Supporting Information for

An acid-chromic luminescent lanthanide metallogel for time-dependent information encryption and anti-counterfeiting

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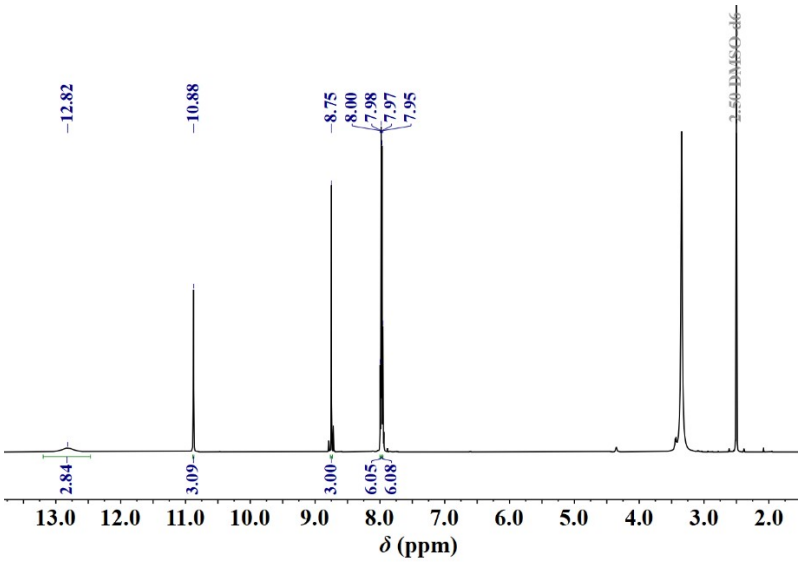

Fig. S1. The ^{1}H NMR spectrum of H_3L.

Table S1. Gelation tests of H_3L/Tb^{3+} in different mixed solvents

Results v/v / Solvents	9/1	8/2	7/3	6/4	5/5	4/6	3/7	2/8	1/9
DMF/CH_3OH	TS	TS	TS	TS	TS	TS	TS	TS	TS
DMF/H_2O	TS	TS	G	G	G	G	G	G	TS
DMSO/H_2O	TS	TS	TS	TS	G	G	G	G	G
DMF/CH_3CH_2OH	TS	TS	TS	TS	TS	TS	TS	TS	TS
DMSO/CH_3OH	TS	TS	TS	TS	TS	TS	TS	TS	TS
DMSO/CH_3CH_2OH	TS	TS	TS	TS	TS	TS	TS	TS	TS

G = gel; TS = turbid solution. C_{H_3L}= 0.02 mol/L; $C_{Tb^{3+}}$=0.02 mol/L; C_{NaOH}= 0.04 mol/L.

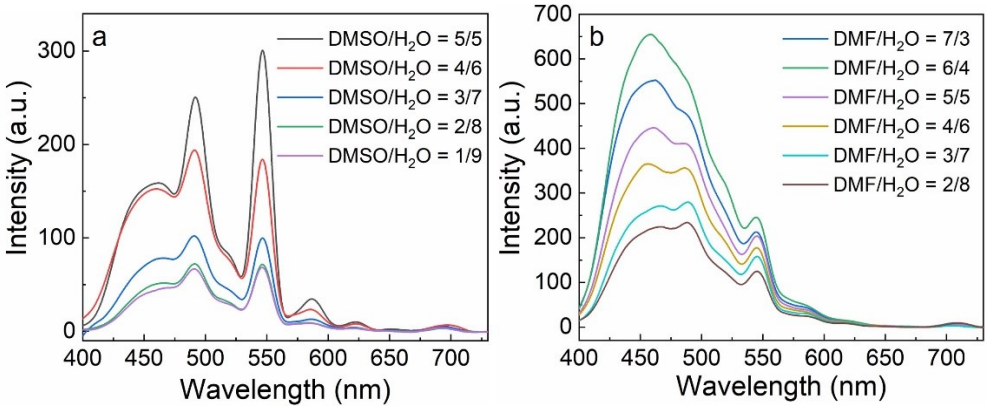

Fig. S2. The influence of the mixed solvents of (a) DMSO/H_2O and (b) DMF/H_2O on the luminescence of H_3L/Tb^{3+} (λ_{ex}=344 nm).

