Supplementary Information

Doxorubicin-conjugated β-NaYF₄: Gd³⁺/ Tb³⁺ multifunctional, phosphor nanorods: A multimodal, luminescent-magnetic probe for simultaneous optical, magnetoresonance imaging and an excellent pH-triggered anti-cancer drug delivery nanovehicle

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**Figure S1:** Stability of (a) $\beta$-NaYF$_4$: Gd$^{3+}$/ Tb$^{3+}$ and (b) DOX-conjugated $\beta$-NaYF$_4$: Gd$^{3+}$/ Tb$^{3+}$ in FBS for 3 days at 37 °C.

**Figure S2:** Release behavior of doxorubicin in the physically mixed solution of doxorubicin and $\beta$-NaYF$_4$: Gd$^{3+}$/ Tb$^{3+}$ nanorods at different time interval in PBS buffer at pH 7.4 and pH 5.
**Figure S3:** FT-IR spectra of DOX-conjugated $\beta$-NaYF$_4$: Gd$^{3+}$/ Tb$^{3+}$ at different time intervals during dialysis in PBS at pH 5, showing cleavage of hydrazone bond.

**Figure S4:** Confocal laser scanning microscopy (CLSM) images of MCF-7 cancer cells incubated with $\beta$-NaYF$_4$: Gd$^{3+}$/ Tb$^{3+}$ nanorods. The scale bar is 10 $\mu$m.
**Figure S5:** Confocal laser scanning microscopy (CLSM) images of MCF-7 cancer cells incubated with DOX-conjugated $\beta$-NaYF$_4$:Gd$^{3+}$/Tb$^{3+}$ nanorods for 30 min (a-c), 2 h (d-f), and 8 h (g-i) at 37 °C. The columns can be classified as (left) the nuclei of cells (being dyed in blue by DAPI for visualization), (middle) DOX-conjugated $\beta$-NaYF$_4$:Gd$^{3+}$/Tb$^{3+}$ nanorods and (right) a merge of the two channels of both. The red emission (591nm) is from DOX molecules.