

## Electronic Supplementary Information

### **NaYF<sub>4</sub>:Yb/Er@PPy Core-Shell Nanoplates: An Imaging-Guided Multimodal Platform for Photothermal Therapy of Cancers**

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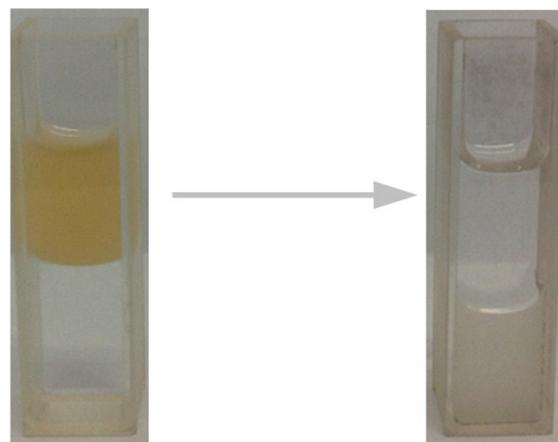
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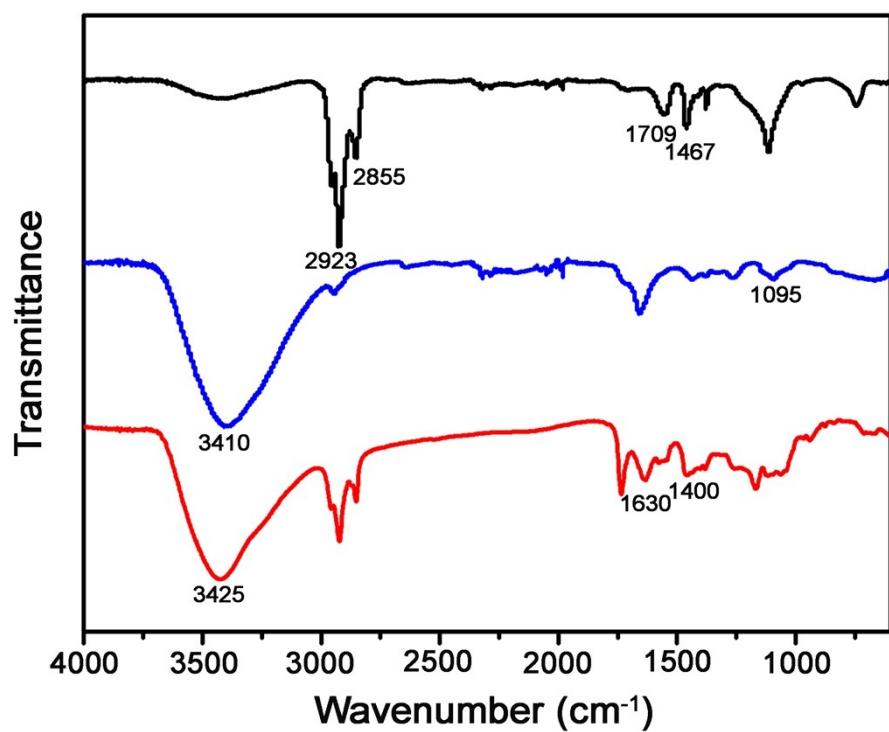
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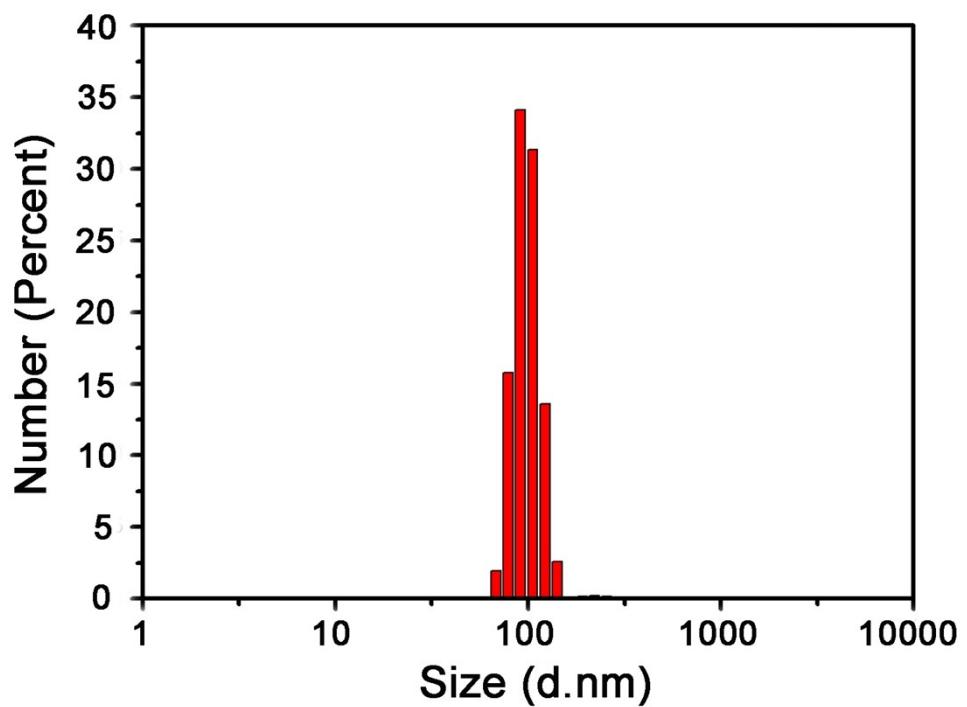
\* Corresponding Author.



