

Electronic Supplementary Information for

**Rational design of a thermalresponsive-polymer-switchable FRET system for
enhancing the temperature sensitivity of upconversion nanophosphors†**

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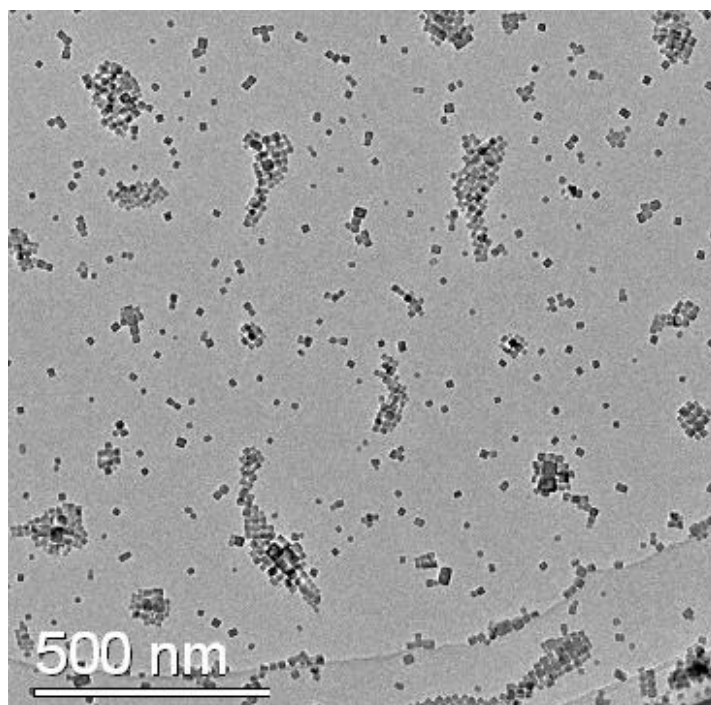


Fig. S1. TEM image of $\text{NaYF}_4:\text{Mn}^{2+},\text{Ln}^{3+}$ UCNPs.

