

SUPPLEMENTARY INFORMATION

Ln³⁺-doped nanoparticles with enhanced NIR-II luminescence for lighting up blood vessels in mice

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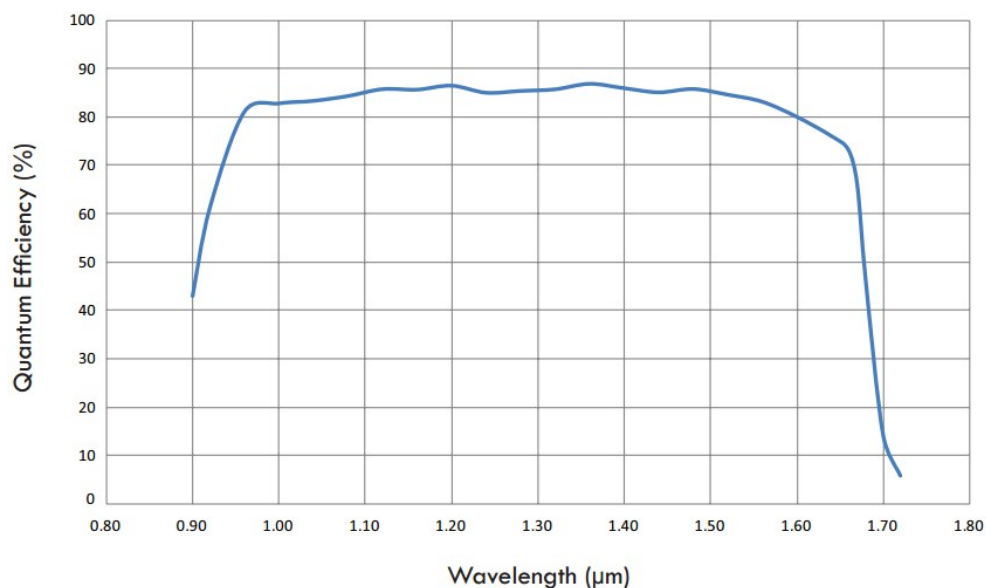


Fig. S1 The quantum efficiency curves of the camera used in the fluorescent imaging experiments: InGaAs based NIRvana 640 charge coupled device (CCD). This figure is obtained from the instrument manual (Princeton Co.).