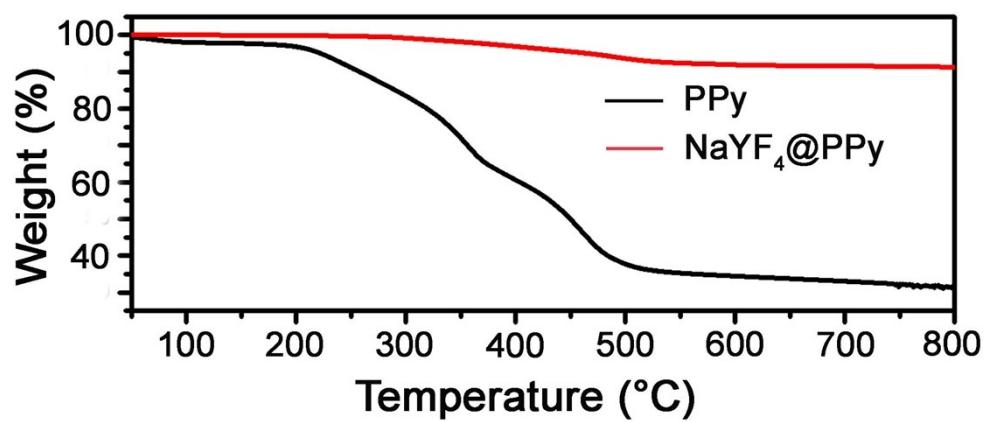
**Figure S1.** The left side is a photo showing the oil acid-NaYF<sub>4</sub>:Yb/Er nanoplates dispersed in cyclohexane/water, and the right side is the PVA-NaYF<sub>4</sub>:Yb/Er nanoplates dispersed in cyclohexane/water.



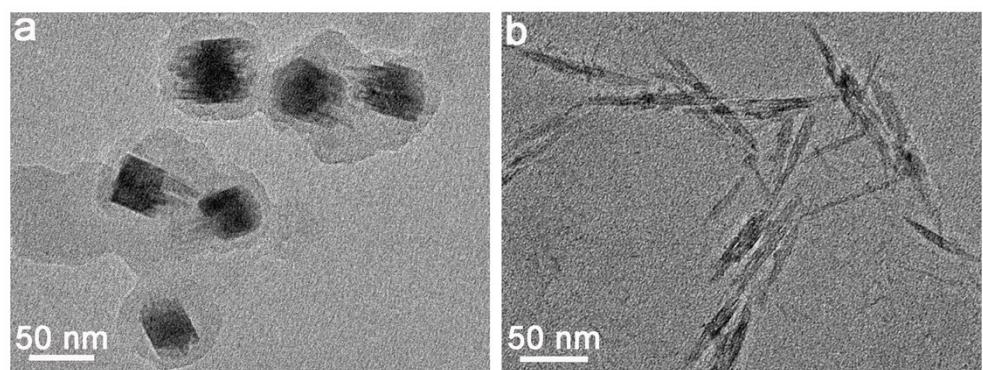
**Figure S2.** FTIR spectra of oil acid-NaYF<sub>4</sub>:Yb/Er (black line), PVA-NaYF<sub>4</sub>:Yb/Er (blue line), and NaYF<sub>4</sub>:Yb/Er@PPy nanoplates (red line).