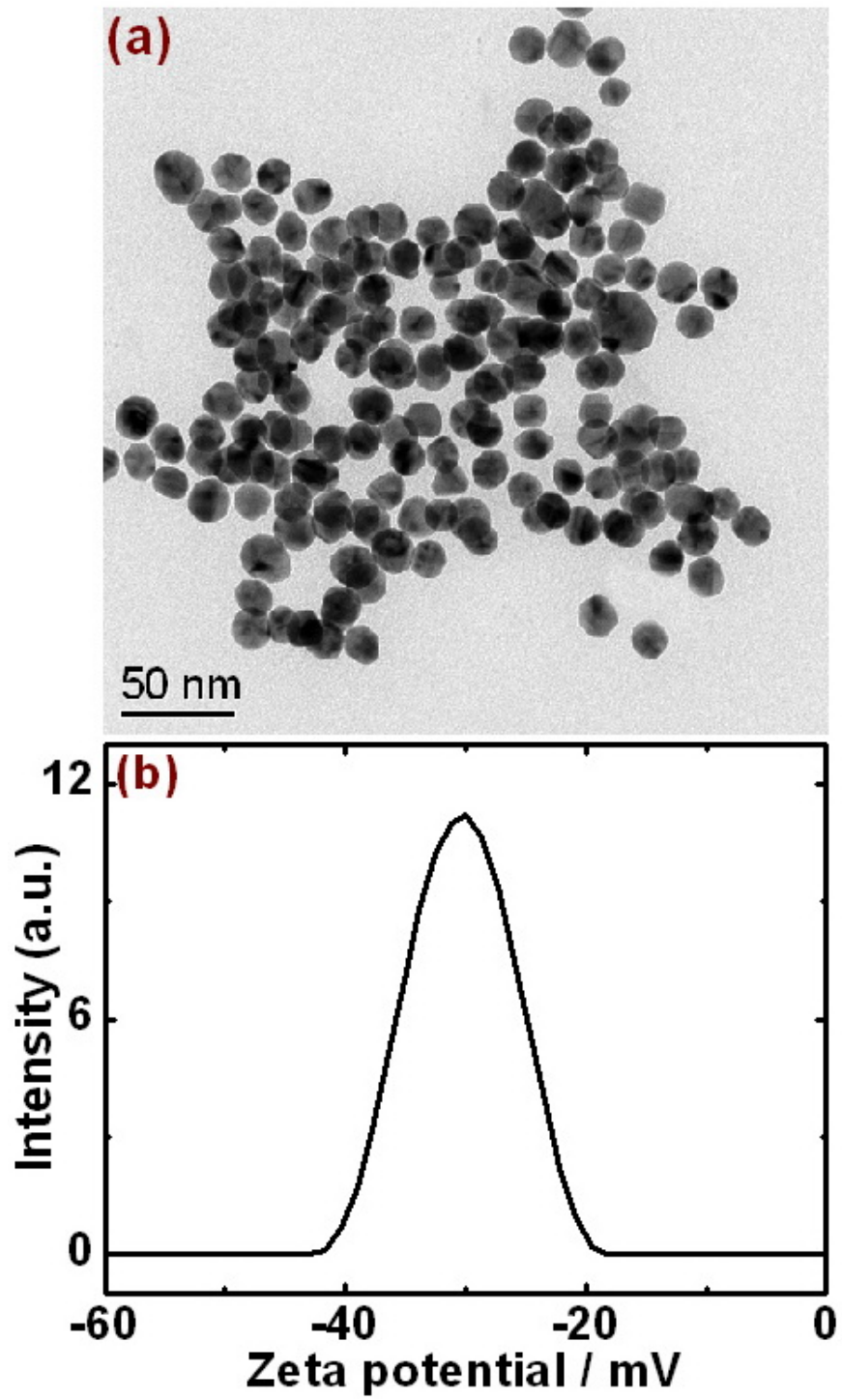


Fig. S2. (a) TEM and (b) Zeta potential of citrate stabilized Au NPs.

