

## Supporting information

# Salt-assisted the Rapid Transformation of NaYF<sub>4</sub>: Yb<sup>3+</sup>,Er<sup>3+</sup> Nanocrystals from Cubic to Hexagonal

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Table S. The influence of hydrothermal time, temperature and molar ratio of phosphate to  
Ln<sup>3+</sup> on the product phase.

Temperature (°C)	180		200	
n (PO <sub>4</sub> <sup>3-</sup> ) / n (Ln <sup>3+</sup> )	4	6	4	6
Time (h)	3.5	3	3	2

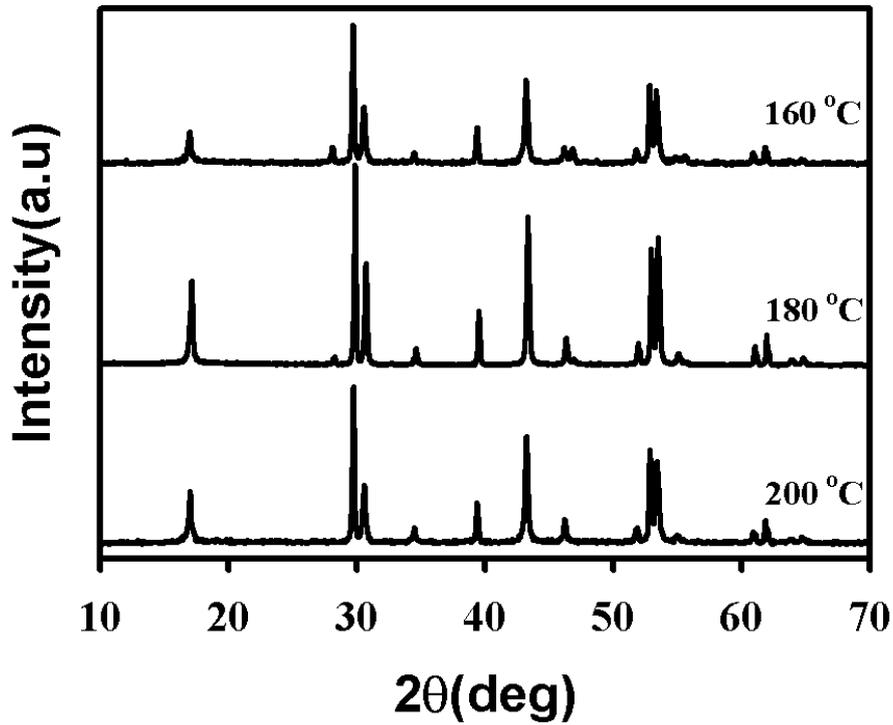


Fig. S 1 XRD pattern of NaYF<sub>4</sub>:Yb<sup>3+</sup>,Er<sup>3+</sup> prepared in the assistance of Na<sub>2</sub>HPO<sub>4</sub>·12H<sub>2</sub>O (PO<sub>4</sub><sup>3-</sup>/Ln<sup>3+</sup> = 4) at different hydrothermal temperature for 3 h.

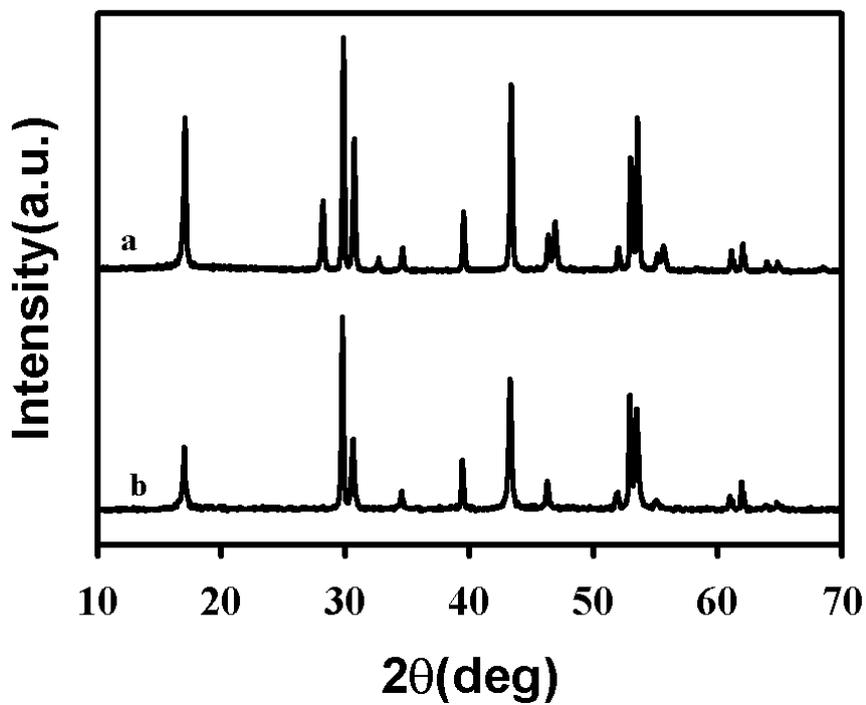


Fig. S 2 XRD pattern of NaYF<sub>4</sub>:Yb<sup>3+</sup>,Er<sup>3+</sup> nanocrystals prepared in the assistance of Na<sub>2</sub>HPO<sub>4</sub>·12H<sub>2</sub>O with the molar ratio (PO<sub>4</sub><sup>3-</sup>/Ln<sup>3+</sup>) were (a) 4 and (b) 6 at 200 °C for 2 h.

