Electronic Supplementary Material (ESI) for CrystEngComm

Supporting information

Hyperbranched Microspheres Formed by EDTA-based Coordination Polymer with Ternary Architectures Assembled by Ultrathin Nanoribbons and Their Tricolor Luminescent Properties

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Experimental Section

Synthesis. All chemical regents are commercially available and were used as received. In a typical synthesis, 4 mmol disodium EDTA was dissolved in 24 ml H_2O at 45^oC. 8 mmol rare earth salt ($La(NO_3)_3•6H_2O$, $Ce(NO_3)_3•6H_2O$, etc.) was added in the disodium EDTA solution above-mentioned under stirring, and several minutes later, some white precipitates were produced. Then the suspension obtained was transferred into 30 ml autoclave, sealed and heated under 160 ^oC for 24 hours. The as-prepared lanthanide coordination polymers (CPs) were washed by deionized water and absolute ethanol and dried in air under 60 ^oC.

Characterizations. The thermogravimetry and differential thermal analysis (TG-DTA) of the sample were performed on a Rigaku TG-DTA thermal analyzer. XRD patterns were recorded with a Rigaku D/max-2500 diffractometer. SEM was measured on Shimadzu SS-550 and Hitachi Model S-4800 instruments. TEM was measured by Philips Tecnai G^2 F20 instrument. AFM was measured by Veeco Metrology Nanoscope IIIa. XPS spectra were obtained with a Kratos Axis Ultra DLD spectrometer. Element analysis data were obtained with an Elementar Vanio-EL instrument. FTIR spectra were carried out on KBr pellets in a BRUKER VECTOR 22 spectrometer.

	Without Hydrothermal Treatment	Hydrothermal Treatment 6h	Hydrothermal Treatment 12h
C	25.95	22.85	20.32
H	3.65	3.11	3.44
N	6.31	6.41	6.11

Table S1 EA analysis data of La-EDTA CPs obtained by (column a) without hydrothermal treatment and after 6 h (column b), 12 h reaction (column c) at 160 ^{o}C with the molar ratio of EDTA-2Na: La^{3+}=4: 8, and the La^{3+} is 8 mmol.

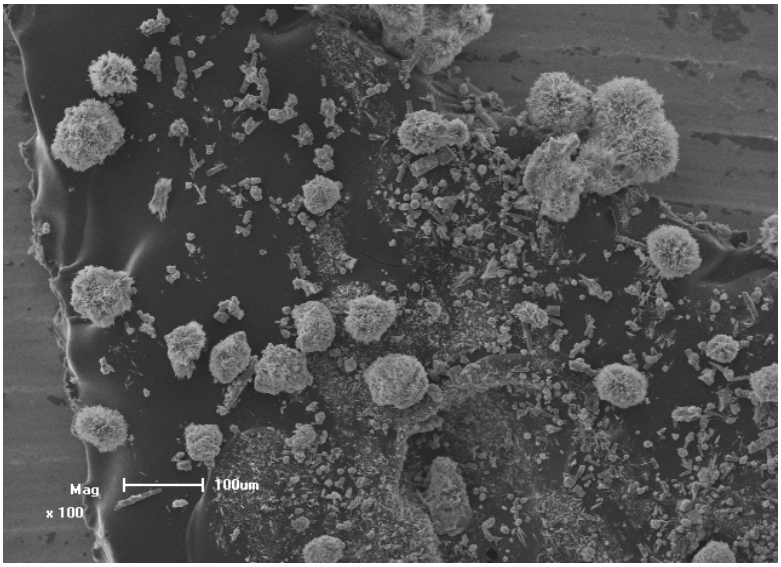

Fig. S1 Low resolution SEM image of Ce-EDTA hyperbranched microspheres assembled by ultrathin nanoribbons.

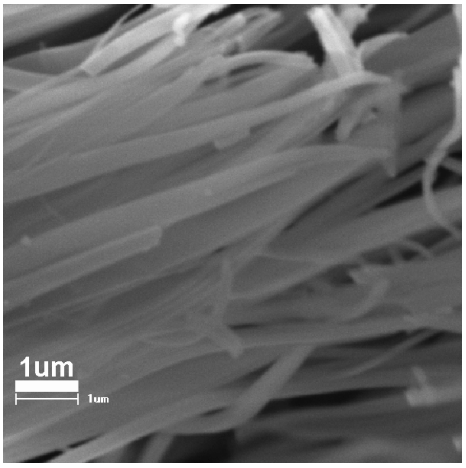

Fig. S2 The high resolution SEM image of nanoribbons of Ce-EDTA coordination polymers (CPs).

