Supplementary information

Combining complexing agent and solvothermal reaction for the morphology controllable synthesis of (Y,Eu)PO_4 crystals with size-dependent photoluminescence

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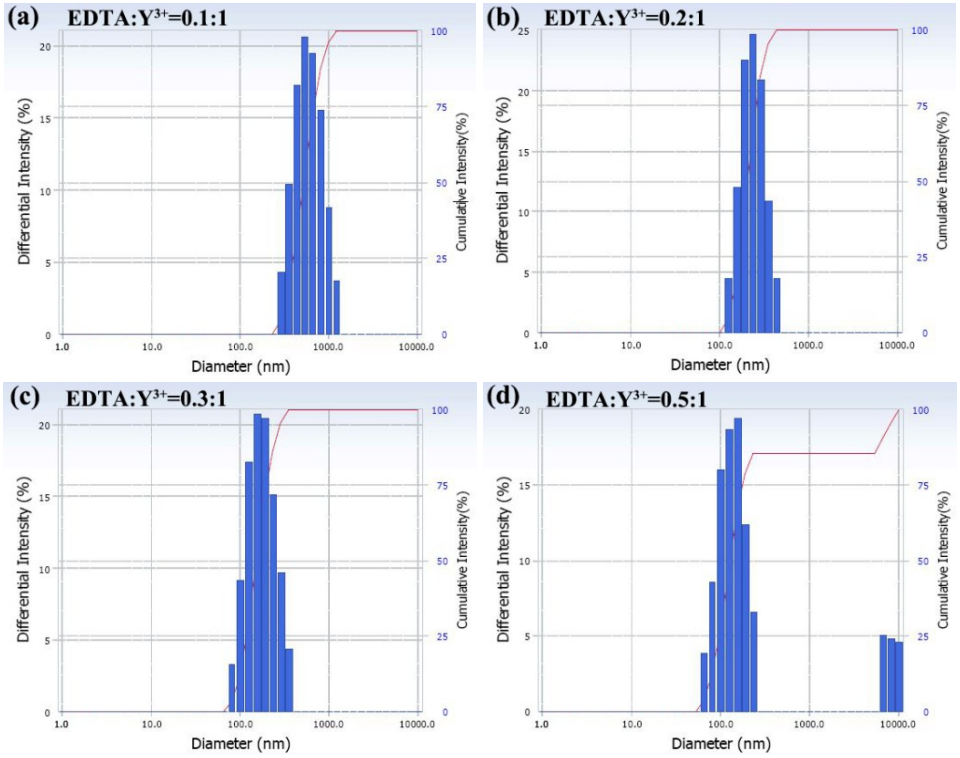

Fig. S1 Particle size/size distribution analysis of the h-YPO_4 particles synthesized with the EG content of 40 mL and the EDTA:Y^{3+} molar ratios of 0.1:1 (a), 0.2:1 (b), 0.3:1 (c), and 0.5:1 (d).

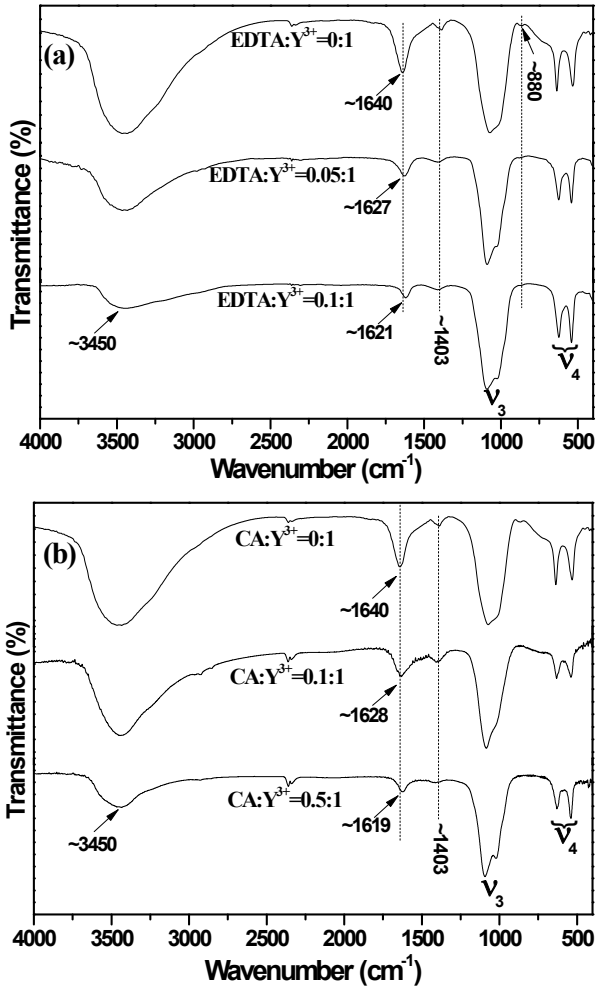

Fig. S2 FTIR spectra for the representative samples synthesized with different EDTA:Y^{3+} (a) and CA:Y^{3+} (b) molar ratios.

