

Multifunctional photosensitizer-conjugated core-shell $\text{Fe}_3\text{O}_4@\text{NaYF}_4:\text{Yb/Er}$ nanocomplexes and their applications in T_2 -weighted magnetic resonance /upconversion luminescence imaging and photodynamic therapy of cancer cells

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1. Dynamic light scattering (DLS) characterization of NPs and NPs- AlPcS_4 in water-phase

In Fig. S1, the DLS result showed that the size of NPs and NPs- AlPcS_4 in water-phase was about 123 and 138 nm, respectively.

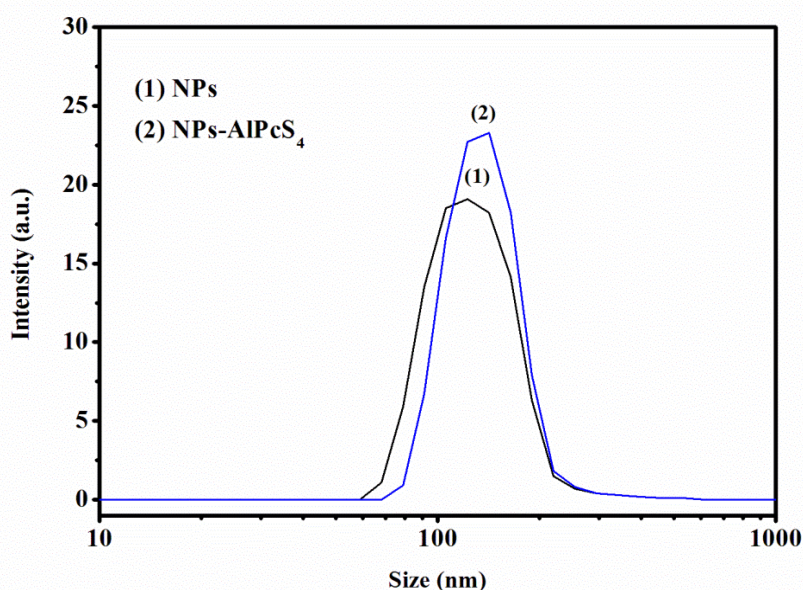


Fig. S1 Size distribution of NPs and NPs- AlPcS_4 in water-phase

2. Zeta potential distribution of NPs and NPs- AlPcS_4 in water-phase

In Fig. S2, the zeta potential distribution showed that the zeta potential of NPs and NPs- AlPcS_4 in water-phase was 37.1 mV and 35.1 mV, respectively.

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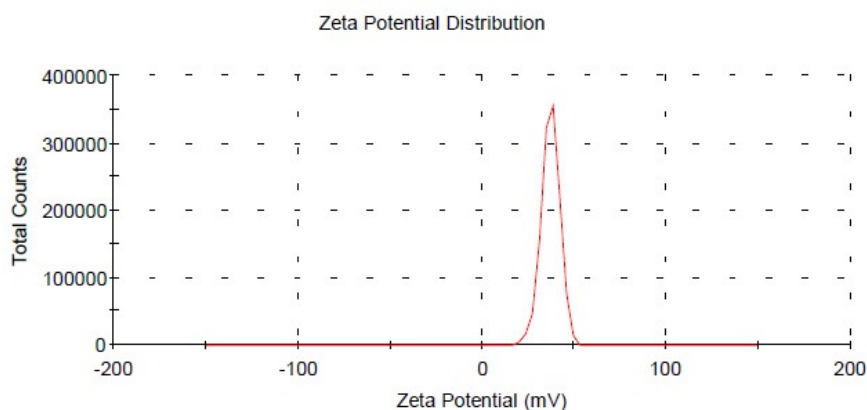


