

Electronic Supplementary Information

Hexagonal β -Na(Y,Yb)F₄ Based Core/Shell Nanorods: Epitaxial Growth, Enhanced and Tailored Up-conversion Emission

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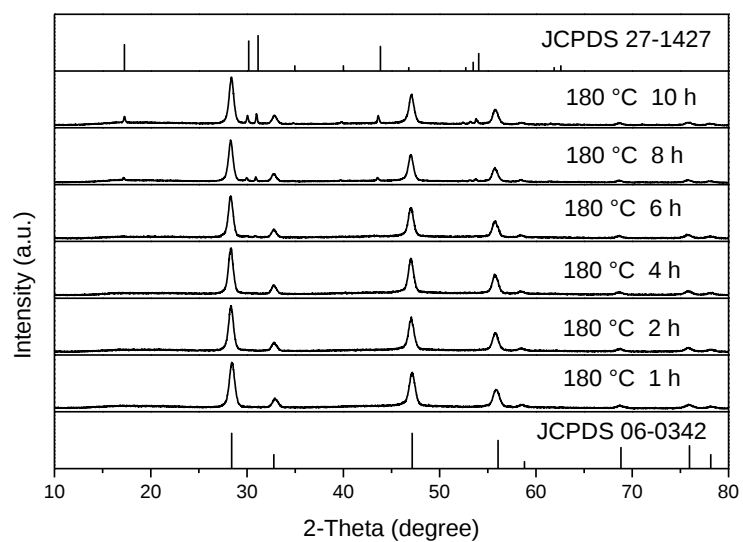


Fig. S1 XRD patterns of α -NaYbF₄: 0.02Er³⁺ with different reaction time under 180 °C. The α -NaYbF₄ is the isostructure to α -NaYF₄ (JCPDS 06-0342). The standard pattern (JCPDS 27-1427) of β -NaYbF₄ is shown at the top for comparison.

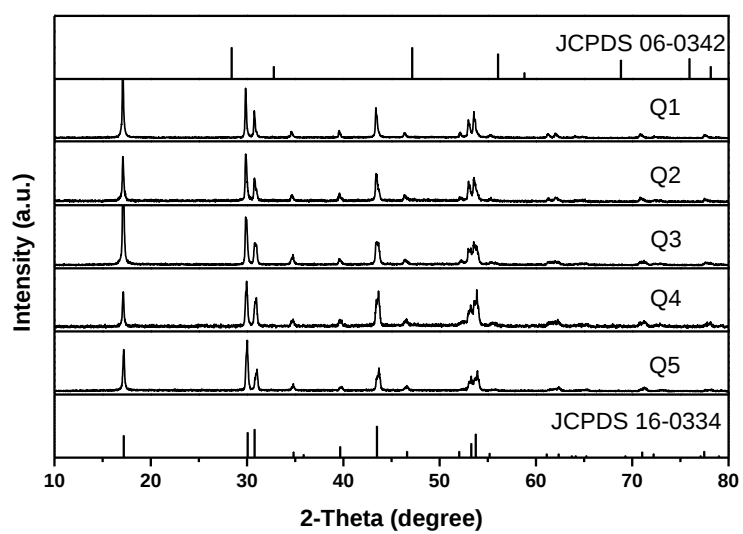


Fig. S2 XRD patterns of samples Q1-Q5 after epitaxial growth. The standard patterns of β - NaYF_4 (JCPDS 16-0334) and α - NaYF_4 (JCPDS 06-0342) are shown for comparison.