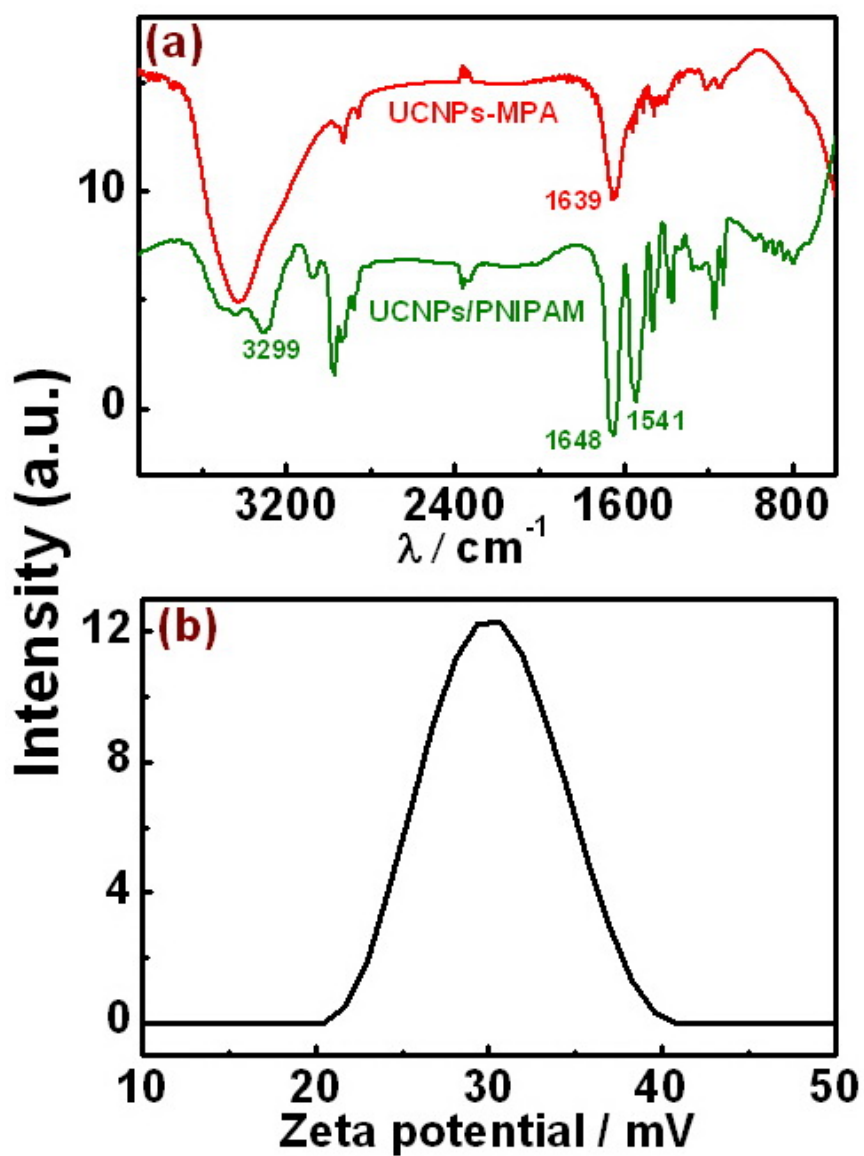


Fig. S3. (a) FTIR spectrum and (b) Zeta potential of the PNIPAM-conjugated UCNPs.

Also shown in (a) is the FTIR spectrum of MPA modified UCNPs.

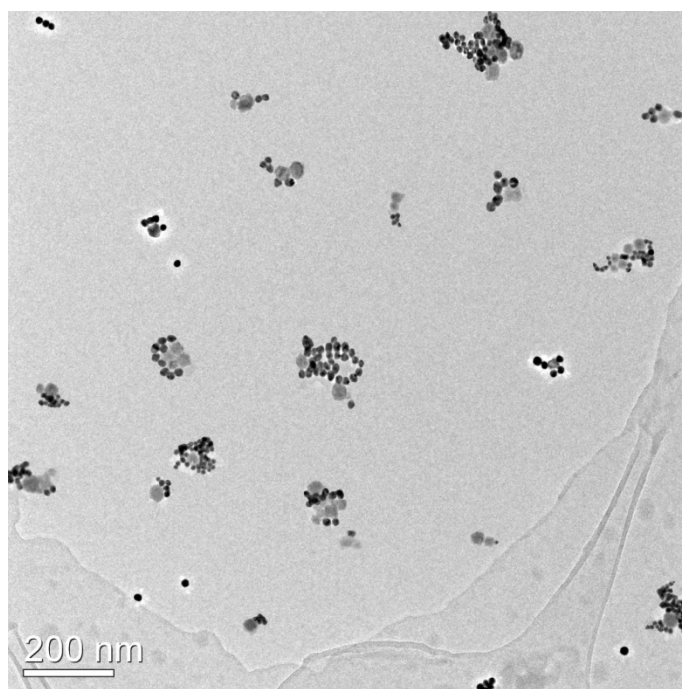


Fig. S4. TEM image of the upconverting nanocomposites.

