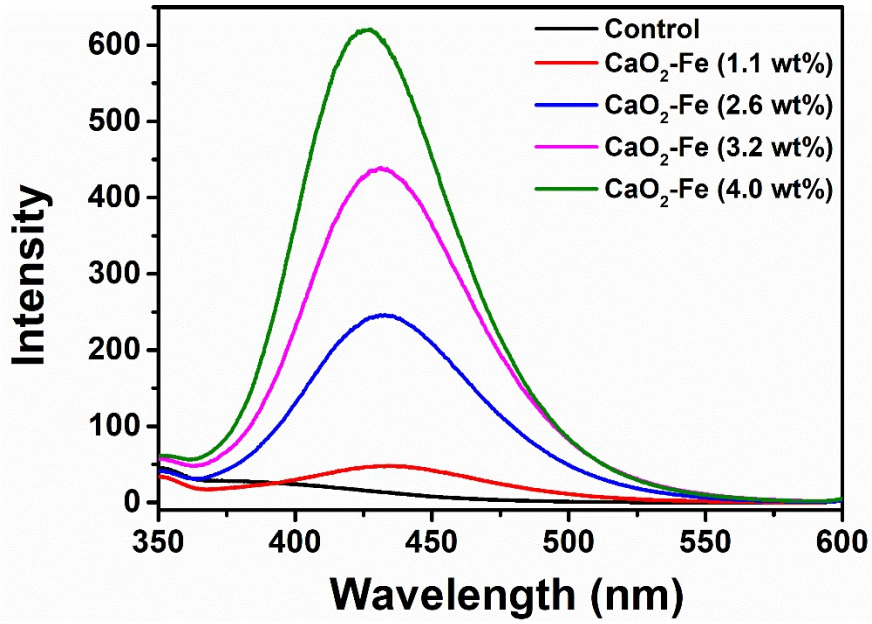

Figure S11. TPA assay of CaO_2-Fe NPs with different Fe (wt%) in pH 5.4 solution with 10 mM GSH.

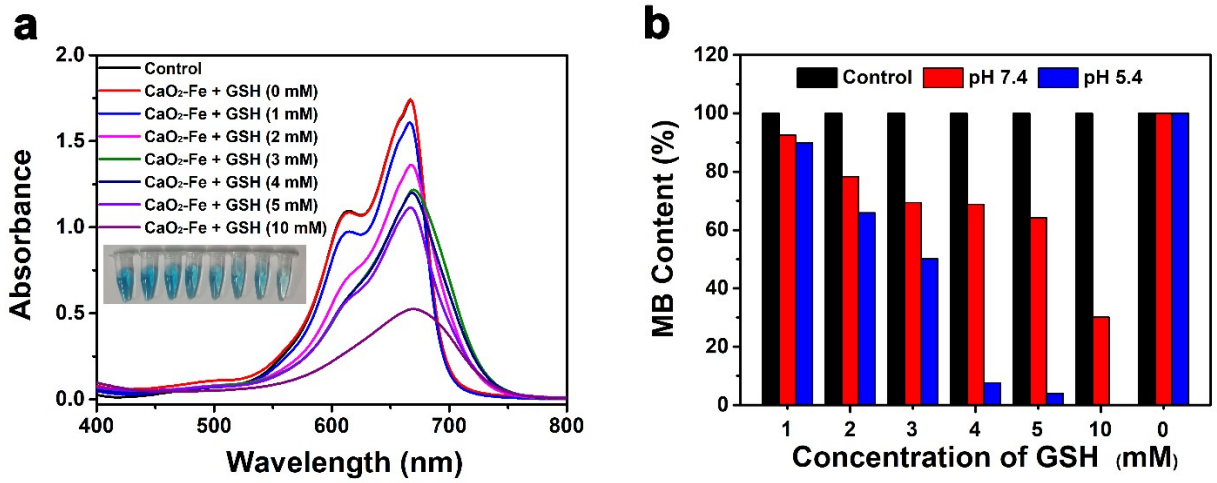

Figure S12. (a) UV-Vis absorption spectra and photo (inset) of MB after degradation by CaO_2-Fe NPs treated with different amount of GSH at pH 7.4. (b) Bar graph of the degradation percent of MB by CaO_2-Fe NPs treated with different amount of GSH at different pH values.