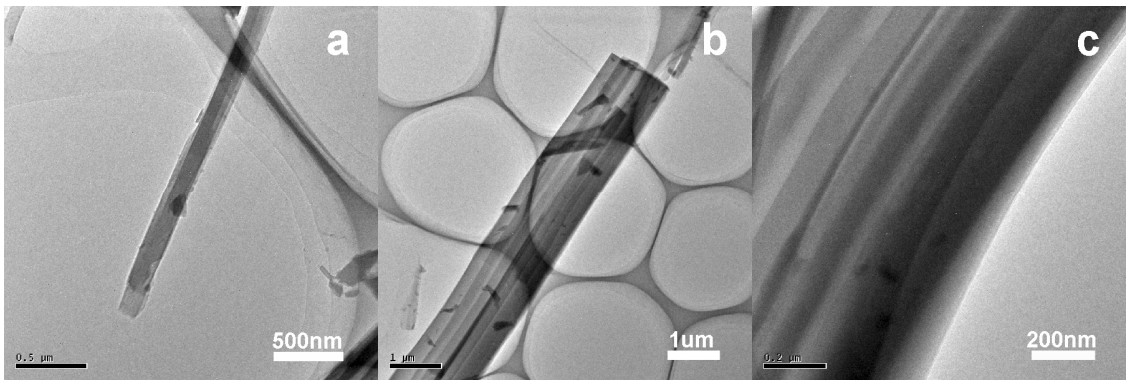

Fig. S3 TEM images of multi-layer nanoribbons of La-EDTA CPs.

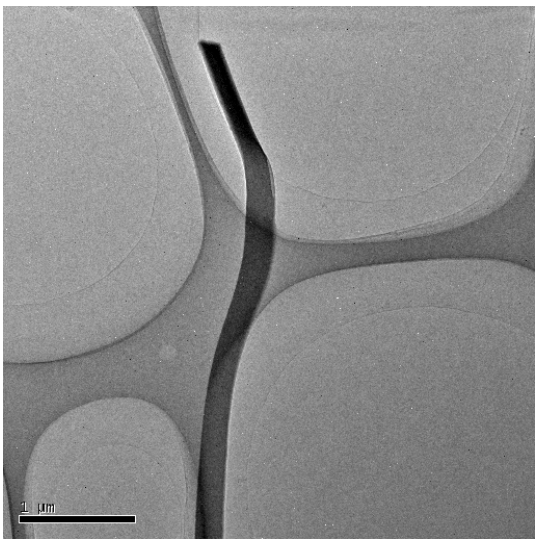

Fig. S4 TEM image of ultrathin nanoribbon of La-EDTA CPs in Figure 1d after radiation of electrons for several seconds.

Fig. S5 An optical photo of La-EDTA CPs as-prepared products.

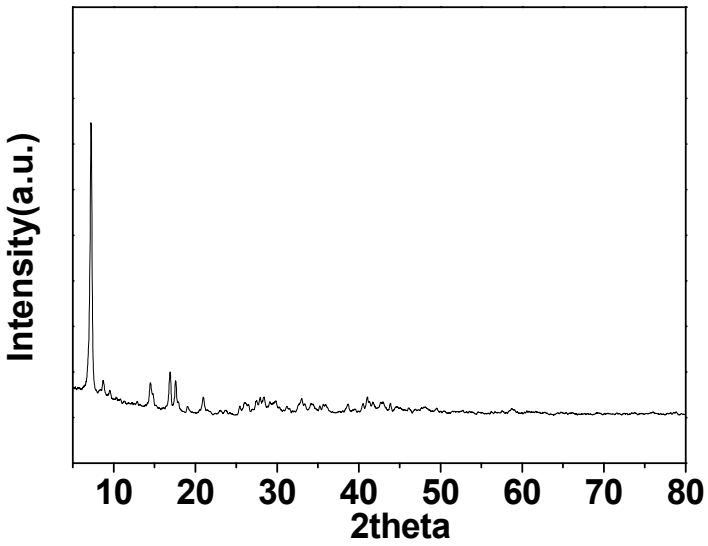

Fig. S6 The XRD pattern of La-EDTA CPs products obtained after 24 h reaction at 160 ^{o}C, with the molar ratio of EDTA-2Na: La^{3+}=4: 8, and the La^{3+} is 8 mmol.