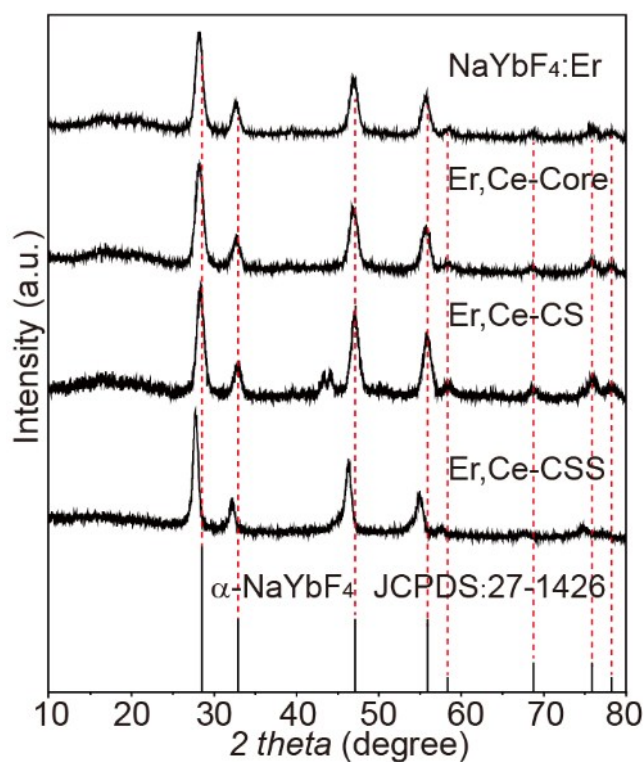


Fig. S2 XRD patterns of $\text{NaYbF}_4\text{:}2\%\text{Er}$, $\text{NaYbF}_4\text{:}2\%\text{Er}, 5\%\text{Ce}$ (Er,Ce-Core), $\text{NaYbF}_4\text{:}2\%\text{Er}, 5\%\text{Ce}@ \text{NaYF}_4\text{:}10\%\text{Yb}$ (Er,Ce-CS) and $\text{NaYbF}_4\text{:}2\%\text{Er}, 5\%\text{Ce}@ \text{NaYF}_4\text{:}10\%\text{Yb}@ \text{NaYF}_4\text{:}50\%\text{Nd}$ (Er,Ce-CSS) were determined. And the standard XRD patterns of cubic phase of NaYbF_4 (JCPDS: 27-1426).

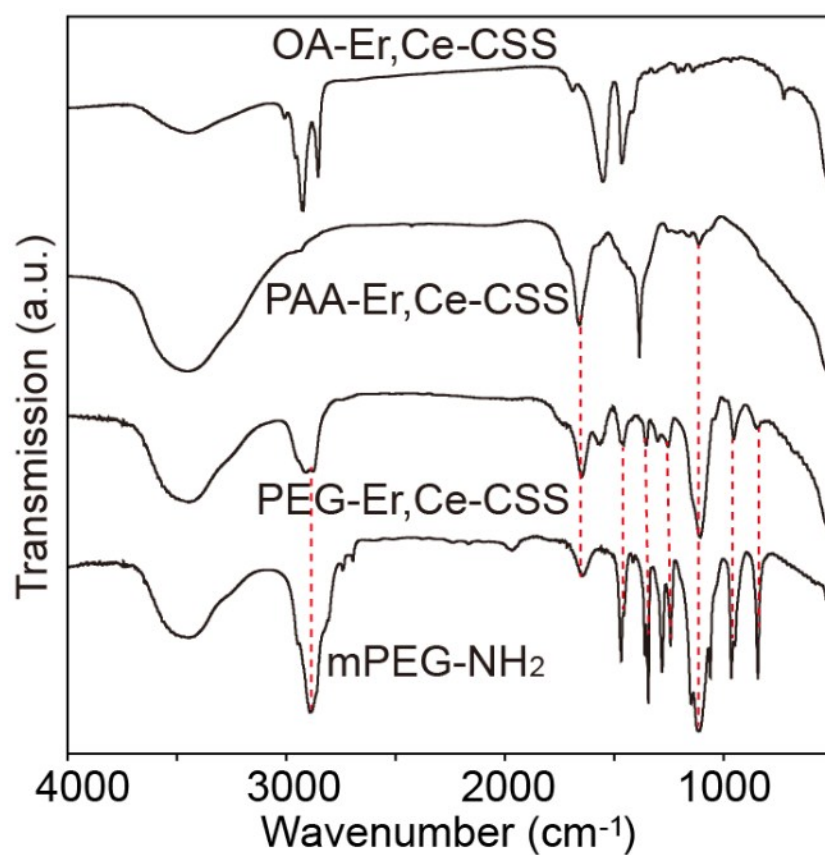


Fig. S3 Fourier-transform infrared spectra of OA-Er,Ce-CSS, PAA-Er,Ce-CSS, PEG-Er,Ce-CSS and mPEG-NH₂ molecule.

