Electronic Supplementary Information (ESI)

Ultrasmall and photostable nanotheranostic agents based on carbon quantum dots passivated with polyamine-containing organosilane molecules

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Fig. S1 XPS spectrum of CDs.

Fig. S2 Change of the fluorescence intensity of CDs in solutions with different pH values.
**Fig. S3** Photostability comparison between FITC and CDs. (a) The confocal images of FITC and CDs solutions after irradiation using a mercury lamp (20 mW, 450–500 nm) for different time periods. (b) The change of fluorescence (FL) intensity as a function of irradiation time for FITC and CDs.
Fig. S4 Dynamic light scattering (DLS) results of CDs and CDs–DOX.

\[ d_{\text{CDs-DOX}} = 9.8 \pm 0.1 \text{ nm} \]
\[ d_{\text{CDs}} = 8.2 \pm 0.5 \text{ nm} \]

Fig. S5 MADLI-TOF mass spectrum of CDs.
**Fig. S6** MADLI-TOF mass spectrum of CDs–DOX.

**Fig. S7** Photographs of CDs–DOX in different solutions including cell PBS, H₂O and DMEM medium at 0 d (left) and 90 d (right).
Fig. S8 DLS results of CDs–DOX after storage for different time periods as indicated.

Fig. S9 Flow cytometric analysis of MCF-7 cells pretreated with 4°C, or incubated with CPZ, β-CD, genistein, or amiloride for 2 h before the introduction of CDs.
**Fig. S10** Release behavior of DOX from CDs–DOX under different pH values (5, 7 and 9).

**Fig. 11** Flow cytometric analyses of MCF-7 cells treated with CDs–DOX or free DOX (1 μg/mL DOX) for different time periods (0, 0.5, 1 and 3 h).
**Fig. S12** Confocal images of *E. coli*, *S. aureus*, *S. cerevisiae* and *T. reesei* cells after treatment with 200 μg/mL CDs at 37 °C for 1 h.
Fig. S13 MTT assay results of *E. coli* cells after incubation with different concentrations of CDs for 2.5 h.