Fig. S2 (a) Zeta potential distribution of NPs in water-phase

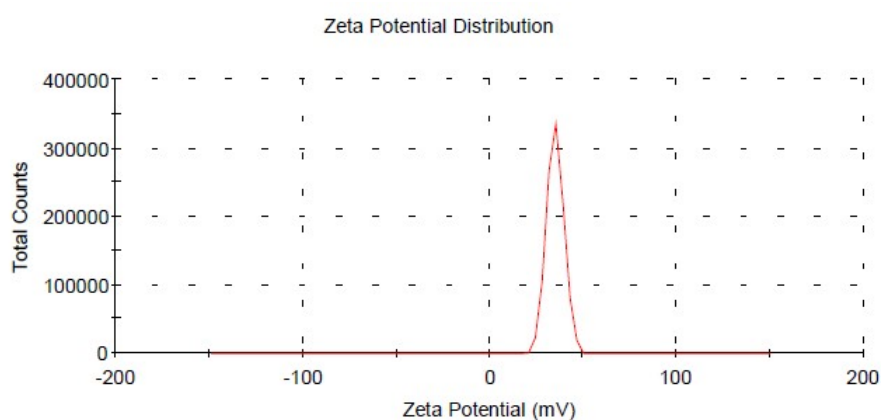


Fig. S2 (b) Zeta potential distribution of NPs-AlPcS₄ in water-phase

3. Magnetic characterization of NPs dispersed in hexane and water-phase

The M-H showed that the saturation magnetization of nanoparticles was 16.60 and 15.89 emu/g, respectively, before and after they were transferred into water-phase.

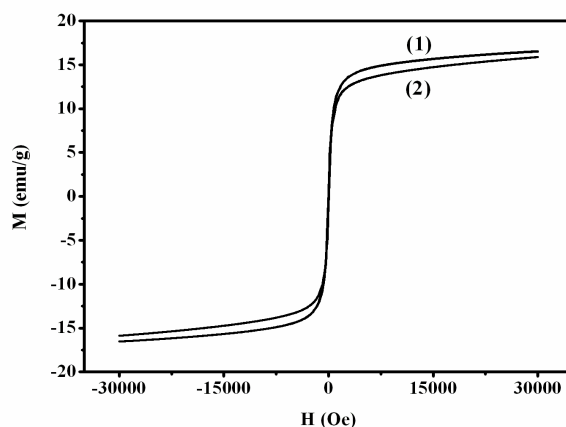


Fig. S3 M-H curve of $\text{Fe}_3\text{O}_4\text{-NaYF}_4\text{:Yb/Er}$ nanoparticles before (1) and after (2) they were transferred from hexane into water-phase.

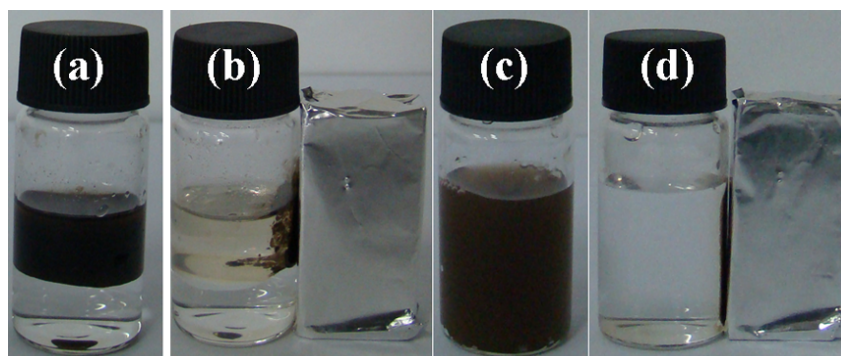


Fig. S4 Magnetic separation of NPs dispersed in hexane (a and b) and water (c and d)