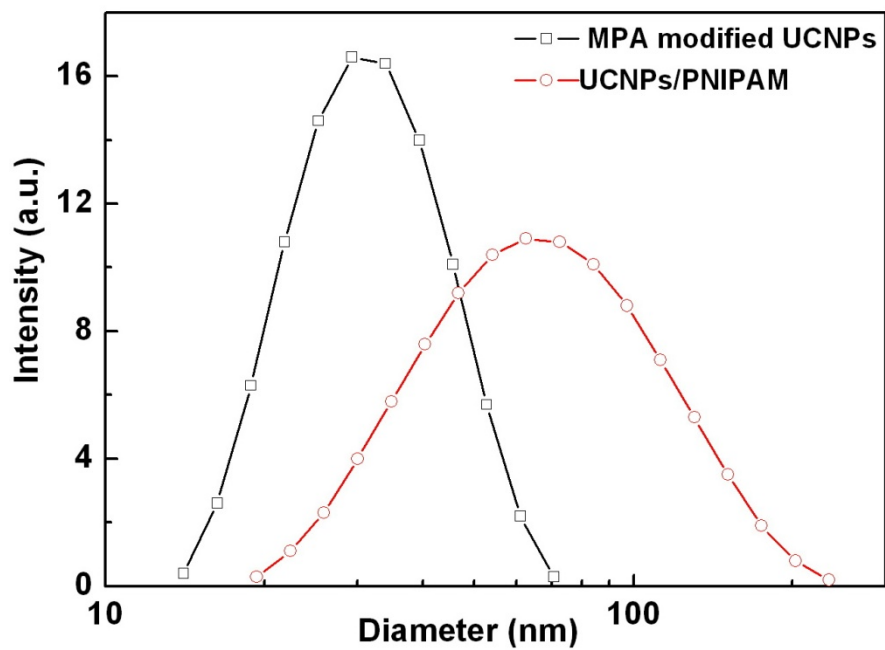


Fig. S5. Size distributions of MPA modified UCNPs and PNIPAM-conjugated UCNPs determined by DLS.

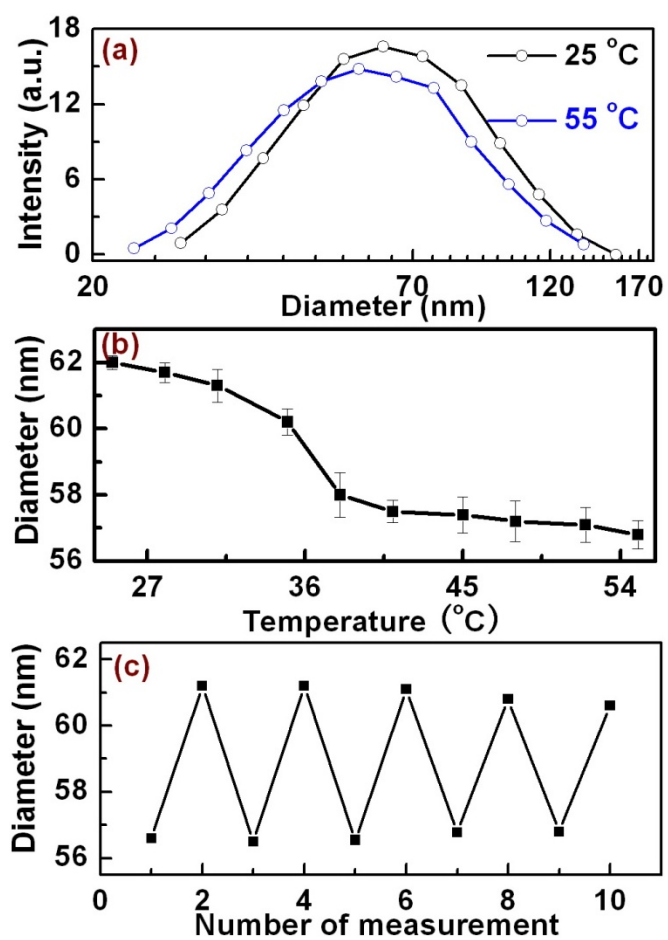


Fig. S6. (a) Size distributions, (b) hydrodynamic diameters and (c) multiple-run reversibility experiments of the upconverting nanocomposites to temperature variation determined by DLS.

