

Electronic Supplementary Information

Morphology- and concentration-dependent temperature sensing and optical heating in Er^{3+} single-doped and $\text{Er}^{3+}/\text{Yb}^{3+}$ co-doped $\text{NaY}(\text{WO}_4)_2$ particles derived from microwave assisted hydrothermal reaction

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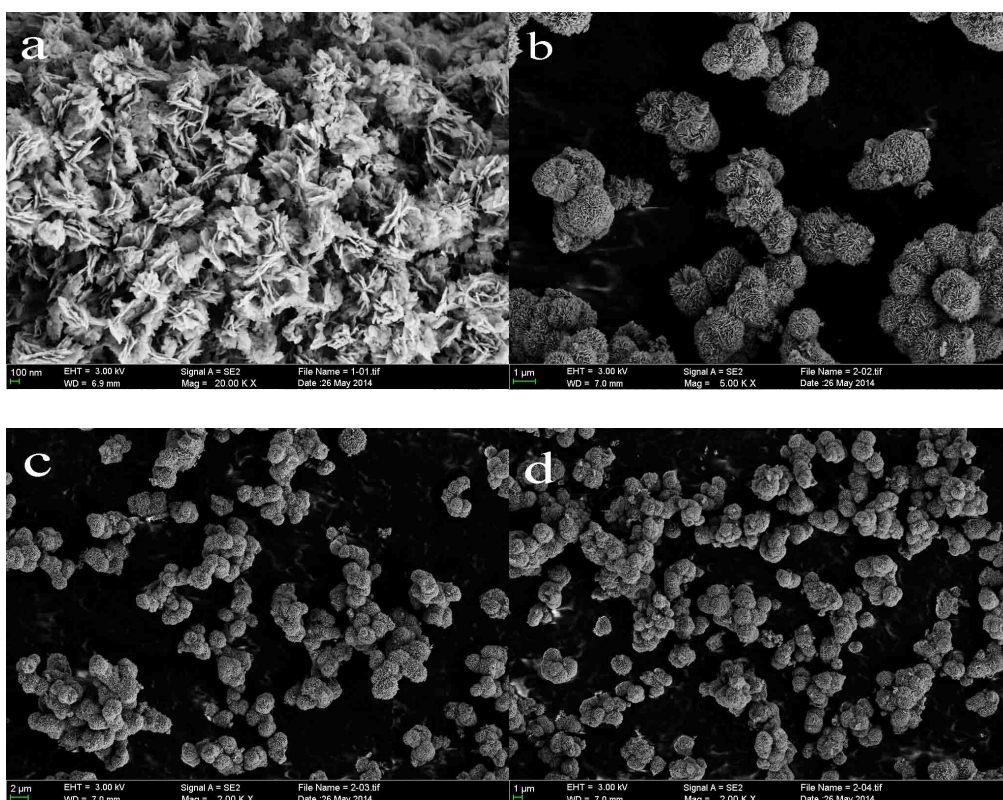
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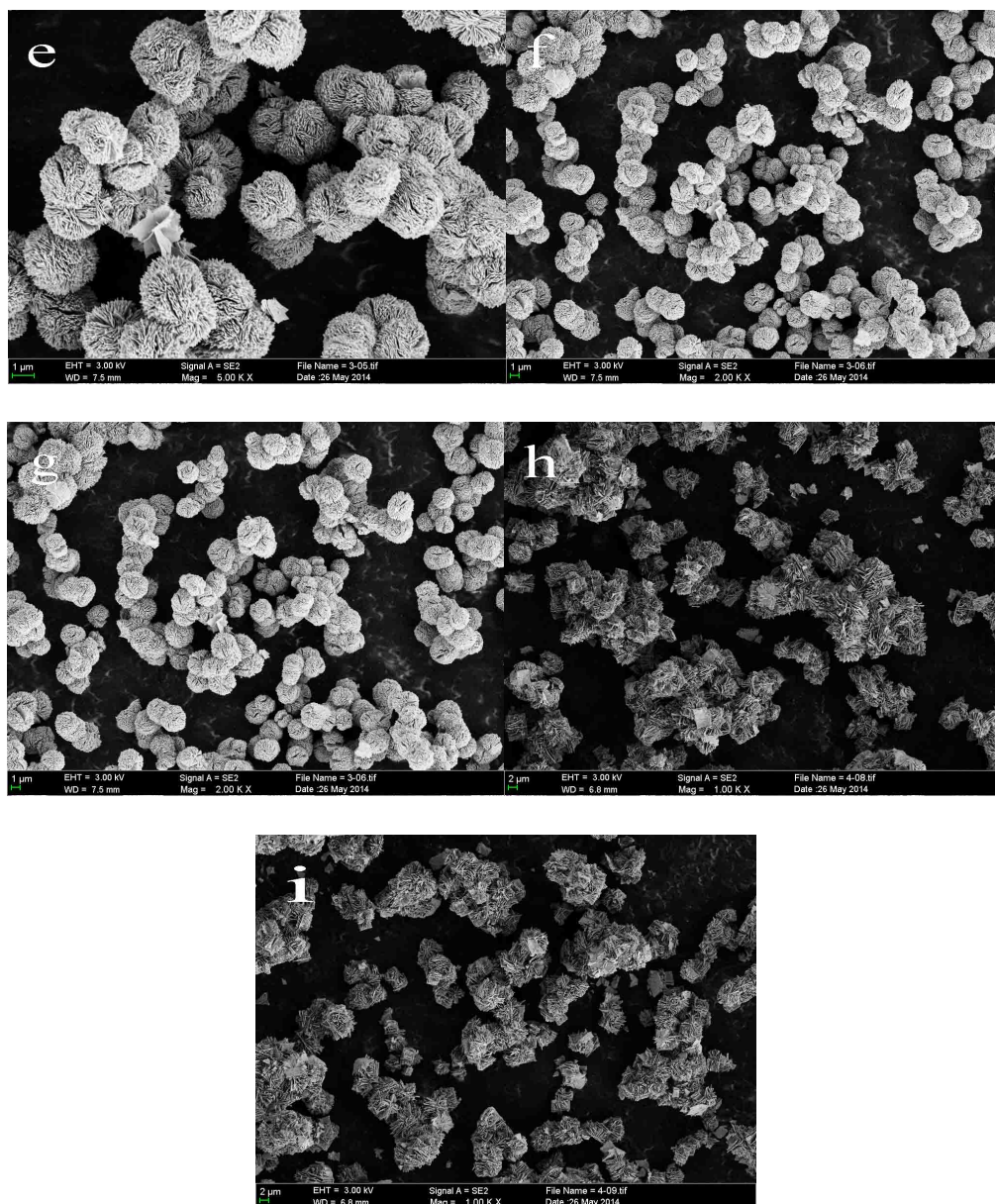
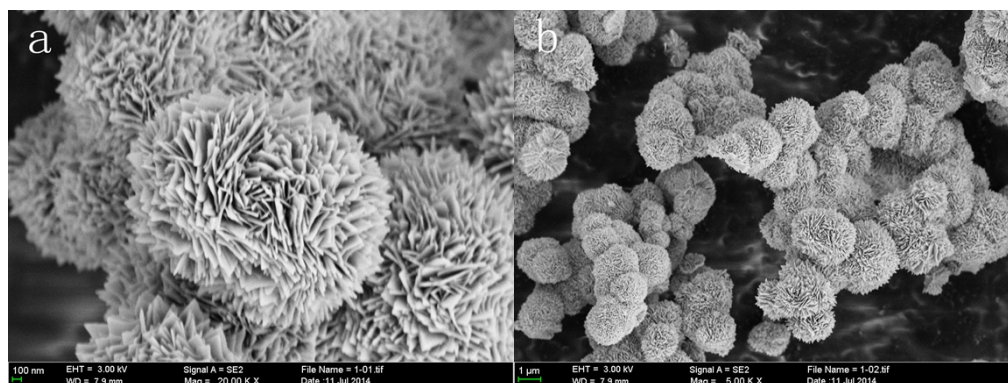


