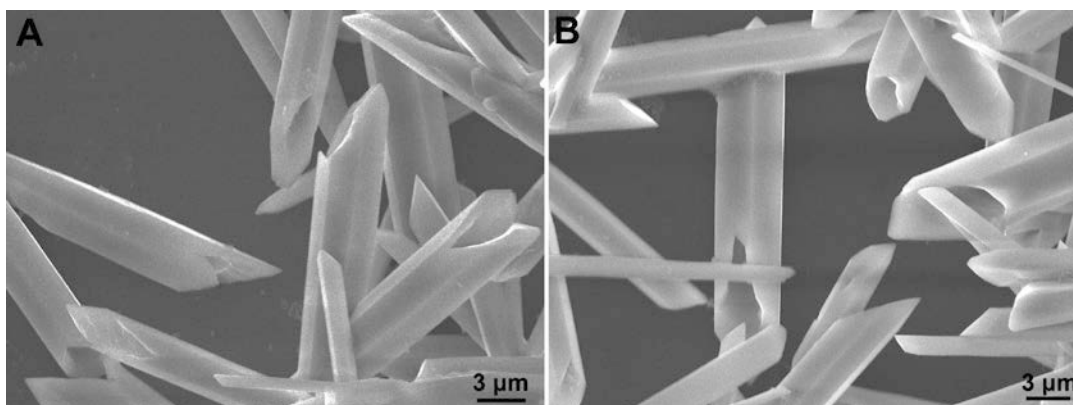


## Electronic Supplementary Information

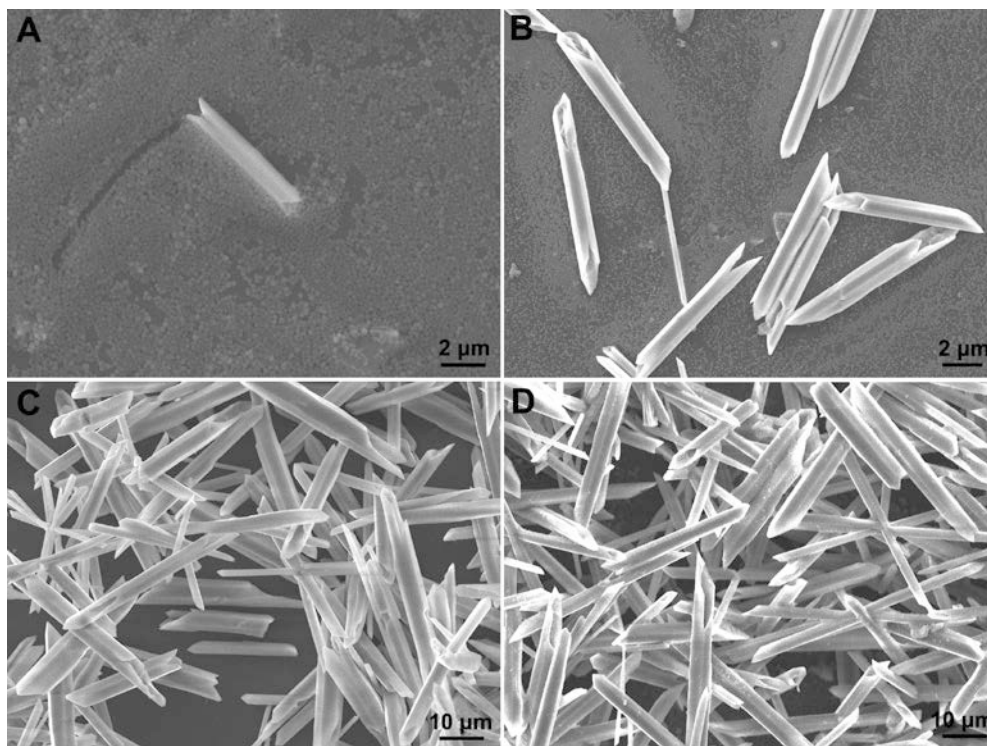
### **Synthesis of NaYF<sub>4</sub> with different morphology and enhanced up-conversion luminescence property**

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**Figure S1.** SEM images of  $\text{NaYF}_4$  (A), SEM images of  $\text{NaYF}_4:16\% \text{Yb}^{3+}/1\% \text{Tm}^{3+}$  (B).



**Figure S2.** SEM images of NaYF<sub>4</sub>:Yb<sup>3+</sup>/Tm<sup>3+</sup> prepared with the PSS concentration of 18 g/L for 12 h (pH = 6) using NH<sub>4</sub>F as the fluorine source at 120 °C (A), 160 °C (B), 180 °C (C), 200 °C (D).