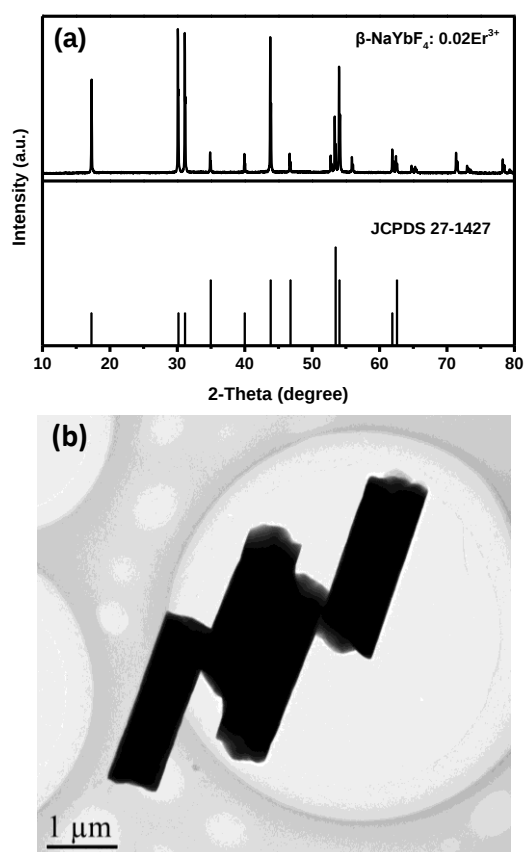


Fig. S3 (a) XRD pattern of $\beta\text{-NaYbF}_4: 0.02\text{Er}^{3+}$. The standard pattern of $\beta\text{-NaYbF}_4$ (JCPDS 27-1427) is shown for comparison. (b) TEM of $\beta\text{-NaYbF}_4: 0.02\text{Er}^{3+}$.

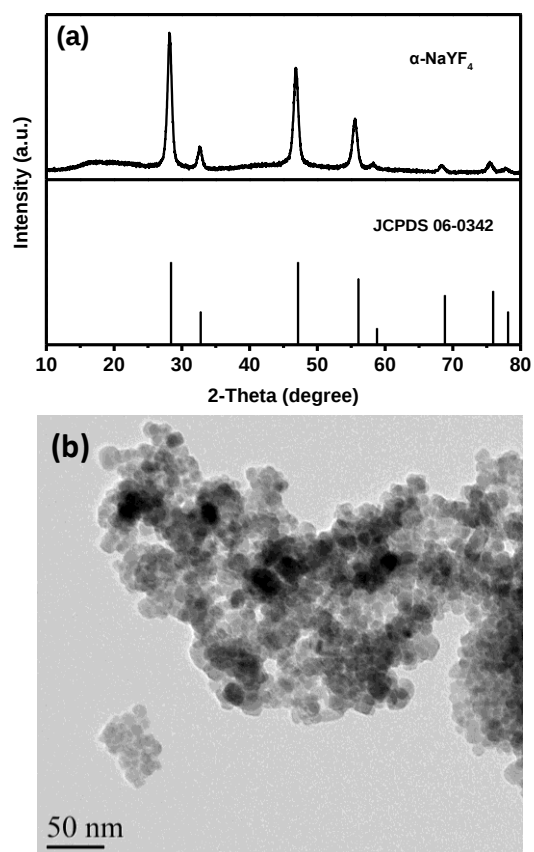


Fig. S4 (a) XRD pattern of $\alpha\text{-NaYF}_4$. The standard pattern of $\alpha\text{-NaYF}_4$ (JCPDS 06-0342) is shown for comparison. (b) TEM of $\alpha\text{-NaYF}_4$.

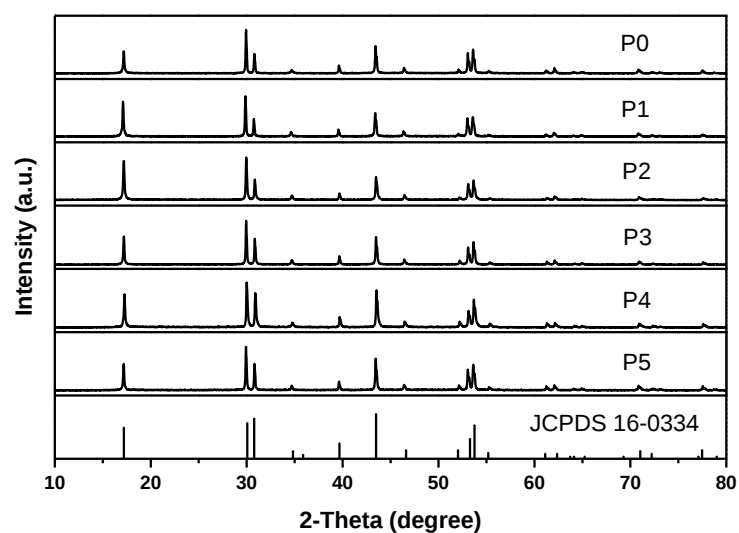


Fig. S5 XRD patterns of P samples. P0 is β -NaYF₄: 0.20Yb³⁺, 0.02Ho³⁺ core. The standard pattern of β -NaYF₄ (JCPDS 16-0334) is shown for comparison.