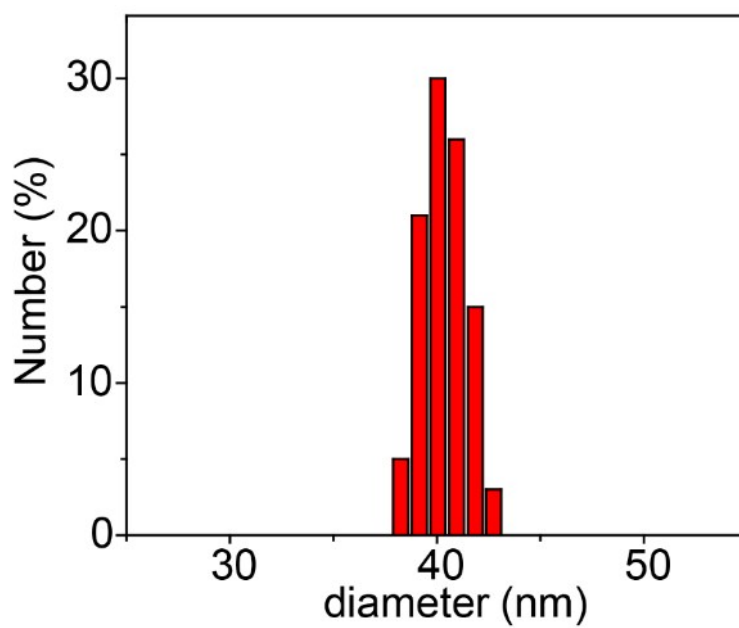


Fig. S4 The distribution of PEG-Er,Ce-CSS (dispersed in water).

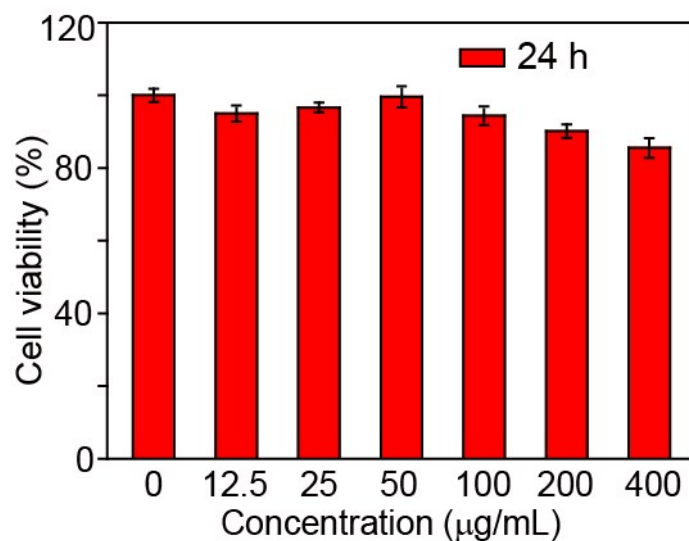


Fig. S5 Cell viability (%) estimated by MTT assay versus concentrations of PEG-Er,Ce-CSS after 24 h incubation at 37 °C.

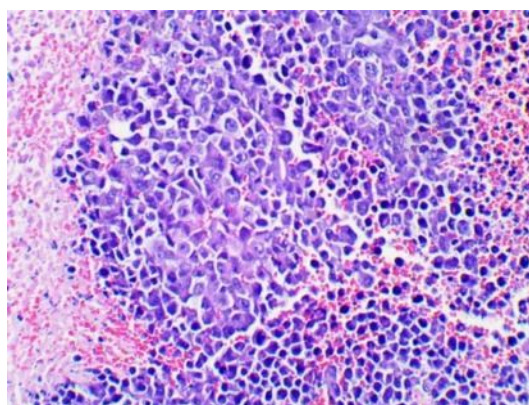


Fig. S6 The histopathology image of subcutaneous tumor. (The magnification is 200×)

Reference:

- 1 Y. Li, S. Zeng, J. Hao, *ACS Nano*, 2019, **13**, 248-259.
- 2 Q. S. Qin, P. Z. Zhang, L. D. Sun, S. Shi, N. X. Chen, H. Dong, X. Y. Zheng, L. M. Li and C. H. Yan, *Nanoscale*, 2017, **9**, 4660-4664.
- 3 J. S. Suk, Q. Xu, N. Kim, J. Hanes and L. M. Ensign, *Adv. Drug. Deliver. Rev.*, 2016, **99**, 28-51.