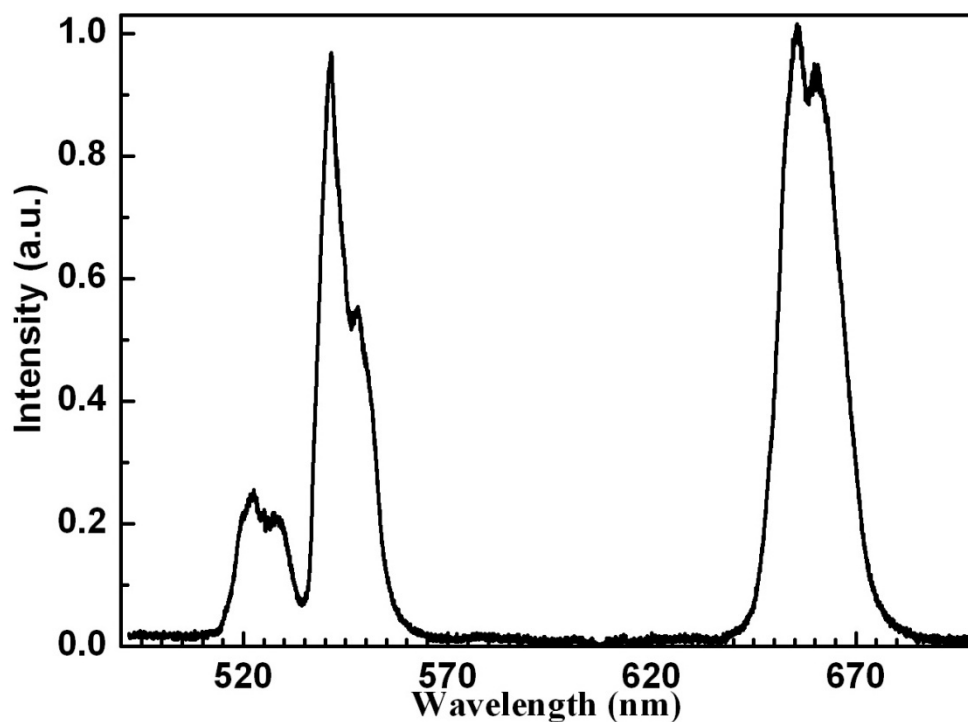


Fig. S7. UCL spectrum of NaLuF₄: Er³⁺, Yb³⁺ UCNP without Mn²⁺ doping.

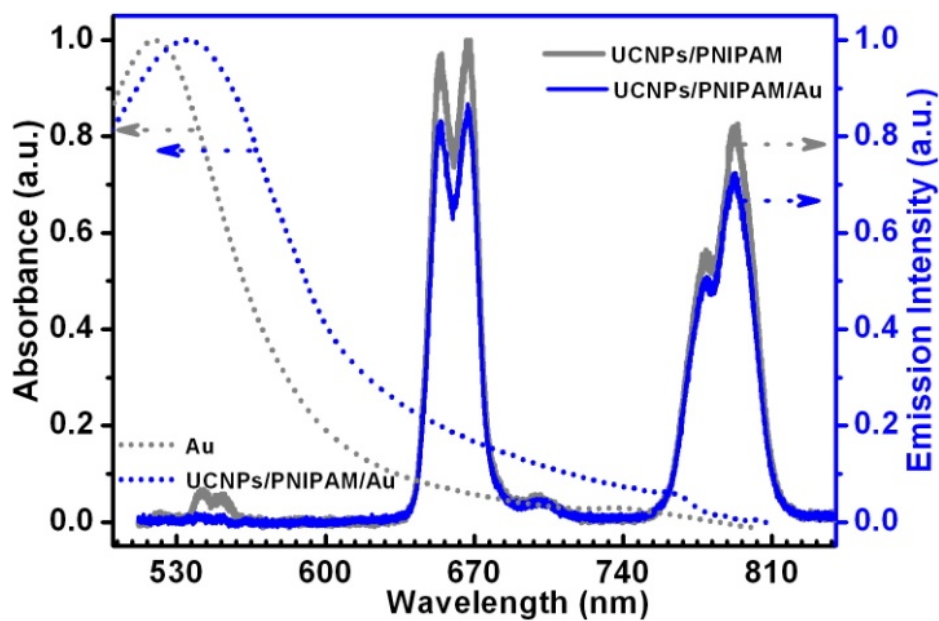


Fig. S8. Absorption spectra of Au NPs and the upconverting nanocomposites, and UCL spectra of PNIPAM-conjugated UCNP and the upconverting nanocomposites.