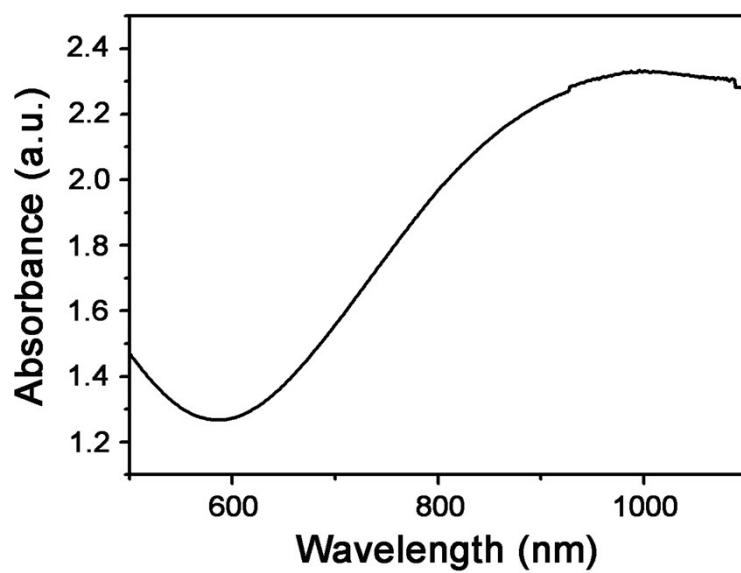
**Figure S3.** Dynamic light scattering (DLS) diameter distribution of the  $\text{NaYF}_4:\text{Yb/Er}@\text{PPy}$  nanoplates.



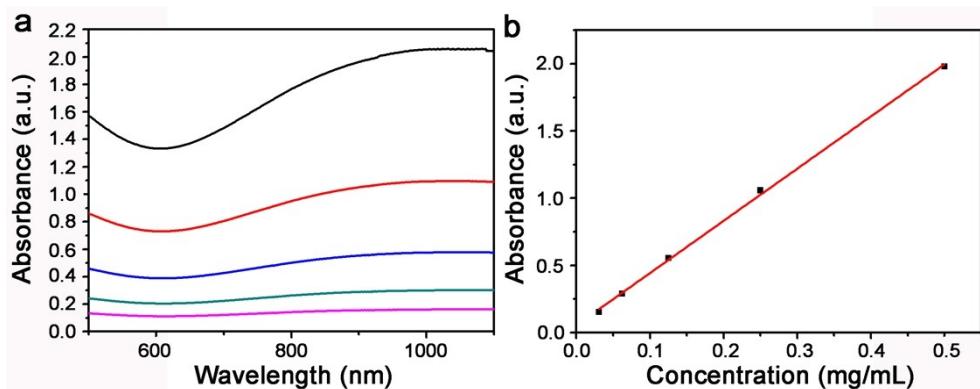
**Figure S4.** TGA curve of PPy and the disc-shaped NaYF<sub>4</sub>:Yb/Er@PPy nanoplates.



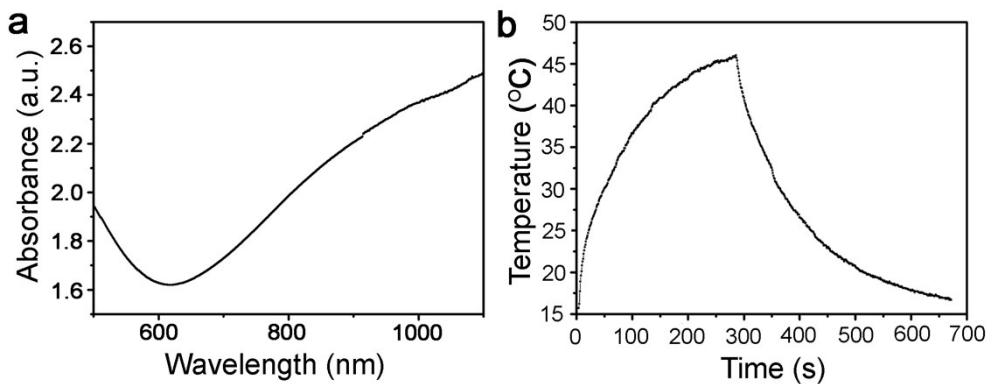
**Figure S5.** TEM images of nanocomposites with more  $\text{Fe}^{3+}$  (5 mL) added: a)  $3.31 \text{ mg L}^{-1}$ , b)  $6.61 \text{ mg L}^{-1}$ .



