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Electronic Supplementary Information

Novel Synthesis of YVO₄:Ln³⁺ (Ln= Eu, Sm, and Dy) Porous/Hollow Submicro-

Ellipsoids and Luminescence Properties

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Fig. S1. Particle-size distribution histograms: (A) ellipsoidal width; (b) ellipsoidal length.



Fig. S2. XRD patterns of the $Y_2(OH)_5NO_3 \cdot nH_2O$ precursors.



Fig. S3. TEM images of the $Y_2(OH)_5NO_3 \cdot nH_2O$ precursors. Scale bar is 100 nm.



Fig. S4. SEM images of the products at different reaction intervals under 220 °C: (A1) 8 h,

(B1) 12 h, and (C1) 36 h; (A2-C2) the corresponding TEM images.



Fig. S5. SEM images of the products synthesized at 120 °C (A1) and 160 °C (B1), respectively; (A2-A5) and (B2-B5) the corresponding TEM images.



Fig. S6. XRD patterns of the products synthesized at 120 °C (A) and (B) 160 °C.



Fig. S7. SEM images of the products prepared with different amount of Na₂CO₃ (A) 1 mmol (sample S2), (B) 2 mmol (sample S3), and (C1, C2) 6 mmol (sample S4).



Fig. S8. SEM images of the products prepared with 2 mmol NaNO₃ (A1, A2, sample S5) and 4 mmol NaNO₃ (B1, B2, sample S6) under the fixed Na₂CO₃ of 4 mmol.



Fig. S9. SEM images of the products prepared with (A) 4 mmol Na₂CO₃ and pH=11 (NaOH sample S7), (B) 4 mmol Na₂CO₃ and pH=12 (NaOH, sample S8), (C) 6 mmol Na₂CO₃ and pH=12 (NaOH, sample S9), (D) 4 mmol Na₂CO₃ and pH=11 (NH₃·H₂O, sample S10), (E) 4 mmol Na₂CO₃ and pH=12 (NH₃·H₂O, sample S11), and (E) 4 mmol Na₂CO₃ and pH>12 (NH₃·H₂O, sample S12). The pH value was regulated by NaOH in Fig. S6(A-C) and NH₃·H₂O in Fig. S6(D-F). The scale bars are 1 μ m.

Sample	Y:Na ₂ CO ₃	NaNO ₃	NaOH	NH ₃ ·H ₂ O	Morphology	Influence factor
S1	1:4	0	0	0	ellipsoidal shape	
S2	1:1	0	0	0	irregular nanoparticles	Na^+ and pH values
S 3	1:2	0	0	0	irregular nanoparticles	
S4	1:6	0	0	0	peanut-like, obvious concave waist, relative smooth surface	
S5	1:4	2 mmol	0	0	ellipsoidal shape, slight concave waist, rough surface	Na+
S 6	1:4	4 mmol	0	0	ellipsoidal shape, slight concave waist, rough surface	
S 7	1:4	0	pH:11	0	ellipsoidal shape, slight concave waist, relative smooth surface	
S8	1:4	0	pH:12	0	peanut-like, more obvious concave waist than S7, relative smooth surface	pH values and Na ⁺
S 9	1:6	0	pH:12	0	peanut-like, more obvious concave waist than S8, relative smooth surface	
S10	1:4	0	0	pH:11	ellipsoidal shape, slight concave waist, rough surface	
S11	1:4	0	0	pH:12	ellipsoidal shape, slight concave waist, rough surface	pH values
S12	1:4	0	0	pH>12	peanut-like, obvious concave waist, relative smooth surface	

 Table S1. Summary of experimental conditions.