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## Supporting Information

## Efficient visible and near-infrared photoluminescent attapulгите-based lanthanide one-dimensional nanomaterials assembled by ion-pairing interactions

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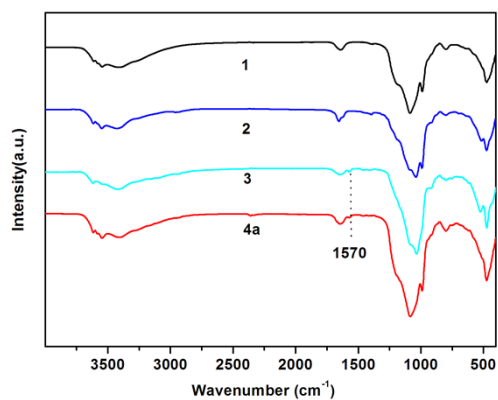
Table S1. The composition analysis of the materials 2, 3 and 4a-e.

Materials	C (%)	H (%)	N (%)	Ln(%)
2	6.04	2.12	0	0
3	6.39	2.04	3.01	0
4a	6.95	2.01	2.07	1.85
4b	6.94	1.99	2.10	1.82
4c	7.02	2.04	2.11	1.87
4d	6.99	2.06	2.17	1.89
4e	6.90	2.09	2.15	1.85

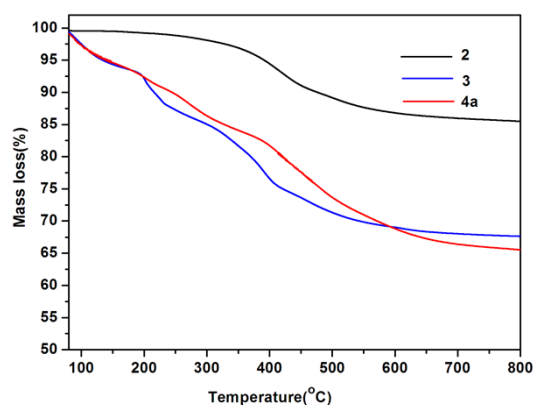
Table S2 The luminescence decay times and the average lifetimes of hybrid materials 4a, 4b, 4c, 4d, and 4e<sup>a</sup>

Samples	Transitions	$\tau_1$ ( $\mu\text{s}$ )	$\tau_2$ ( $\mu\text{s}$ )	$\langle\tau\rangle$ ( $\mu\text{s}$ )
4a	$^5\text{D}_0 \rightarrow ^7\text{F}_2$	240.31(22.43%)	635.52(77.57%)	596.57
4b	$^4\text{G}_{5/2} \rightarrow ^6\text{H}_{9/2}$	36.16(43.10%)	95.61(56.90%)	82.37
4c	$^4\text{F}_{3/2} \rightarrow ^4\text{I}_{9/2}$	0.42(81.62%)	1.81(18.37%)	1.10
4d	$^4\text{I}_{13/2} \rightarrow ^4\text{I}_{15/2}$	1.52(70.93%)	2.71(29.07%)	2.02
4e	$^2\text{F}_{5/2} \rightarrow ^2\text{F}_{7/2}$	6.41(9.43%)	12.46(90.57%)	12.15

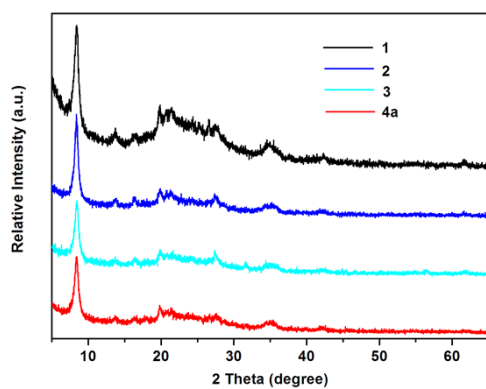
<sup>a</sup> Lifetimes ( $\tau$ ) and average lifetimes  $\langle\tau\rangle$ .



**Fig. S1** Fourier transform infrared spectra of materials **1**, **2**, **3**, and **4a**.



**Fig. S2** Thermogravimetry (TG) curves of the obtained hybrid materials **2**, **3** and **4a**.



**5** **Fig. S3** Powder X-ray diffraction patterns for the obtained materials **1**, **2**, **3**, and **4a**.