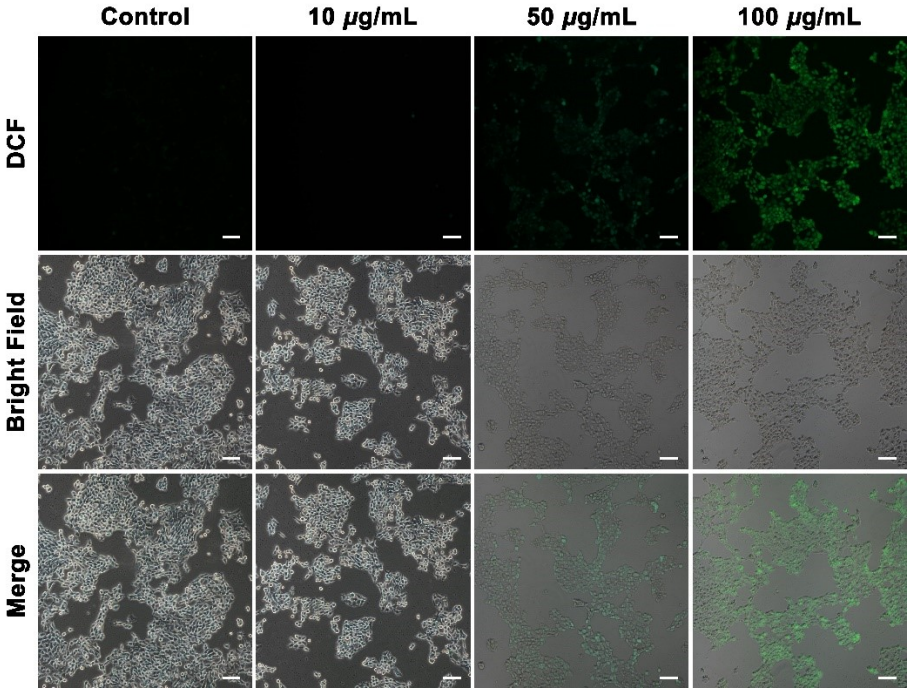

Figure S13. Fluorescence images of DCFH-DA-stained 4T1 cells after exposure to different amount of CaO_2-Fe NPs for 4 h. The scale bar represents 100 μm.

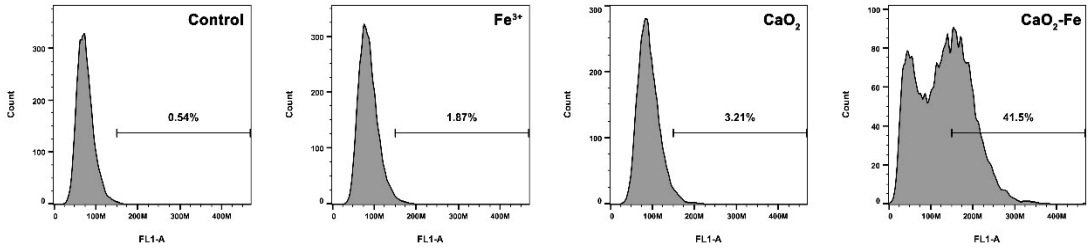

Figure S14. Flow cytometry analysis of ROS generation in 4T1 cells treated with different agents, as detected with DCFH-DA.