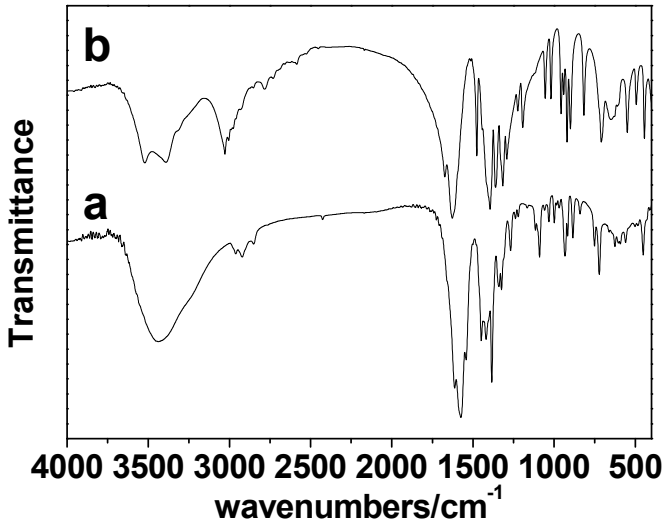

Fig. S7 The FTIR specrtra of (a) La-EDTA coordination polymers obtained after 24 h reaction at 160 ^{o}C with the molar ratio of EDTA-2Na: La^{3+}=4: 8, and the La^{3+} is 8 mmol; (b) Pure EDTA-2Na ligands ($C_{10}H_{14}N_2O_8Na_2 \cdot 2H_2O$).

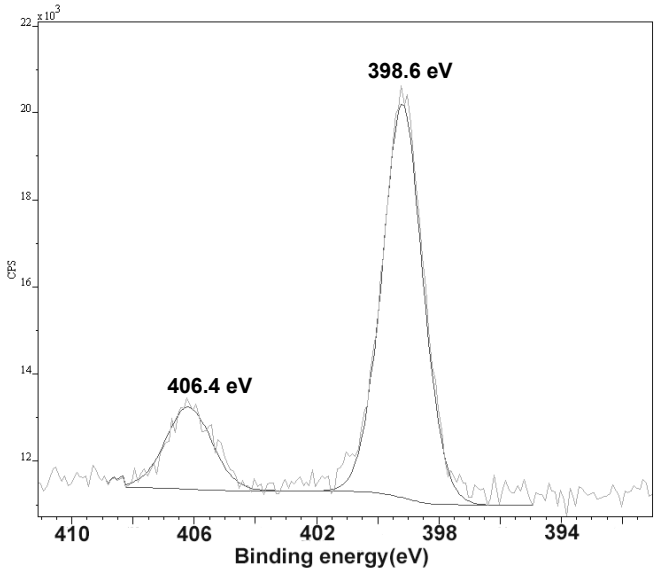

Fig. S8 The XPS spectrum of La-EDTA CPs obtained after 24 h reaction at 160 ^{o}C with the molar ratio of EDTA-2Na: La^{3+}=4: 8, and the La^{3+} is 8 mmol.

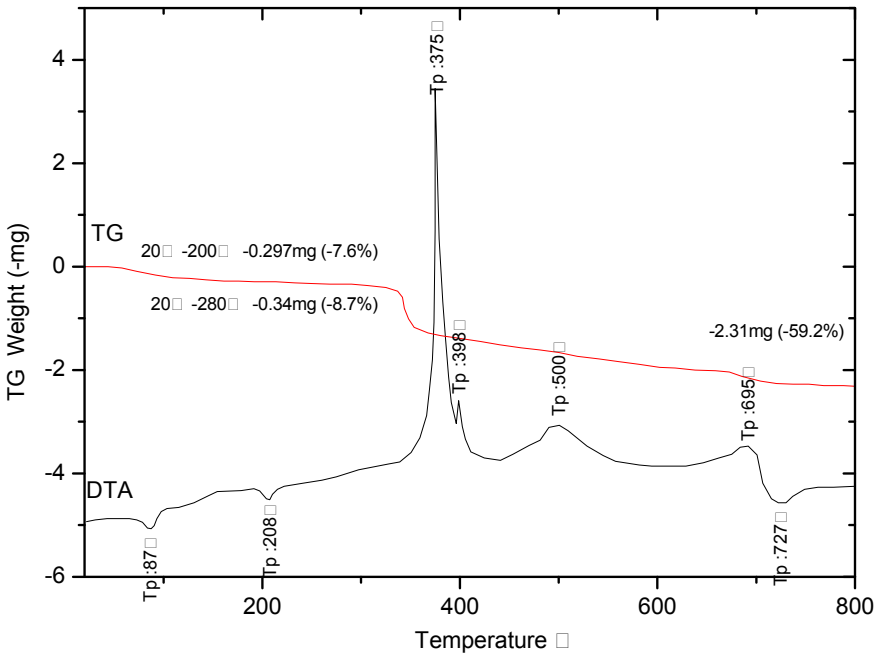

Fig. S9 The TGA curve of La-EDTA CPs obtained after 24 h reaction at 160 ^{o}C with the molar ratio of EDTA-2Na: La^{3+}=4: 8, and the La^{3+} is 8 mmol.

