Bubble-Assisted HIFU Ablation Enabled by Calcium Peroxide

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Figure S1. TEM image of CaO$_2$ NPs.

Figure S2. The XPS survey scan (a) and Ca 2p scan (b) of CaO$_2$ NP.
Figure S3. TEM image of CaO$_2$@SiO$_2$ NPs.

Figure S4. HRTEM image of CaO$_2$@SiO$_2$ NPs.

Figure S5. X-ray energy dispersive spectroscopy (EDS) of CaO$_2$@SiO$_2$ NPs.
Figure S6. FTIR spectra of CaO$_2$@SiO$_2$ NPs before and after APTES modification.

Figure S7. Digital photos of TMB before and after adding CaO$_2$@SiO$_2$ NPs in the presence of Fe$^{3+}$.

Figure S8. The digital photos of ablated liver in different treatment groups including PBS, SiO$_2$ and CaO$_2$@SiO$_2$ after HIFU treatment.
**Figure S9.** Relative viabilities of 4T1 cells after incubation with CaO$_2$@SiO$_2$ NPs at elevated concentrations (0, 50, 100, 200, 400 and 800 μg mL$^{-1}$) for 24 h and 48 h.

**Figure S10.** Relative viabilities of LLC cells after incubation with CaO$_2$@SiO$_2$ NPs at elevated concentrations (0, 50, 100, 200, 400 and 800 μg mL$^{-1}$) for 24 h and 48 h.
Figure S11. CLSM images of 4T1 cells after co-incubation with FITC-labeled CaO$_2$@SiO$_2$ NPs for 0, 1, 2 and 4 h. All the scale bars are 50 μm.

Figure S12. Real time B-mode US imaging of 4T1 tumor-bearing mice after i.t. administration of CaO$_2$@SiO$_2$ NPs for prolonged time intervals.
Figure S13. Digital images of 4T1 tumors from each group after different treatments for two weeks.

Figure S14. Time-dependent body-weight changing curves of Kunming mice during one-month’s feeding period.
Figure S15. Biodistribution test after the intravenous administration of CaO$_2$@SiO$_2$ NPs into LCC tumor-bearing mice for 12 and 24 h (n = 3).

Figure S16. Blood circulation curve of intravenously injected CaO$_2$@SiO$_2$ NPs (n = 3).