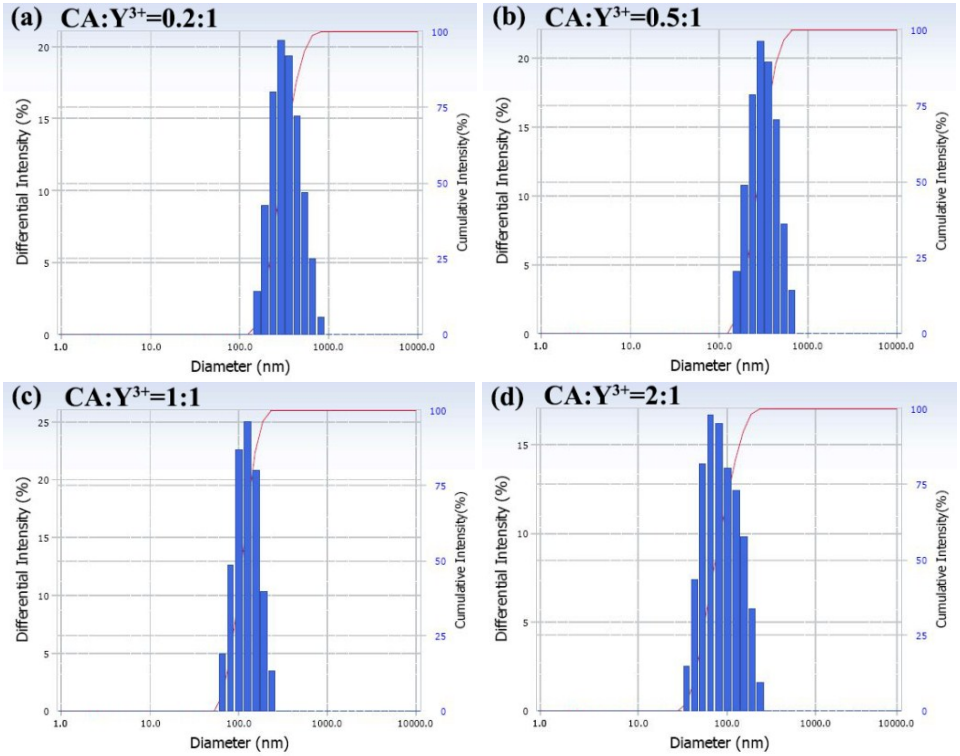

Fig. S3 Particle size/size distribution analysis of the h-YPO_4 particles synthesized with the EG content of 40 mL and the CA:Y^{3+} molar ratios of 0.2:1 (a), 0.5:1 (b), 1:1 (c), and 2:1 (d).

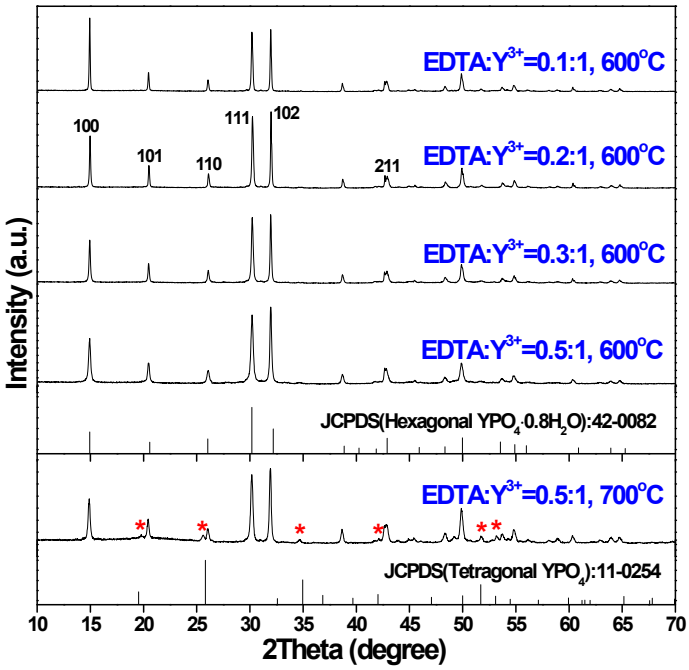

Fig. S4 XRD patterns for the h-$(Y_{0.95}Eu_{0.05})PO_4$ phosphors calcined from the samples synthesized with the EG content of 40 mL and the different EDTA:Y^{3+} molar ratios indicated in the figure. The red asterisks in the pattern of the 700 °C product denote tetragonal YPO_4.