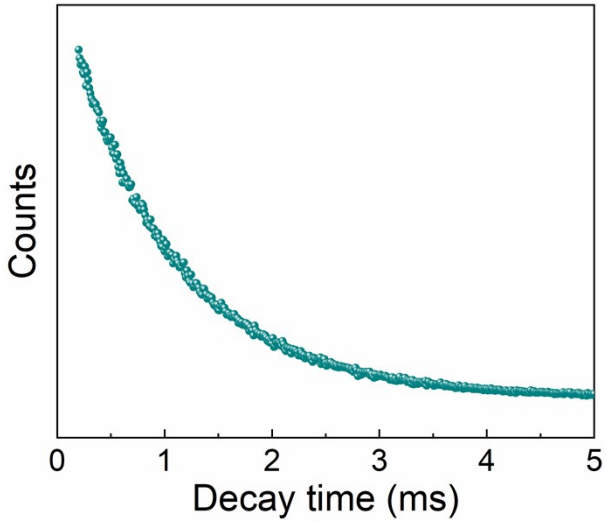

Fig. S3. The luminescence decay curve of the H_3L/Tb^{3+} gel (λ_{ex} = 344 nm and λ_{mon} = 546 nm)

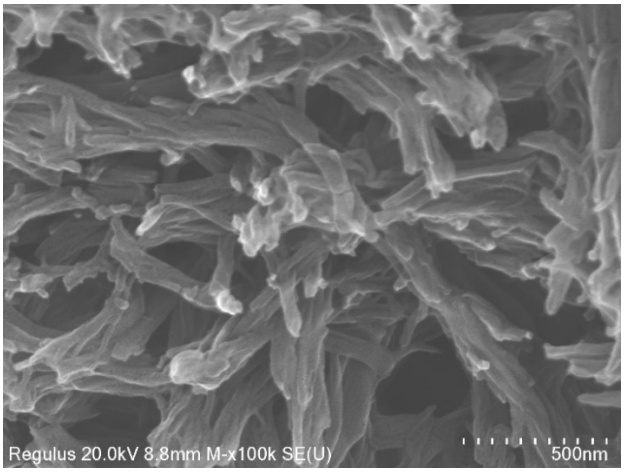

Fig. S4. SEM image of the dried product of H_3L.

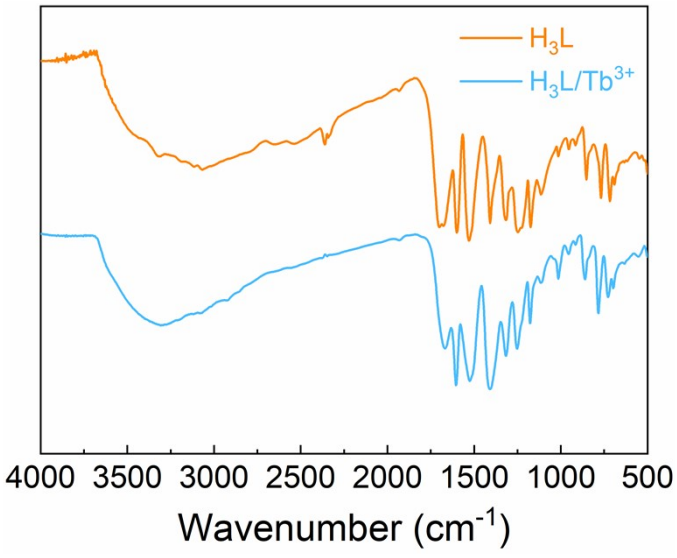

Fig. S5. FT-IR spectra of the H_3L and the H_3L/Tb^{3+} xerogel.

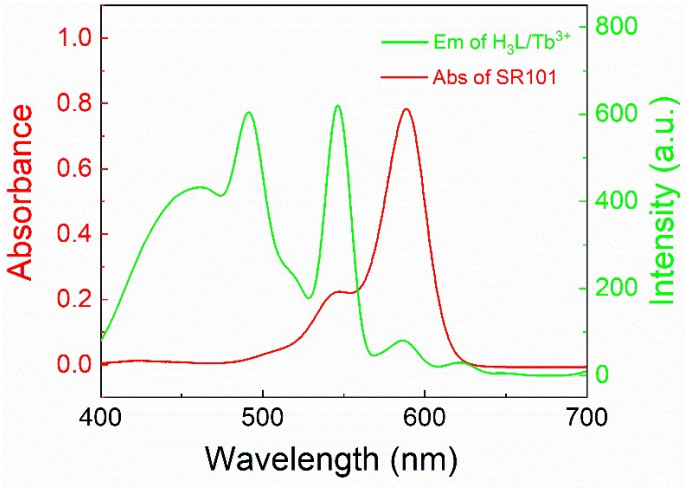

Fig. S6. The adsorption spectra of SR101 and the emission spectra of H_3L/Tb^{3+}.