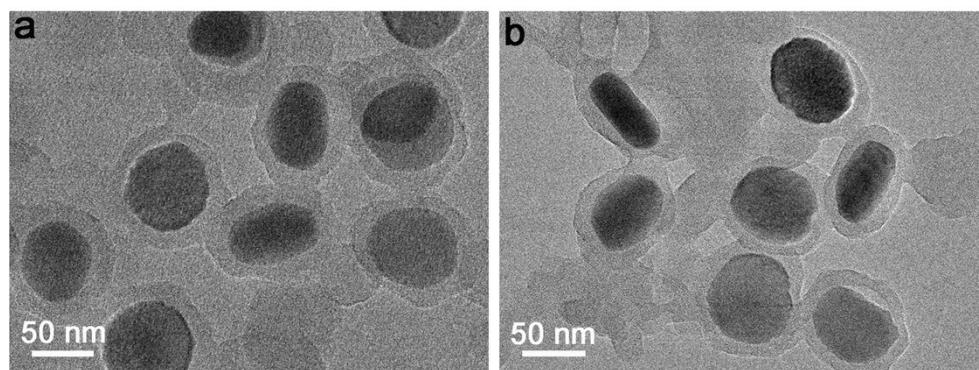
**Figure S6.** UV-vis absorbance spectrum for the aqueous dispersion of the PPy.



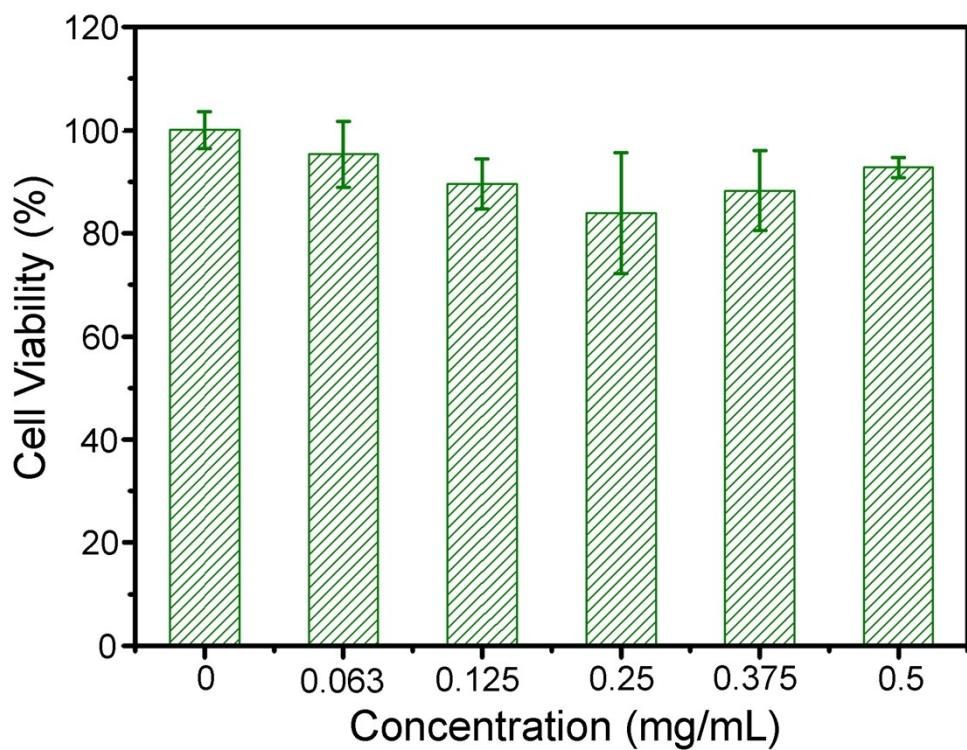
**Figure S7.** (a) UV-Vis-NIR absorption spectra of NaYF<sub>4</sub>:Yb/Er@PPy nanoplates with different concentrations (from top to bottom are 0.5, 0.25, 0.125, 0.063, 0.031 mg/mL). (b) Corresponding linear relationship of the absorbance at 915 nm versus concentrations.