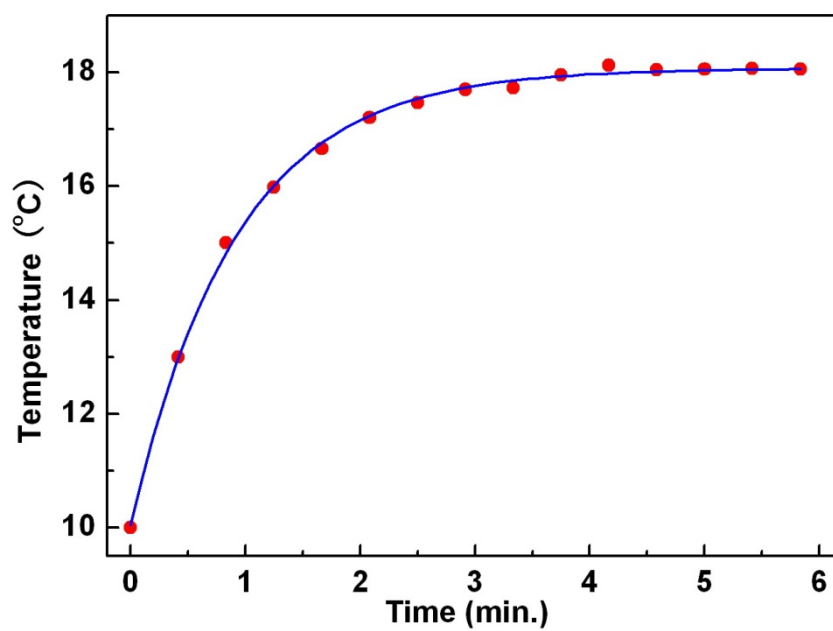


Fig. S9. Temporal profiles of temperature increase of the upconverting nanocomposites colloidal solution (2 mL) upon excitation at 980 nm.