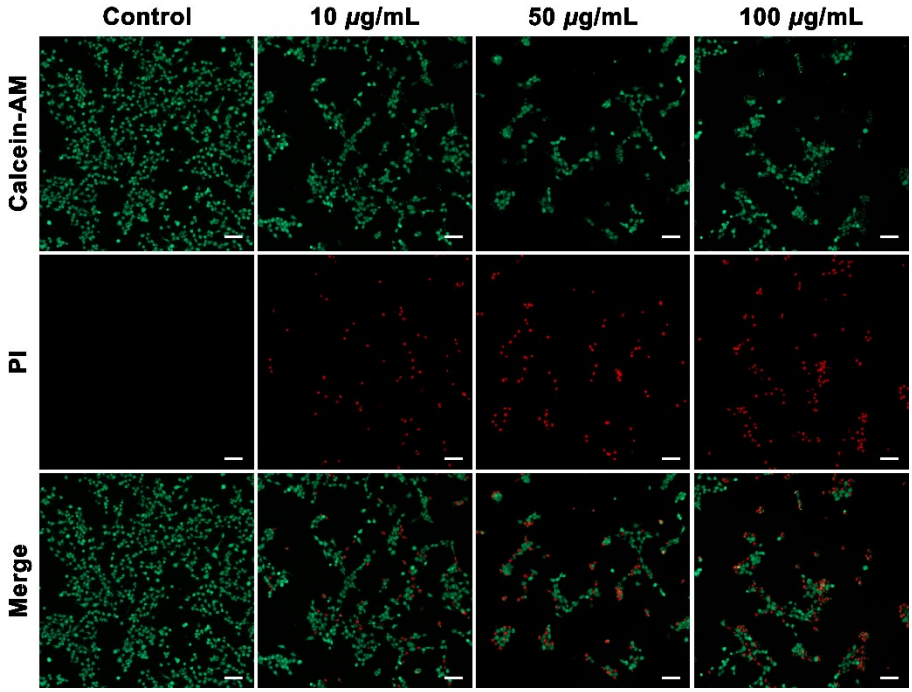

Figure S15. Fluorescence images of calcein AM (green, live cells) and PI (red, dead cells) costained 4T1 cells after incubation with different amount of CaO_2-Fe NPs for 24 h. The scale bar represents 100 μm.

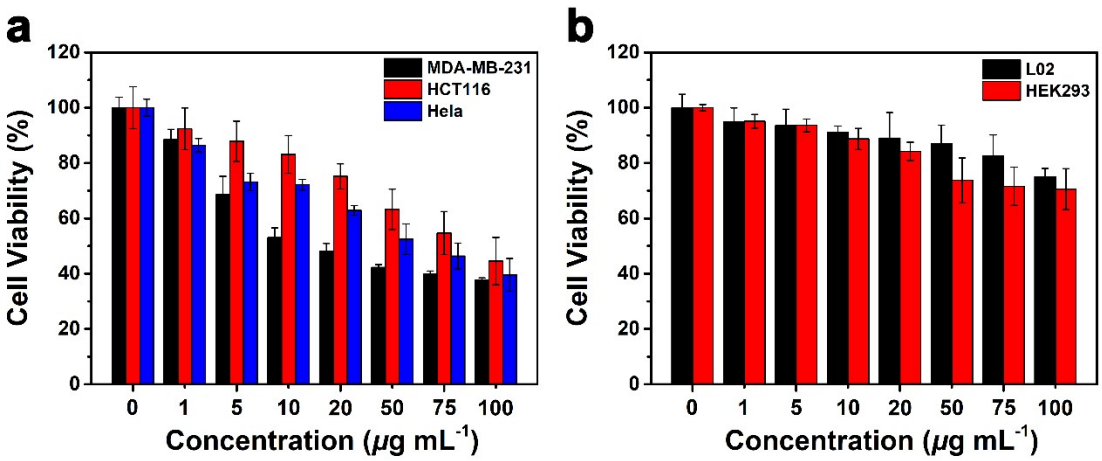

Figure S16. (a) Viability of tumor cell lines (HCT 116, MDA-MB-231, and Hela) after 24 h of incubation with CaO_2-Fe NPs. (b) Viability of normal cell lines (L02 and HEK 293) after 24 h of incubation with CaO_2-Fe NPs.

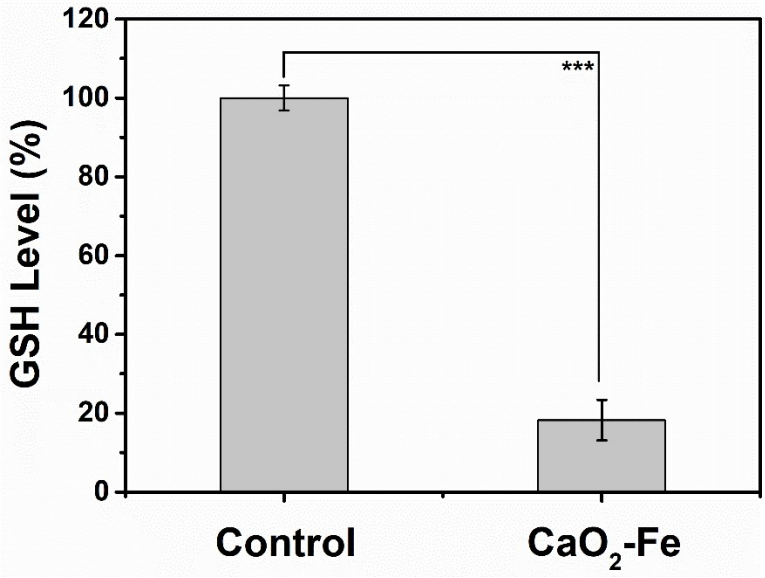

Figure S17. Intracellular GSH levels of 4T1 cells after treating with CaO_2-Fe NPs 8h. (n = 3, mean ± *s.d.*, ***p < 0.001)