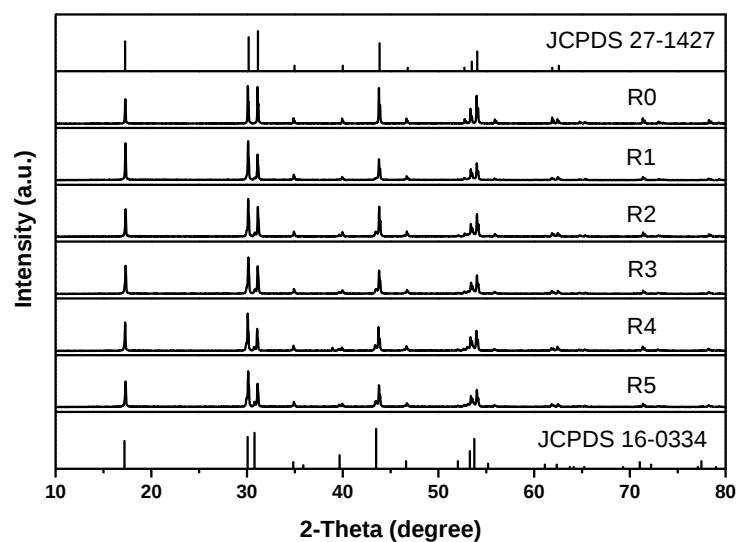


Fig. S6 XRD patterns of R samples. R0 is β -NaYbF₄: 0.02Er³⁺ core. The standard patterns of β -NaYbF₄ (JCPDS 27-1427) and β -NaYF₄ (JCPDS 16-0334) are shown for comparison.

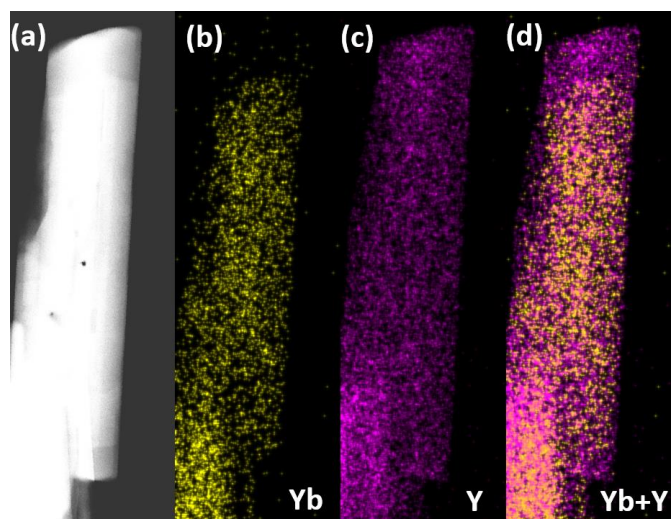


Fig. S7 (a) Typical STEM in HAADF, (b) Element mapping of Yb, (c) Y and (d) Yb+ Y in the rod of P5.

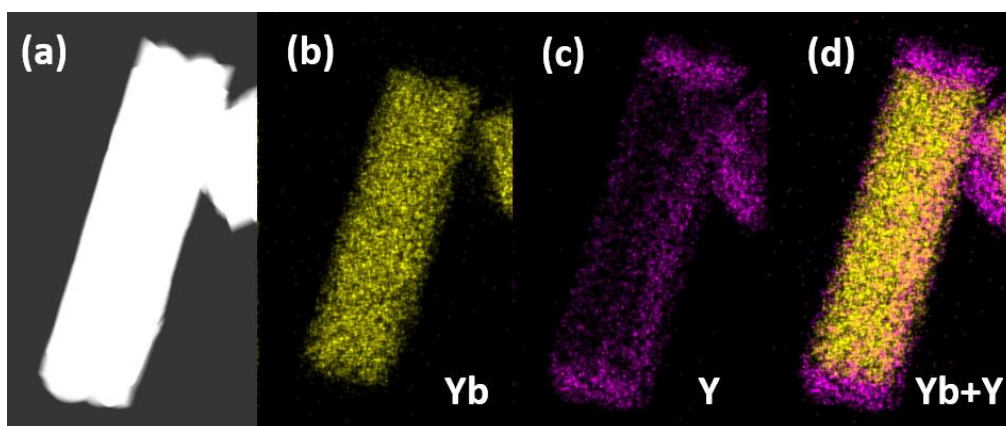


Fig. S8 (a) Typical STEM in HAADF, (b) Element mapping of Yb, (c) Y and (d) Yb+ Y in the rod of R5.