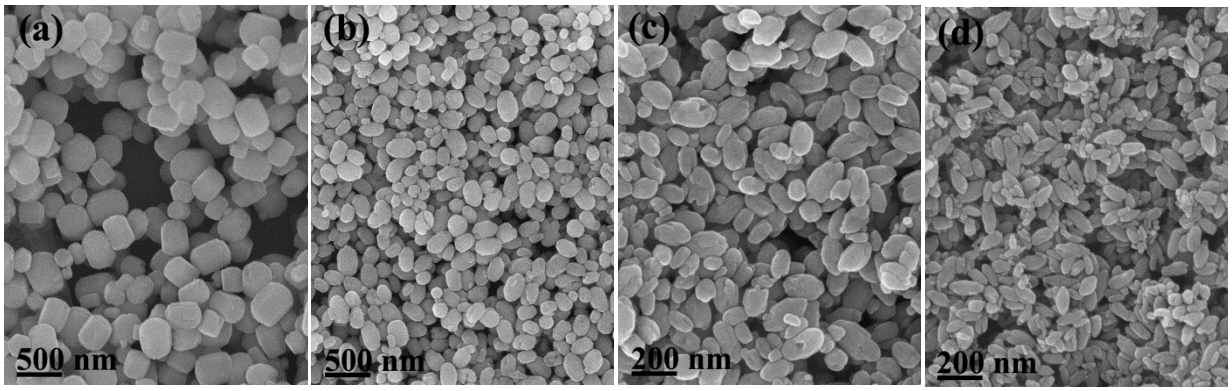

Fig. S5 SEM images showing morphologies of the h-$(Y_{0.95}Eu_{0.05})PO_4$ phosphors calcined at 600 °C from the samples synthesized with the EG content of 40 mL and the EDTA:Y^{3+} molar ratios of 0.1:1 (a), 0.2:1 (b), 0.3:1 (c), and 0.5:1 (d).

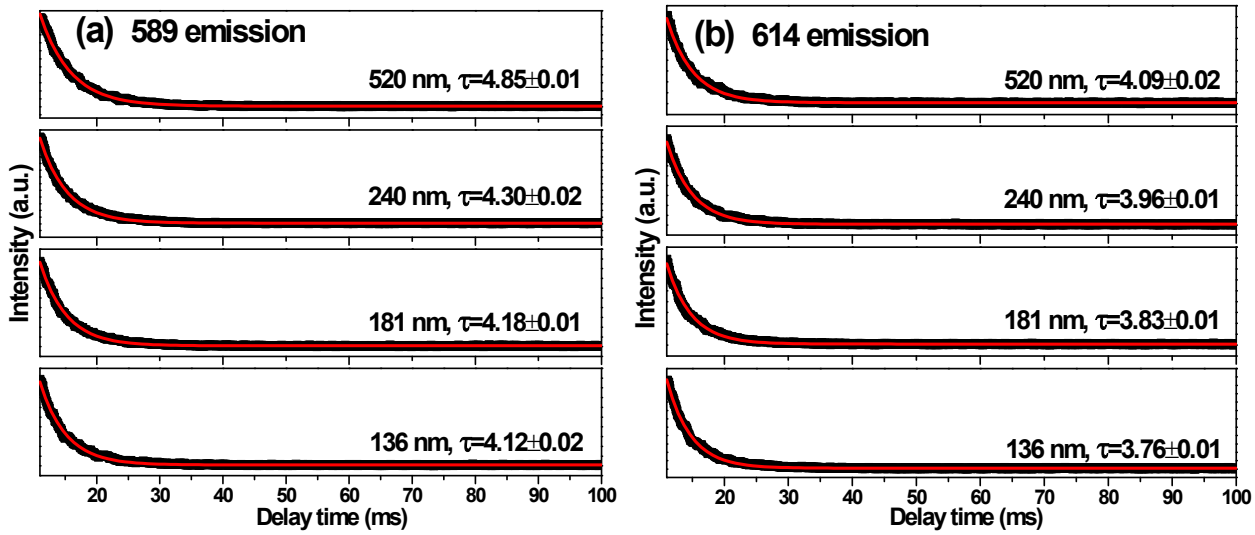

Fig. S6 Fluorescence decay curves of the $^5D_0 \rightarrow {}^7F_1$ (a) and $^5D_0 \rightarrow {}^7F_2$ transitions for the differently sized h-$(Y_{0.95}Eu_{0.05})PO_4$ phosphors.

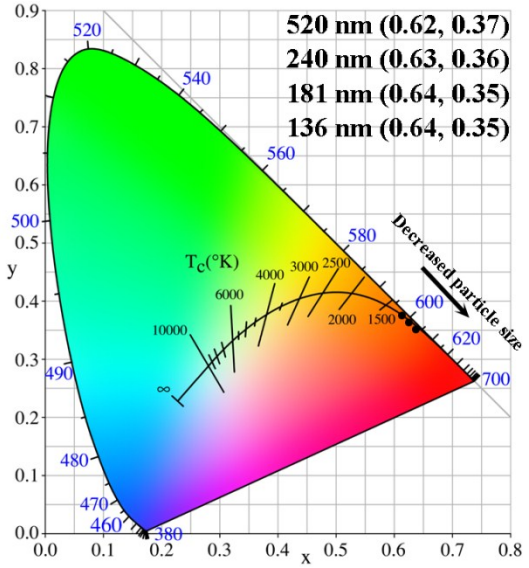

Fig. S7 CIE chromaticity diagram for the differently sized h-$(Y_{0.95}Eu_{0.05})PO_4$ phosphors.