Supplementary Information

Uniform Eu$^{3+}$-doped YF$_3$ Microcrystals: Inorganic Salt-Controlled Synthesis and Their Luminescent Properties

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**Figure S1** FE-SEM images of S2 synthesized at 180°C with different hydrothermal reaction times: (a) 0 h; (b) 2 h; (c) 4 h; (d) 10 h; (e) 12 h; (f) 24 h.
Figure S2 FE-SEM images of S3 synthesized at 180°C with different hydrothermal reaction times: (a) 0 h; (b) 2 h; (c) 4 h; (d) 10 h; (e) 12 h; (f) 24 h.
Figures S1(a-f) show the FE-SEM images of S2 sample synthesized at 180°C with a reaction time of 0 h, 2 h, 4 h, 10 h, 12 h and 24 h. Before the hydrothermal reaction, uniform bundle-like crystals and some small particles were formed after the precipitate stirred for 1 h. The bundle-like crystals were composed of many small wires crystals (Figure S1a). After 2 h of the reaction, uniform bundle-like crystals were dissolved into smaller accumulated particles (Figure S1b). Figure S1c showed the morphology of the products synthesized at 180°C for 4 h under the hydrothermal conditions. We got some scatter crystals. Upon continuing reaction, many small particles began to collect (Figure S1d and S1e). Finally, after 24 h of the reaction, uniform bundle-like microcrystals self-assembled were finally synthesized, as shown in Figure S1f.

Figures S2(a-f) show the SEM images of S3 sample synthesized at 180°C with a reaction time of 0 h, 2 h, 4 h, 10 h, 12 h and 24 h. Before the hydrothermal reaction, uniform bundle-like crystals and some small particles were formed after the precipitate stirred for 1 h. The bundle-like crystals were composed of many small wires crystals (Figure S2a). After 2 h of the reaction, uniform bundle-like crystals were dissolved into smaller accumulated particles (Figure S2b). Figure S2c showed the morphology of the products synthesized at 180°C for 4 h under the hydrothermal conditions. We got some smaller crystals. Upon continuing reaction, many small particles began to collect (Figure S2d and S2e). Finally, after 24 h of the reaction, uniform bundle-like microcrystals self-assembled were finally synthesized, as shown in Figure S2f.