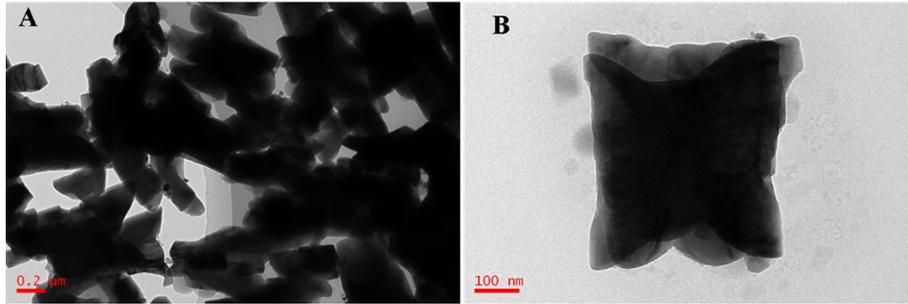


Fig. S 3 (A) TEM images of  $\text{NaYF}_4:\text{Yb}^{3+},\text{Er}^{3+}$  crystals ( $\text{PO}_4^{3-} / \text{Ln}^{3+} = 6$ ) for 3 h. (B) TEM images of one particle prepared in the assistance of  $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$  ( $\text{PO}_4^{3-}/\text{Ln}^{3+} = 6$ ).

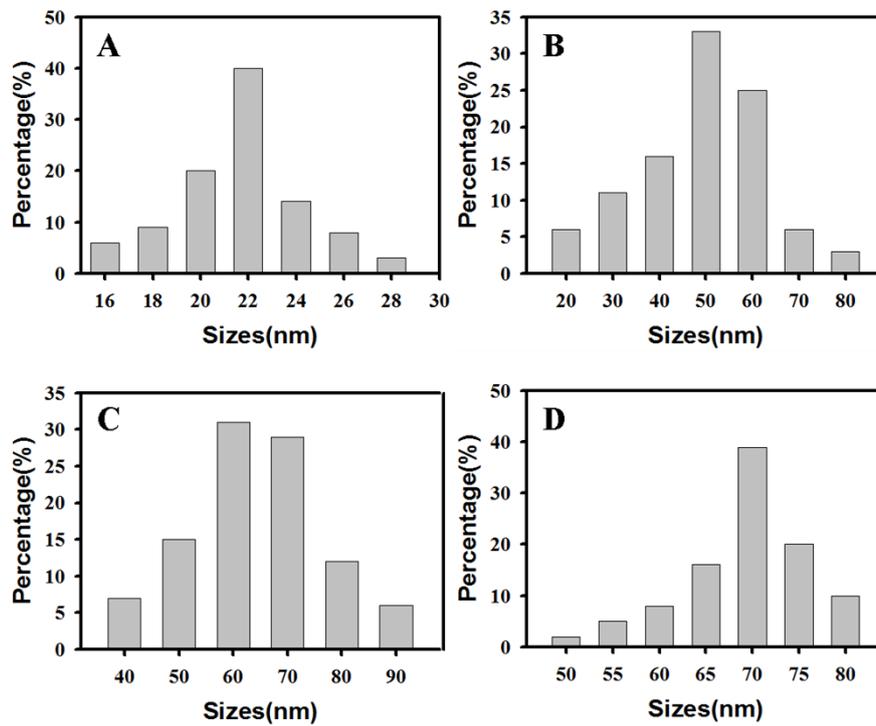


Fig. S 4 The corresponding particle size distribution histograms of  $\text{NaYF}_4:\text{Yb}^{3+},\text{Er}^{3+}$  nanocrystals prepared in the assistance of  $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$  ( $\text{PO}_4^{3-}/\text{Ln}^{3+} = 4$ ) when the reaction time was (A) 1, (B) 2, (C) 3 and (D) 3.5 h.

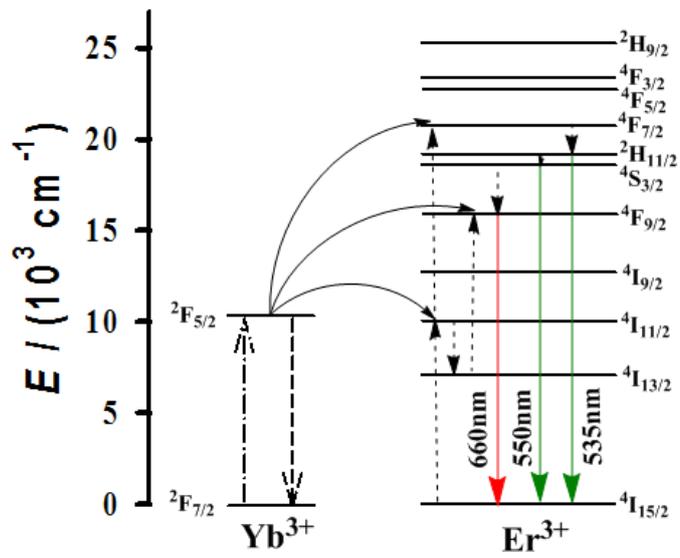


Fig. S 5 Schematic diagram of upconversion processes in an  $\text{Yb}^{3+}, \text{Er}^{3+}$  codoped system upon the excitation of 980 nm laser.