

## Supporting Information

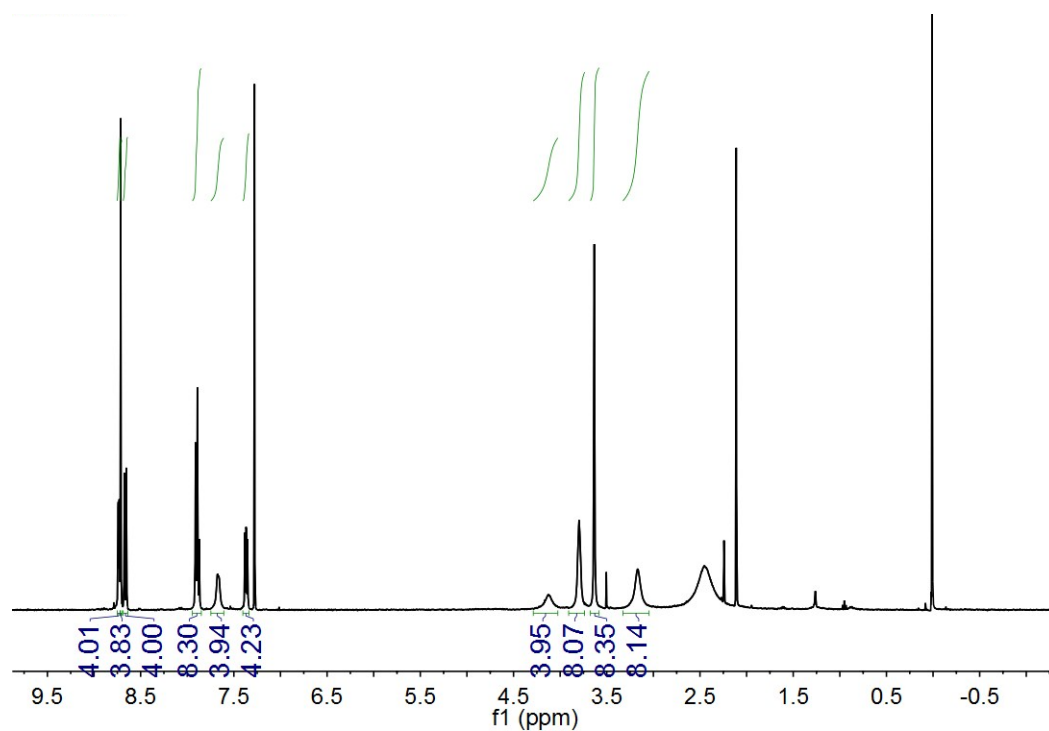
### **Luminescence Modulation by Cation- $\pi$ Interaction in a Lanthanide Assembly: Implications for Potassium Detection**

