## **Supporting Information**

## Nd<sup>3+</sup>-Sensitized NaLuF<sub>4</sub> Luminescent Nanoparticles for Multimodal Imaging and Temperature Sensing under 808 nm Excitation

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Fig. S1 EDX spectroscopy of C@S1@S2@S3 NPs.



Fig. S2 Absorption spectrum of C@S1@S2@S3 NPs dispersed in cyclohexane.



**Fig. S3** *In vitro* cell viability of osteoblasts after incubation with PEG modified C@S1@S2@S3 NPs for 6 h using CCK-8 assay.



Fig. S4 (a) UC luminescence spectra of NaLuF<sub>4</sub>-based C@S1@S2@S3 NPs and NaYF<sub>4</sub>-based C@S1@S2@S3 NPs. (b) DC luminescence spectra of NaLuF<sub>4</sub>-based C@S1@S2@S3 NPs and NaYF<sub>4</sub>-based C@S1@S2@S3 NPs.



**Fig. S5** NIR DC imaging of different thickness of lean pork upon PEG modified C@S1@S2@S3 NPs.