Table S2. Analyzed lifetime data for Tb^{3+} in H_3L/Tb^{3+} gel and SR101 containing H_3L/Tb^{3+} gel with variable SR101 concentration.

SR101 (μM)	Lifetime (μs)	Average lifetime (μs)	Energy transfer efficiency (%)
0	τ_1=731.99; B_1=1654.21 τ_2=1142.92; B_2=3143.99 ^{2} =1.042	1039.35	0
2.5	τ_1=594.49; B_1=1233.18 τ_2=1110.34; B_2=3513.61 ^{2} =1.132	1028.74	1.02
5	τ_1=539.07; B_1=1306.95 τ_2=1079.34; B_2=3307.34 ^{2} =1.052	990.29	4.72
10	τ_1=424.50; B_1=1274.34 τ_2=1016.59; B_2=3337.56 ^{2} =1.152	935.17	10.02
15	τ_1=383.40; B_1=1407.10 τ_2=991.30; B_2=3195.78 ^{2} =1.125	902.85	13.13
25	τ_1=355.32; B_1=1472.89 τ_2=966.68; B_2=3016.09 ^{2} =1.091	873.64	15.94
35	τ_1=310.26; B_1=1709.80 τ_2=890.17; B_2=2735.85 ^{2} =1.171	786.44	24.33
70	τ_1=217.37; B_1=2044.86	620.63	40.29

	τ_2=741.43; B_2=2001.27 ^{2} =1.119		

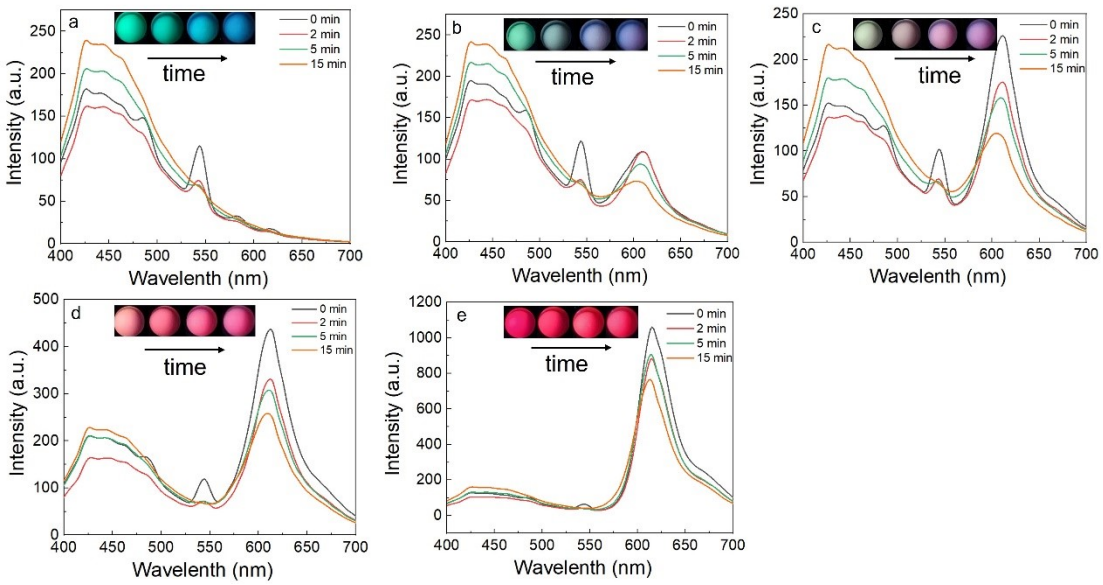

Fig. S7. Changes of emission spectra and photographs of SR101-doped H_3L/Tb^{3+} gels after spray of glucono-δ-lactone (0.2 mol/L). (a) SR101 = 0 μM, (b) SR101 = 5 μM, (c) SR101 = 10 μM, (d) SR101 = 25 μM, (e) SR101 = 70 μM.