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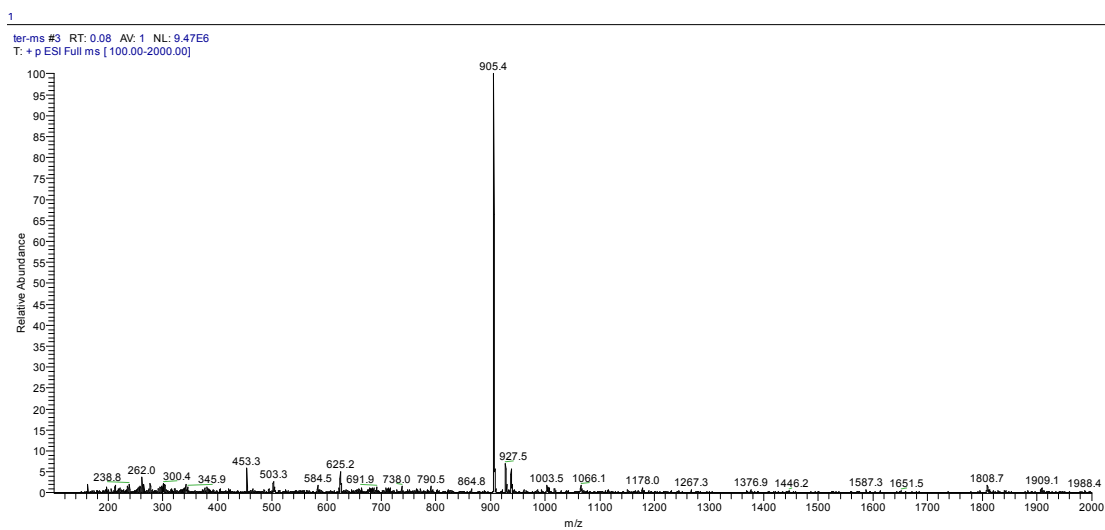
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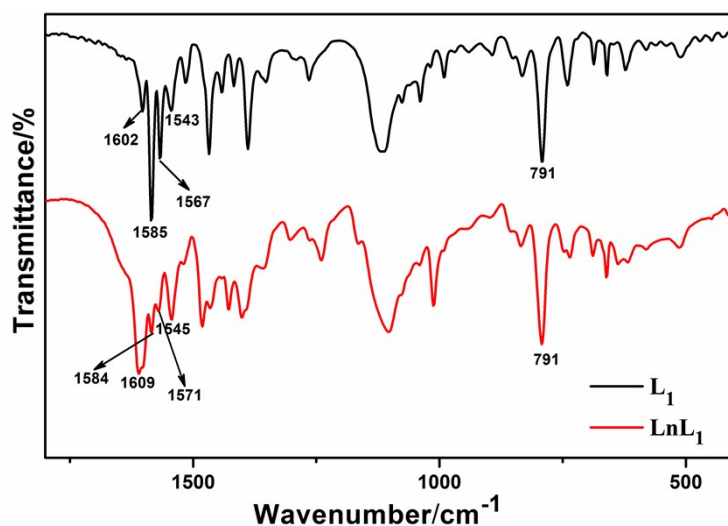
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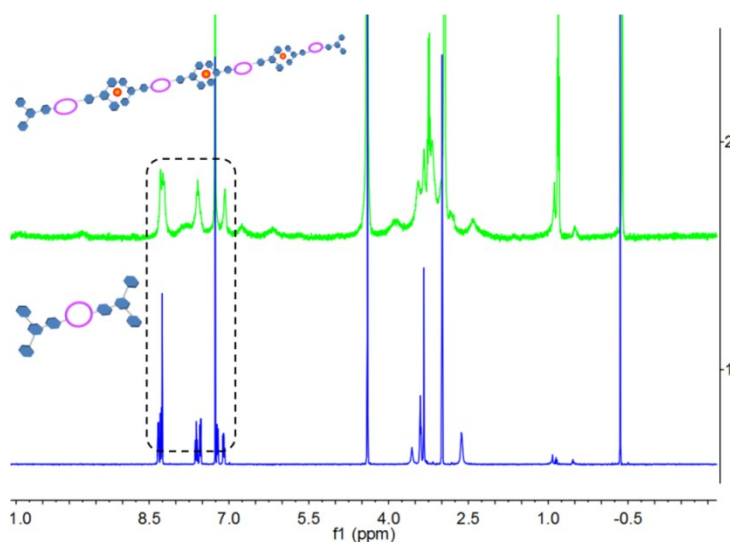
**Figure S1.**  $^1\text{H}$  NMR spectrum of  $\text{L}_1$  ( $\text{CDCl}_3$ , 400 MHz, 25  $^\circ\text{C}$ )