4. Morphology of MCF-7 cells incubated with different samples under 980 nm laser irradiation

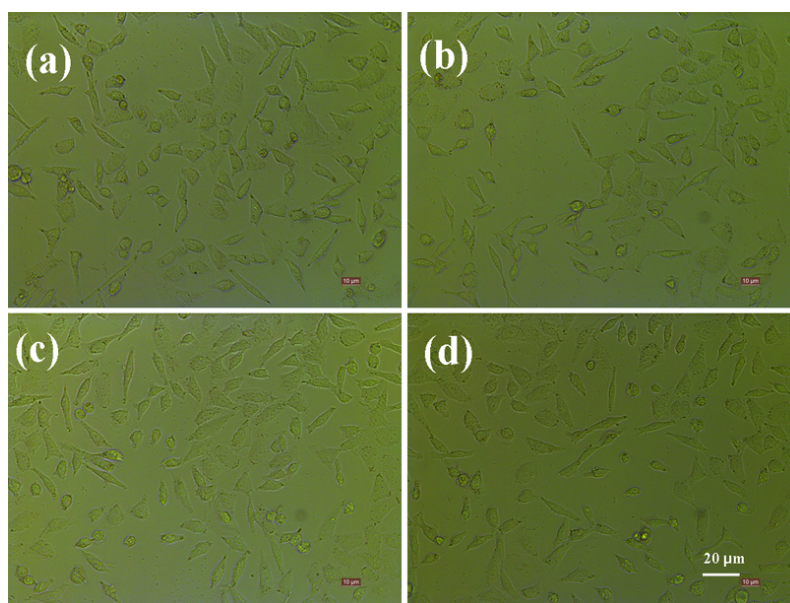


Fig. S5 Morphology of control MCF-7 cells under the irradiation of 980 nm laser for 0 min (a), 1 min (b), 3 min (c) and 5 min (d)

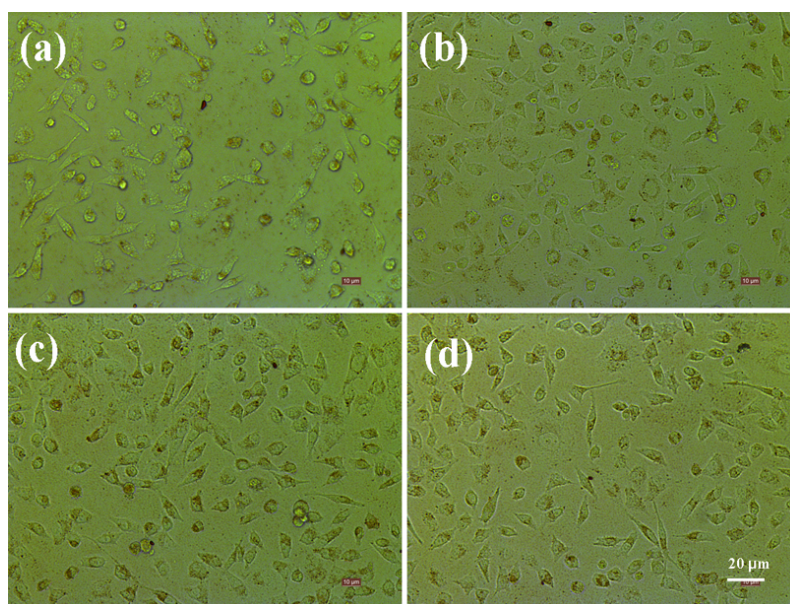


Fig. S6 Morphology of MCF-7 cells incubated with NPs under the irradiation of 980 nm laser for 0 min (a), 1 min (b), 3 min (c) and 5 min (d)

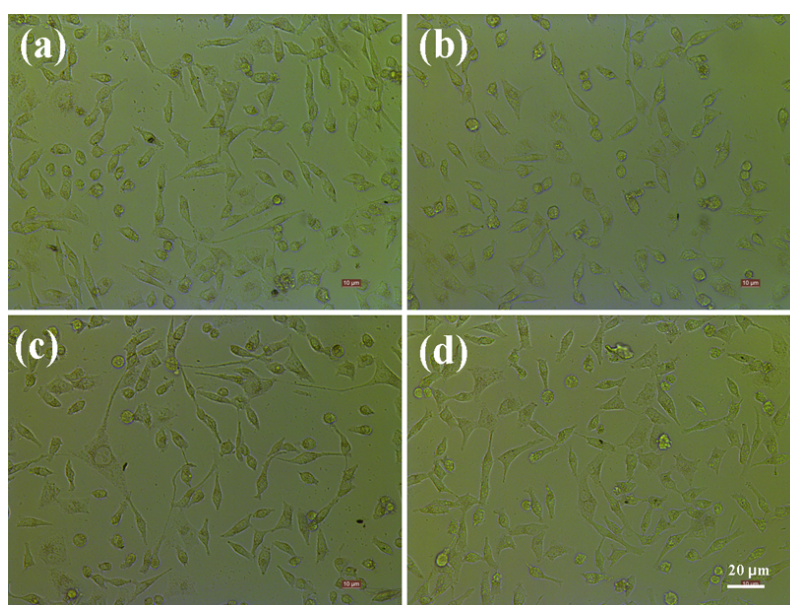


Fig. S7 Morphology of MCF-7 cells incubated with AlPcS₄ photosensitizer under the irradiation of 980 nm laser for 0 min (a), 1 min (b), 3 min (c) and 5 min (d)