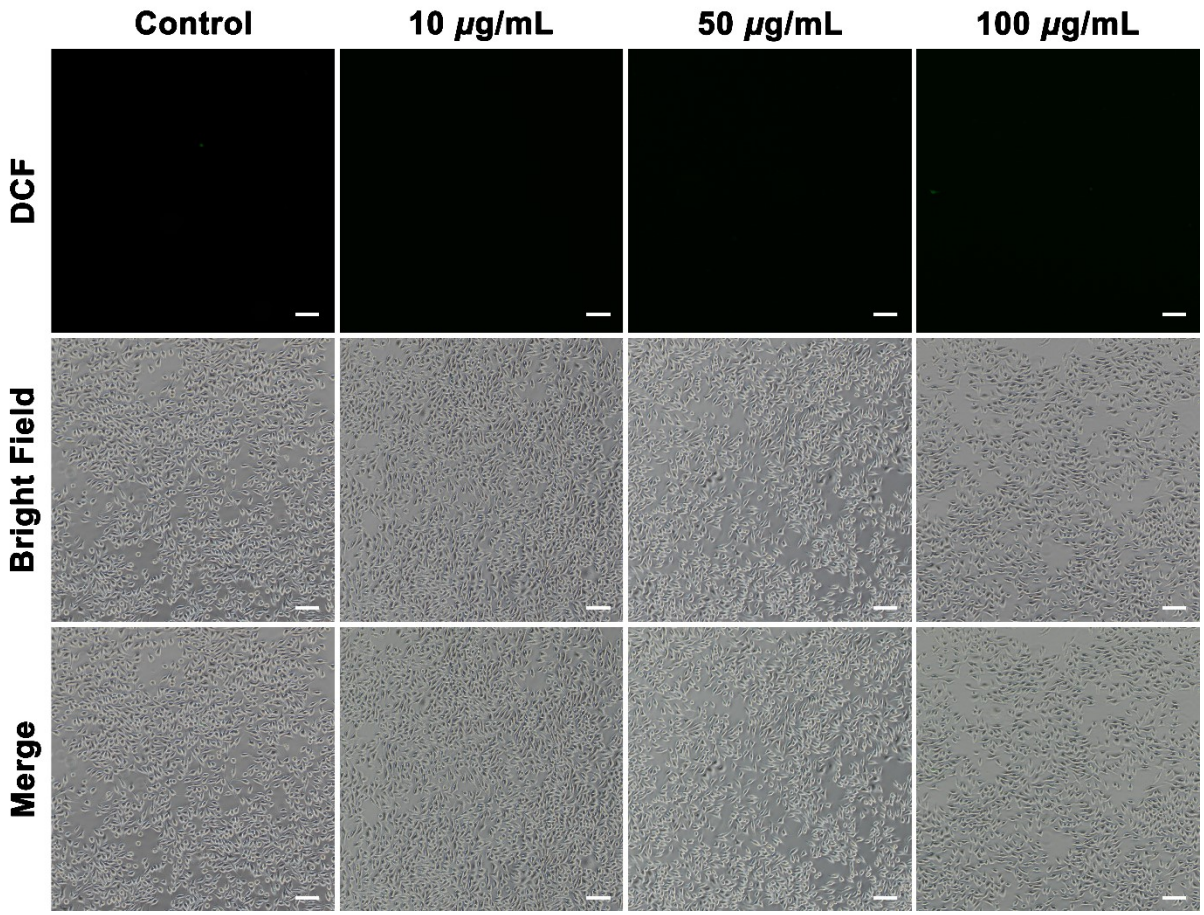

Figure S18. Fluorescence images of DCFH-DA-stained L929 cells after exposure to different amount of CaO_2-Fe NPs for 4 h. The scale bar represents 100 μm.

