Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Graphene oxide induced multi-layered six-petal flower-shaped rare earth Tb^{3+} hybrid luminescent material: Synthesis, characterization, luminescence and fluorescent anti-counterfeiting properties

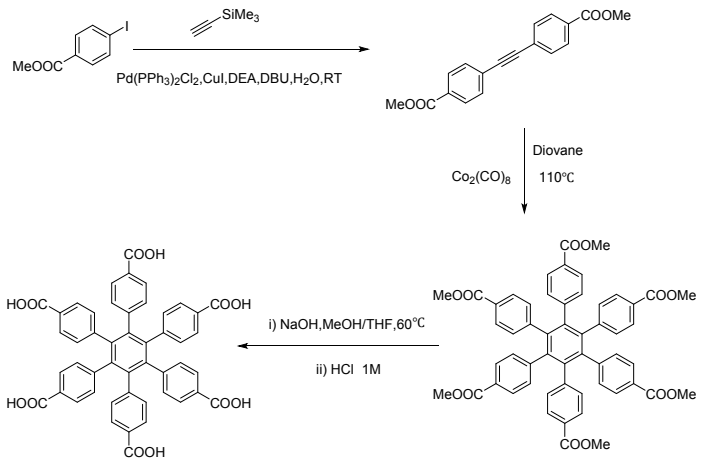

Fig. S1 Schematic illustration of preparation of H_6CPB.

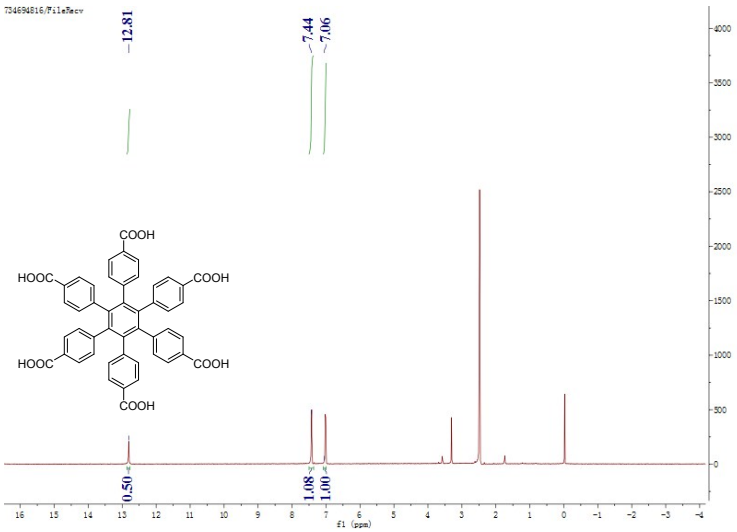

Fig. S2 NMR spectroscopy of H_6CPB (L).

^{1}H-NMR: σ (DMSO-d_6) =7.06 (d, 12H), 7.44 (d, 12H), 12.81 (s, 6H) ppm.

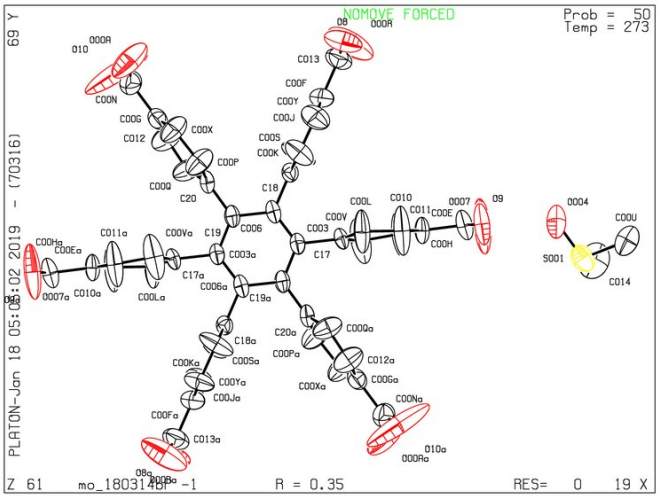

Fig. S3 Molecular structure of H_6CPB (L).

Table S1. Crystal data and structure refinement parameters for H_6CPB (L).