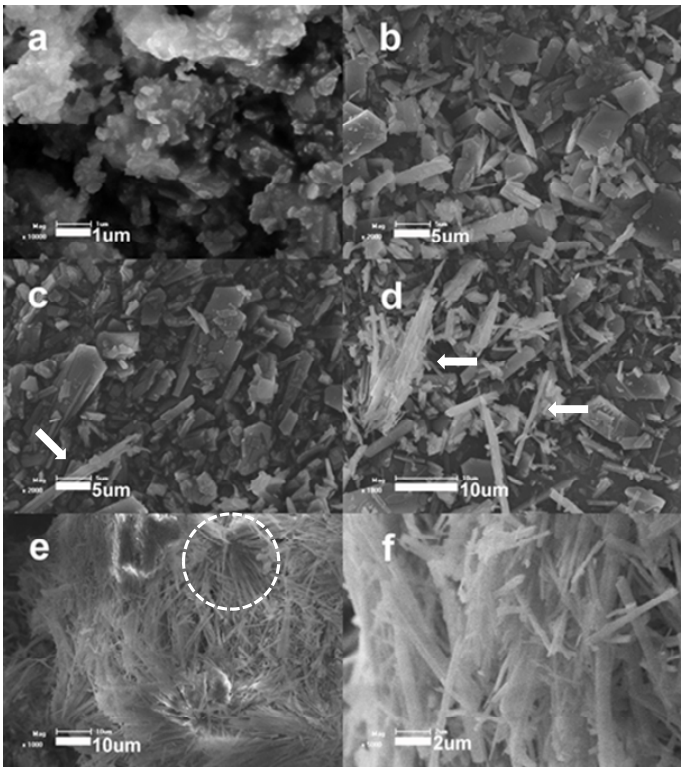

Fig. S10 SEM images of La-EDTA CPs obtained (a) without hydrothermal treatment. After 2 h(b), 6 h(c), 8 h(d) and 12 h(e, f) reaction at 160 ^{o}C with the molar ratio of EDTA-2Na: La^{3+}=4: 8, and the La^{3+} is 8 mmol.

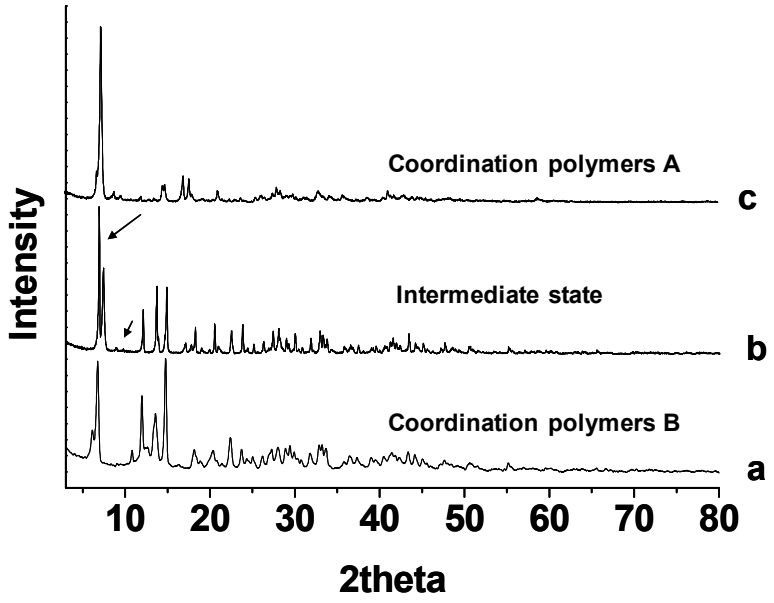

Fig. S11 The XRD patterns of La-EDTA CPs obtained (a) without hydrothermal treatment. (b) After 6 h. The arrows pointed out the "coordination polymers A" in intermediate state. (c) After 2 h reaction at 160 ^{o}C with the molar ratio of EDTA-2Na: La^{3+}=4: 8, and the La^{3+} is 8 mmol.