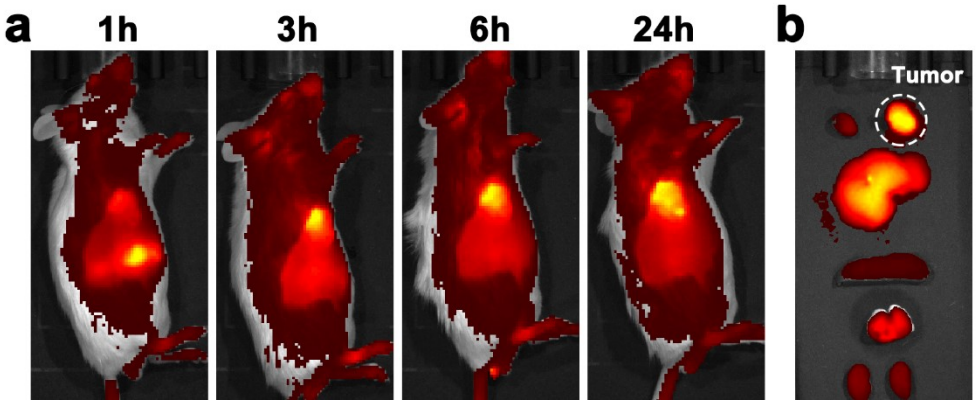

Figure S19. (a) In vivo NIR imaging of tumor-bearing mice intravenous injected with IR783-loaded CaO_2-Fe NPs at 1, 3, 6, and 24 h post-injection. (B) NIR imaging of various tissues at 24 h postinjection.

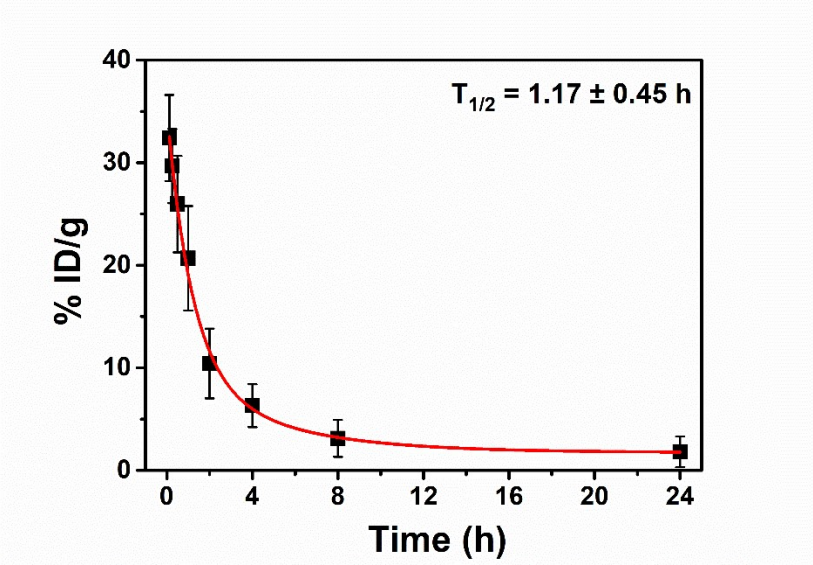

Figure S20. Blood circulation of CaO_2-Fe NPs. The data were obtained by measuring IR-783 fluorescence in the blood samples.