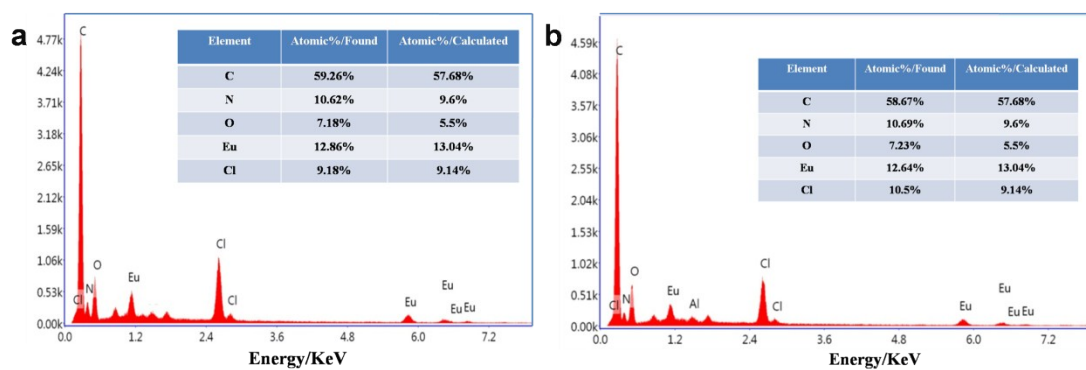
**Figure S2.** The ESI-MS spectrum of  $\text{L}_1$ .



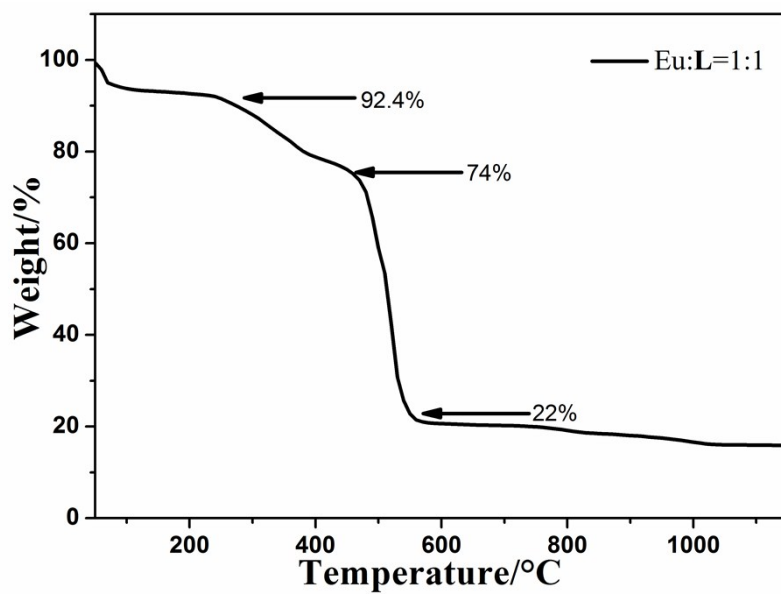
**Figure S3.** FT-IR spectra of  $L_1$  and  $LnL_1$ .



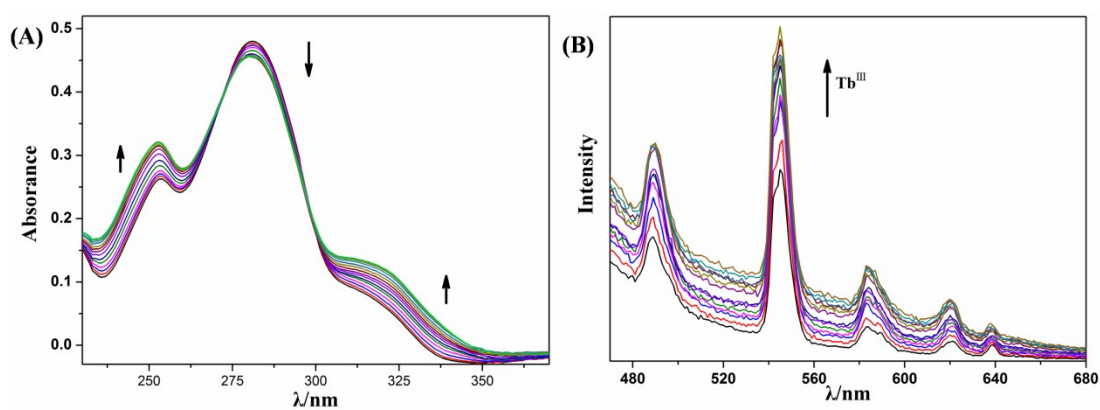
**Figure S4.**  $^1\text{H}$  NMR spectrum of  $L_1$  (1) and  $LnL_1$  (2) ( $Ln=\text{Eu}$ ,  $\text{Tb}$ ,  $\text{Eu/Tb}$ ) ( $\text{CD}_3\text{OD}/\text{CDCl}_3 = 1:1$ , 400 MHz, 25 °C).