Figure. S1 FE-SEM images of samples with different morphologies. The ratio of $\text{Cit}^{3-}/\text{Y}^{3+}$ is (a) 0.5, (b) (c) (d) 1, (e) (f) (g) 1.5 and (h) (i) 2.



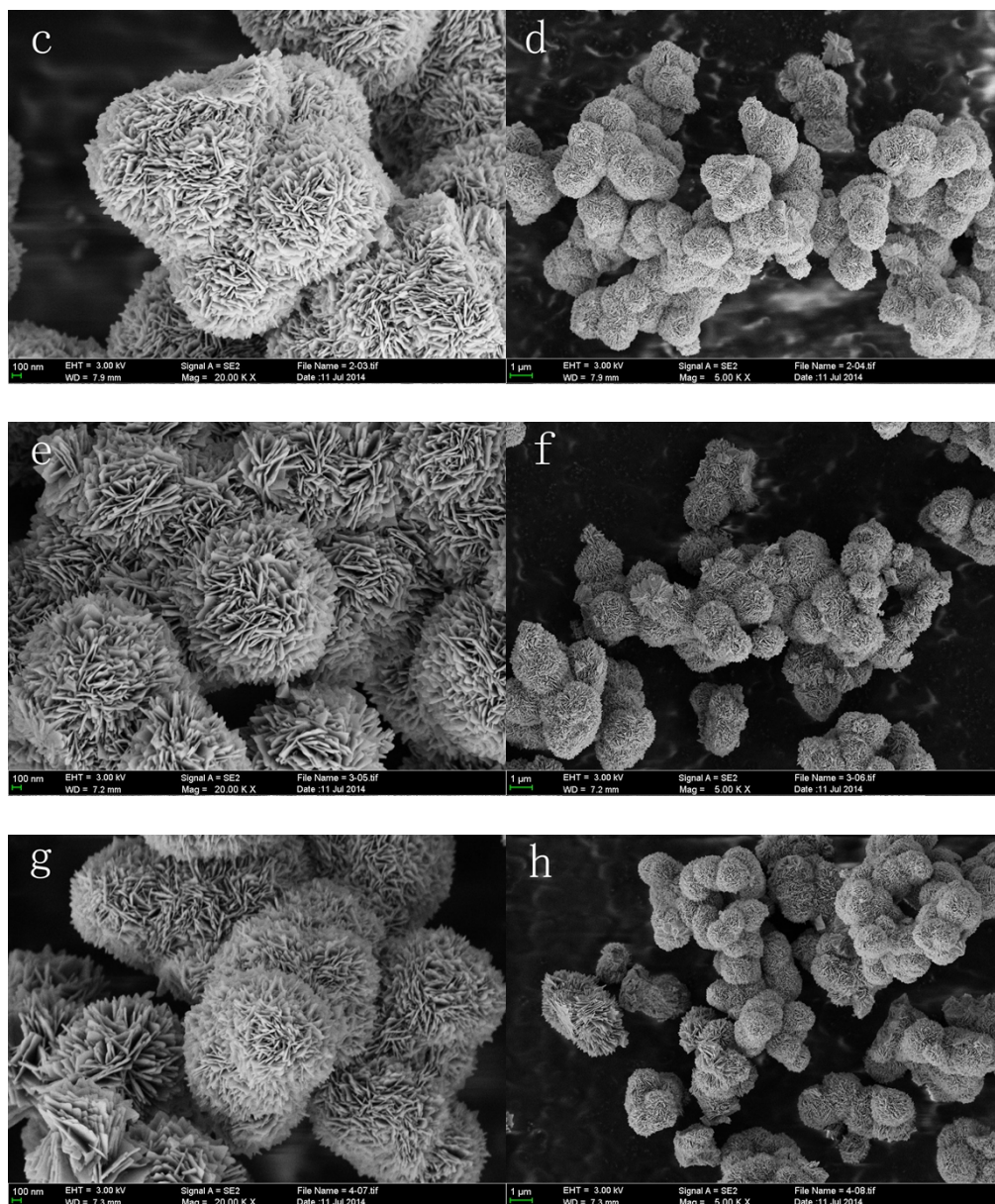


Figure. S2 FE-SEM images of Er^{3+} single-doped and $\text{Er}^{3+}/\text{Yb}^{3+}$ co-doped $\text{NaY(WO}_4)_2$ samples: (a), (b) $\text{NaY(WO}_4)_2: 2.5\%\text{Er}^{3+}$, (c), (d) $\text{NaY(WO}_4)_2: 10\%\text{Er}^{3+}$, (e), (f) $\text{NaY(WO}_4)_2: 1\%\text{Er}^{3+}/2.5\%\text{Yb}^{3+}$, (g), (h) $1\%\text{Er}^{3+}/10\%\text{Yb}^{3+}$ $\text{NaY(WO}_4)_2: 1\%\text{Er}^{3+}/10\%\text{Yb}^{3+}$