	1
Empirical formula	$C_{52}O_{14}S_2$
Formula weight	912.64
Crystal system	Triclinic
Space group	P -1
a (Å)	11.103(2)
b (Å)	12.342(3)
c (Å)	17.189(4)
α (deg)	101.914(7)
β (deg)	97.109(7)
γ (deg)	111.041(6)
V (Å^3)	2100.0(8)
Z	4
ρ_{calc} (g·cm^{-3})	0.722
Independent reflections	6950
Goodness of fit (F^2)[a]	3.656
R_1[b], wR_2[c] ($I > 2\sigma(I)$)	0.3462, 0.7361
Largest diff. peak /hole/eÅ^{-3}	5.30/-1.01

[a]GOF = $[\sum[\omega(F_o^2-F_c^2)^2]/(N_o-N_v)]^{1/2}$($N_o$=number of observations, N_v = number of variables). [b]$R_1 = \sum||F_o| - |F_c||/\Sigma|F_o|$.
[c]$wR^2 = [(\sum\omega(|F_o|^2 - |F_c|^2)^2/\sum\omega|F_o|^2)]^{1/2}$.

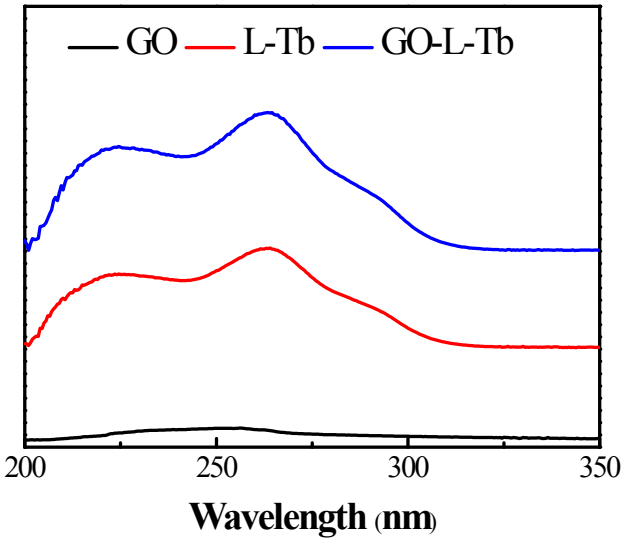

Fig. S4 UV spectrum of GO, L-Tb and GO-L-Tb.

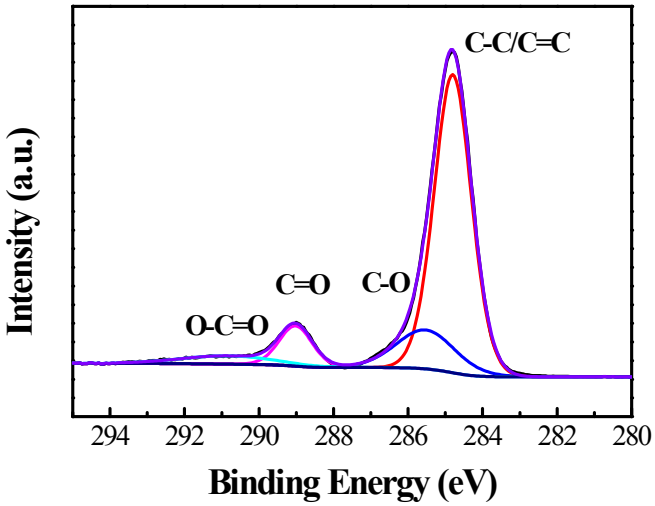

Fig. S5 Resolved C1s spectra of L-Tb.

Table S2. Resolved C1s data of GO.

Position	FWHM	Area	% Conc.
284.8	1.446	85306.21	47.98
286.91	1.148	73268.07	41.21
288.35	1.961	18273.28	10.28
290.98	1.455	950.4	0.53

Table S3. Resolved C1s data of GO-L-Tb.

Position	FWHM	Area	% Conc.
284.8	1.135	64166.84	60.31
285.78	2.821	33183.01	31.19
288.7	1.21	7216.1	6.78
290.72	3.082	1826.52	1.72

Table S4. Resolved C1s data of L-Tb.