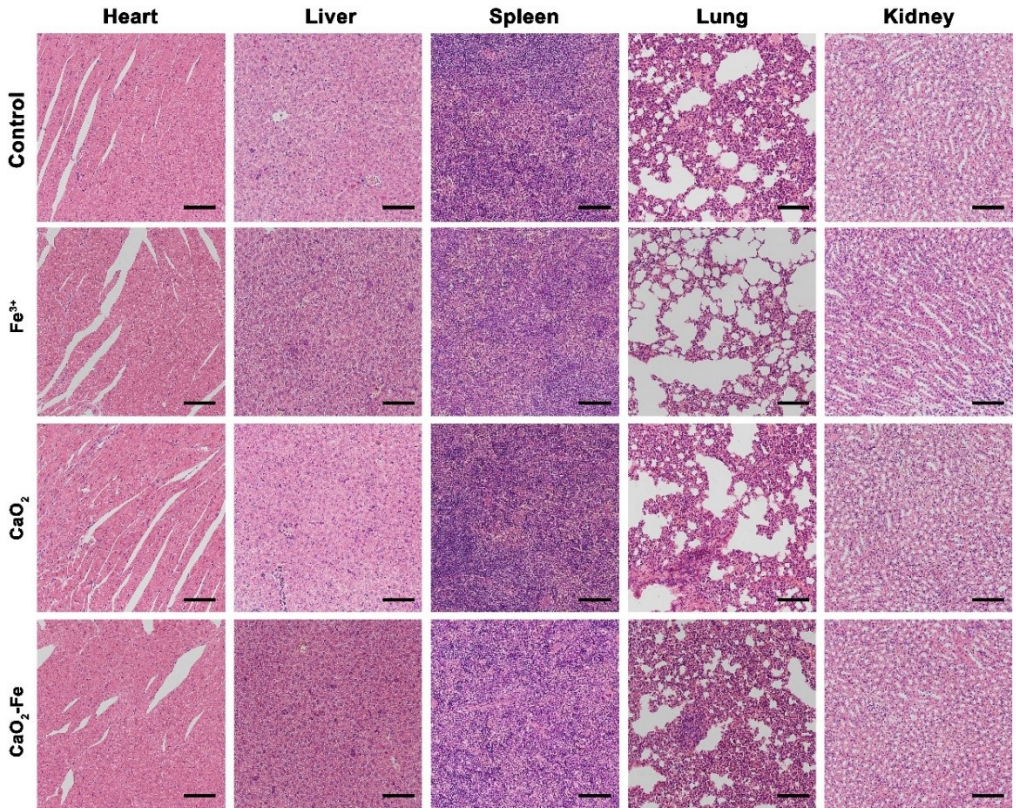

Figure S21. Images of H&E stained major tissues after therapy. The scale bar represents 100 μm.

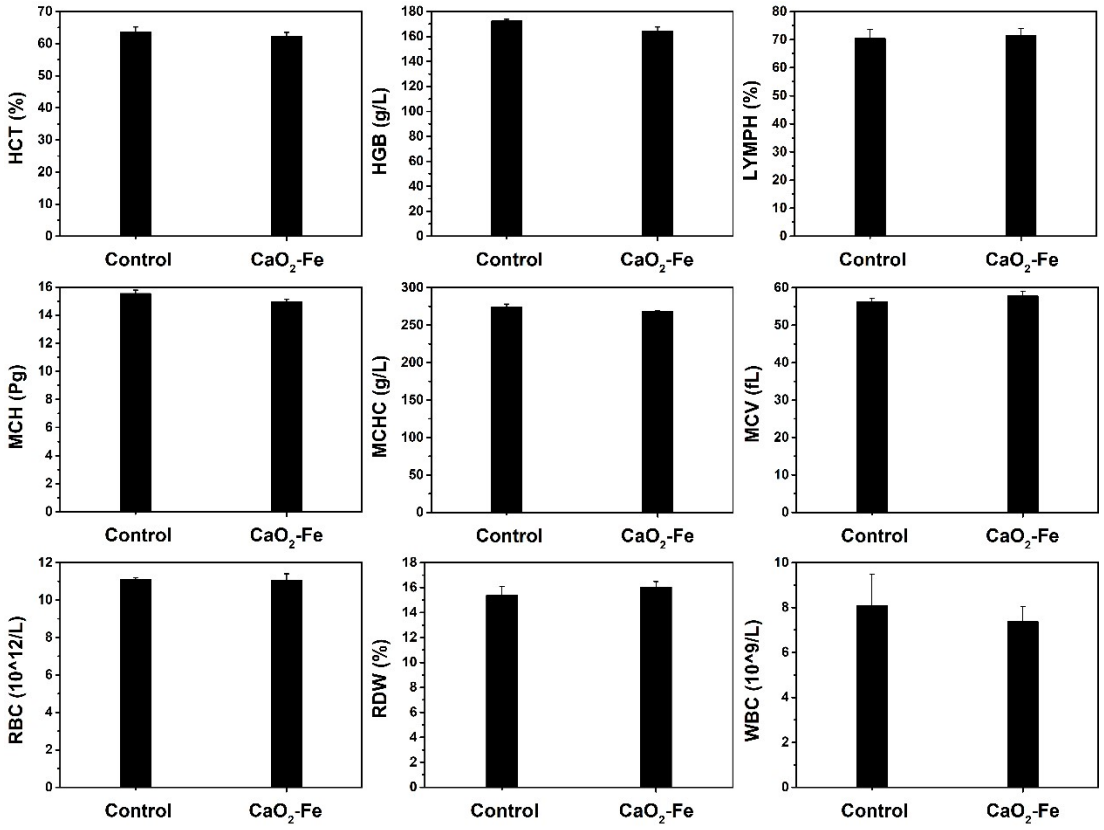

Figure S22. Blood hematology analysis of healthy mice after intravenously injected with saline or CaO_2-Fe NPs for 17 days. (n = 3, mean ± *s.d.*)