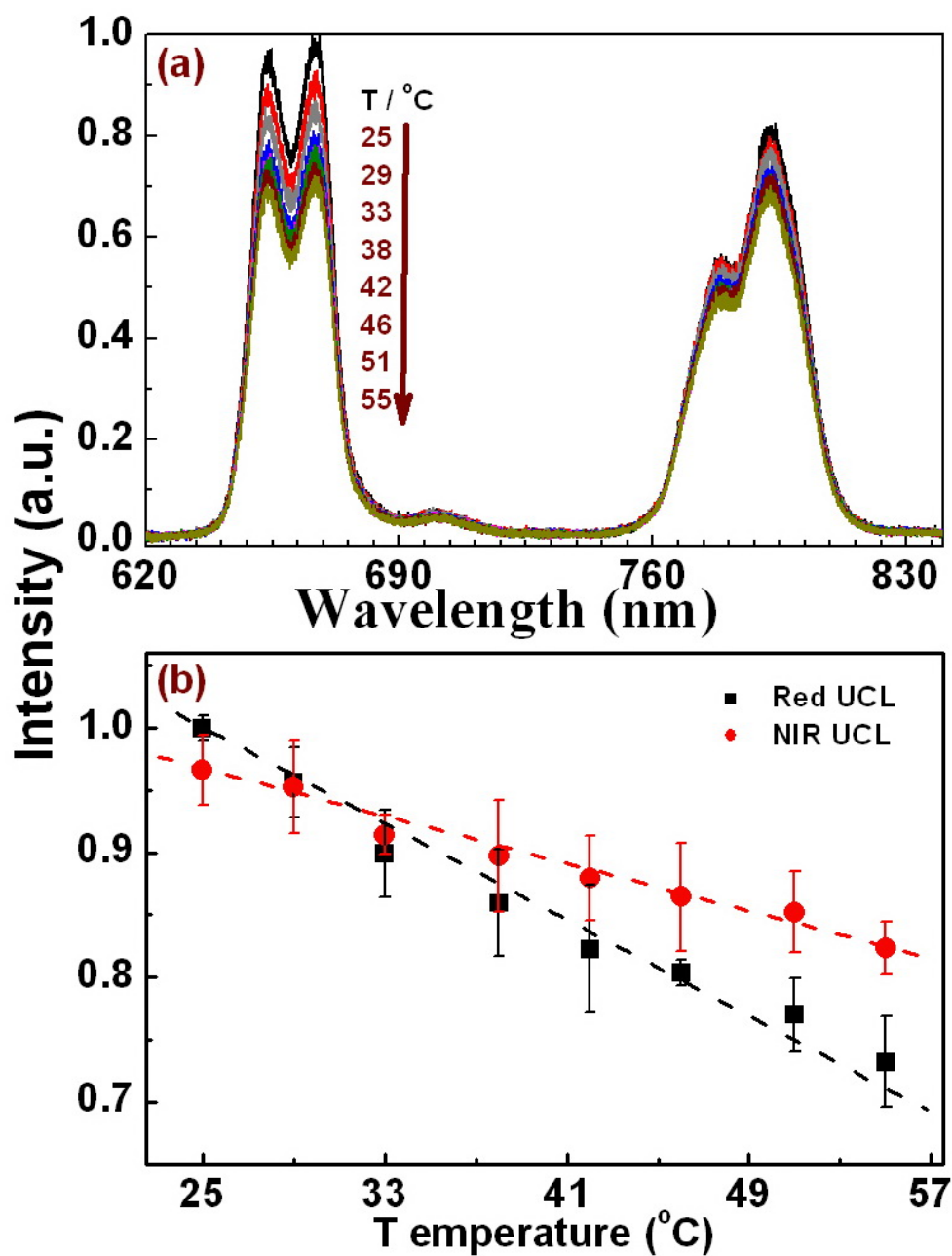


Fig. S10. Optical response of the PNIPAM-conjugated UCNPs to temperature variation: (a) UCL spectra at various temperature and (b) integrated intensity plots with the respective linear fits for the red and NIR emission bands centered at 660 and 800 nm, respectively.

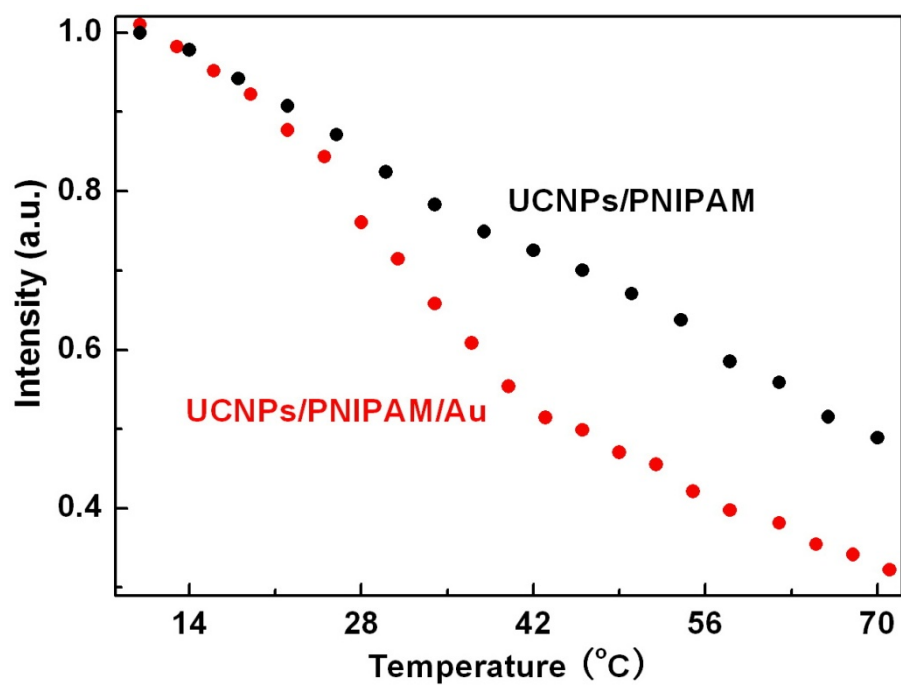


Fig. S11. Comparison of integrated intensity of the red emission bands for the upconverting nanocomposites with PNIPAM-conjugated UCNP in the temperature range of 10-70 °C.