Position	FWHM	Area	% Conc.
284.8	1.172	101569.99	71.69
285.54	1.854	20978.63	14.81
289.02	1.041	12171.82	8.59
290.85	2.885	6953.16	4.91

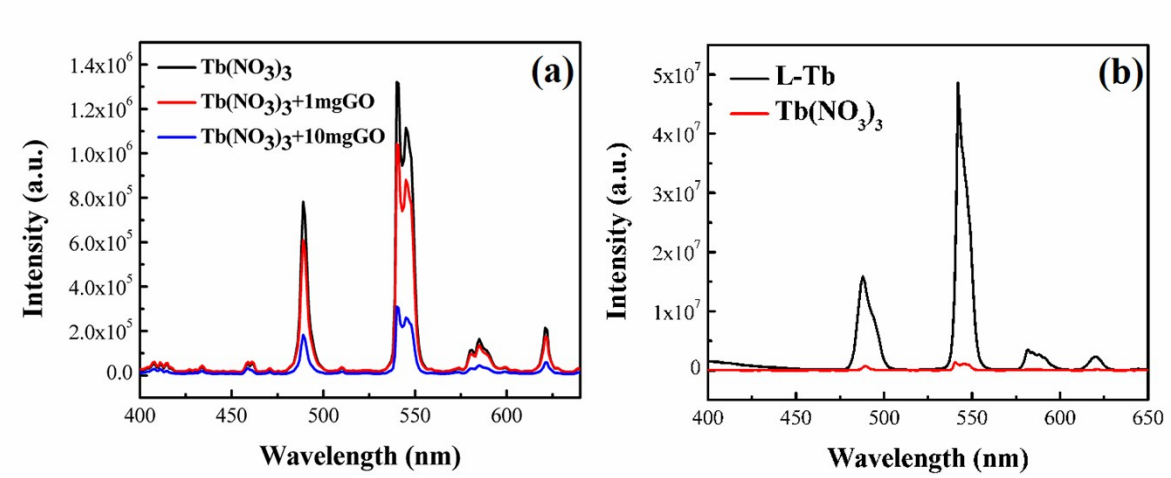

Fig. S6 Fluorescence Spectroscopy of $Tb(NO_3)_3$, $Tb(NO_3)_3$+1mg GO, $Tb(NO_3)_3$+10mg GO (a), $Tb(NO_3)_3$ and GO-L-Tb (b).

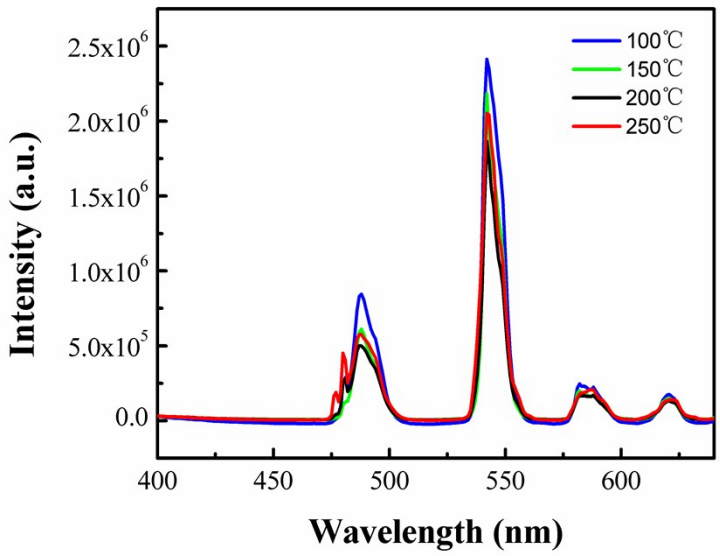

Fig. S7 Fluorescence Spectroscopy of GO-L-Tb after heating at 100℃, 150℃, 200℃, 250℃ for half an hour.

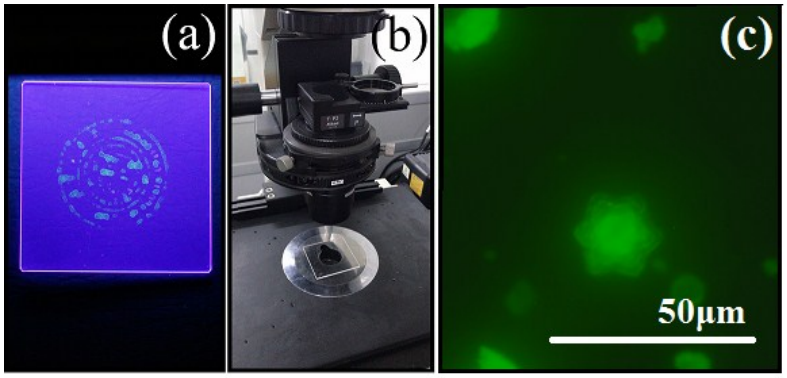

Fig. S8 The pattern made by GO-L-Tb printed on the quartz plate (a), quartz sheet on a fluorescence microscope (b), six-petal shape in GO-L-Tb in the pattern observed under fluorescence microscope.