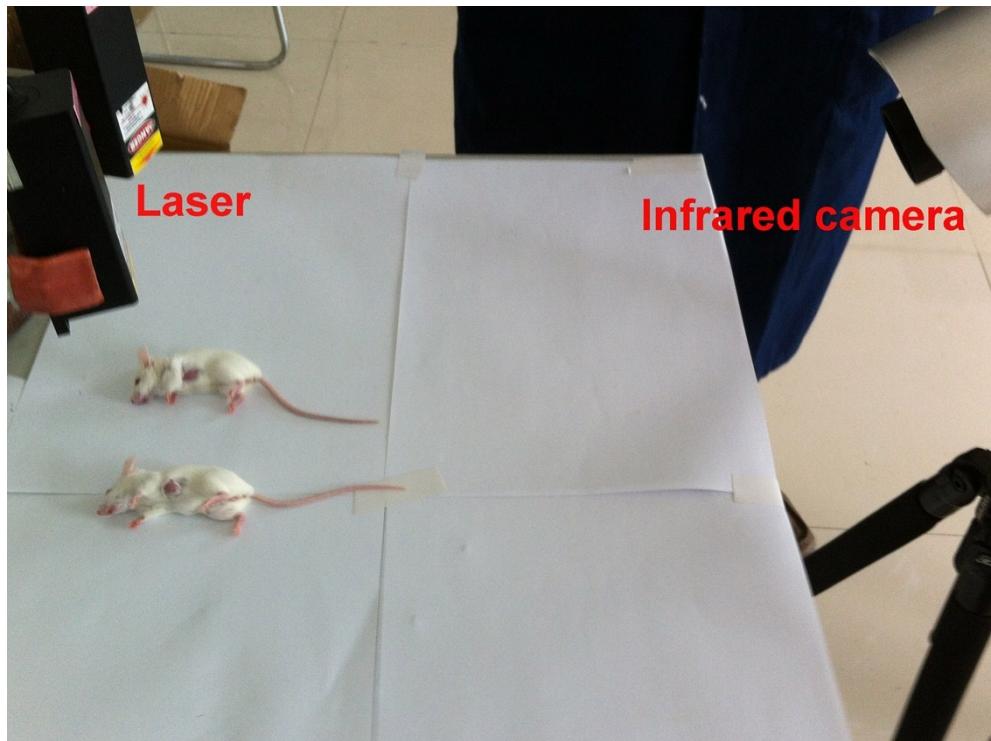
**Figure S8.** a) UV-vis absorbance spectrum for the aqueous dispersion of hexagonal  $\text{NaYF}_4\text{:Yb/Er@PPy}$  nanoplates. b) Temperature elevation of the dispersion of the hexagonal  $\text{NaYF}_4\text{:Yb/Er@PPy}$  nanoplates, under an exposure of NIR light (915 nm,  $0.5 \text{ W cm}^{-2}$ ) for 5 min, and then the laser was shut off.



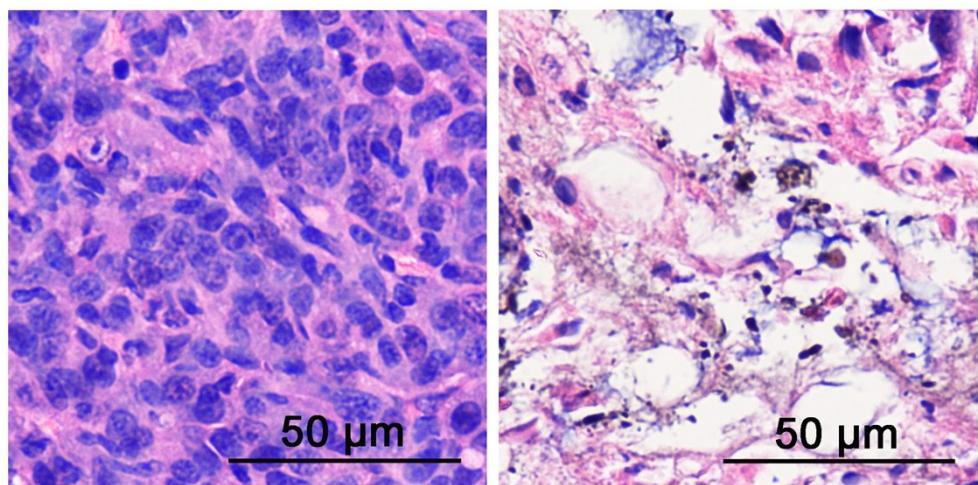
**Figure S9.** TEM images of the disc-shaped  $\text{NaYF}_4\text{:Yb/Er@PPy}$  nanoplates a) before and b) after the laser ( $915\text{ nm}$ ,  $0.5\text{ W cm}^{-2}$ ) irradiation for 25 min.



**Figure S10.** In vitro cell viabilities of Hela Cells incubated with the aqueous dispersion of the  $\text{NaYF}_4:\text{Yb/Er@PPy}$  nanoplates with different concentrations for 24 h.



**Figure S11.** A photograph showing the typical experimental setup for in vivo infrared thermal imaging and photothermal ablation.



**Figure S12.** The representative hematoxylin and eosin stained histological images of ex vivo tumor sections treated by the irradiation of 915 nm laser ( $0.5 \text{ W/cm}^2$ ) over a period of 10 min injected with: PBS (left) and the aqueous dispersion of  $\text{NaYF}_4\text{-Yb/Er@PPy}$  nanoplates (right).