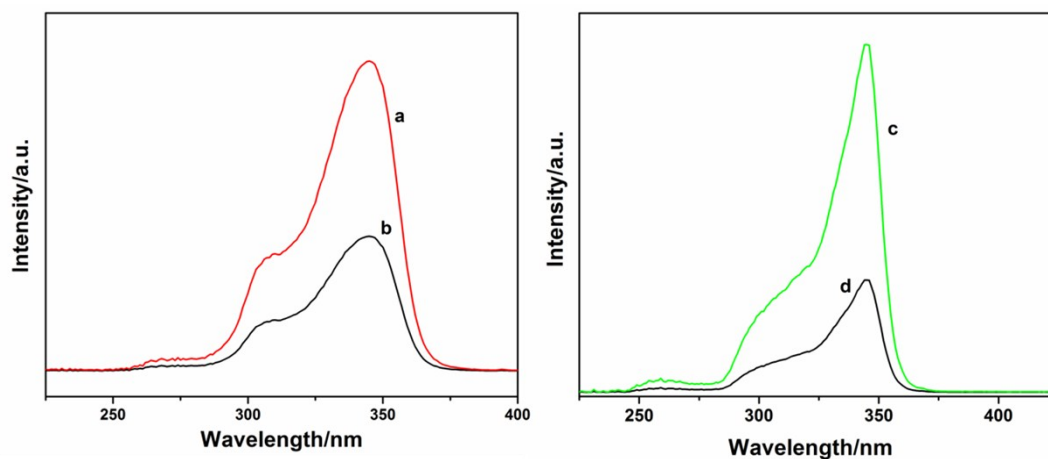
**Figure S5.** EDX spectra of  $\text{Eu}L_1$  in MeOH solution (a) and on silicon plate surface (b). The tables are the quantitative analysis of the elements in the material (without H).



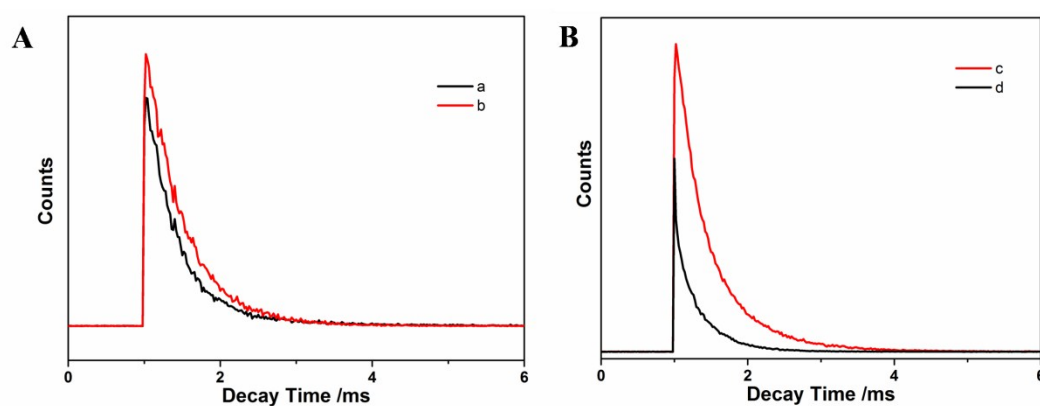
**Figure S6.** TG analysis of the  $\text{Eu}\cdot\text{L}_1$ .



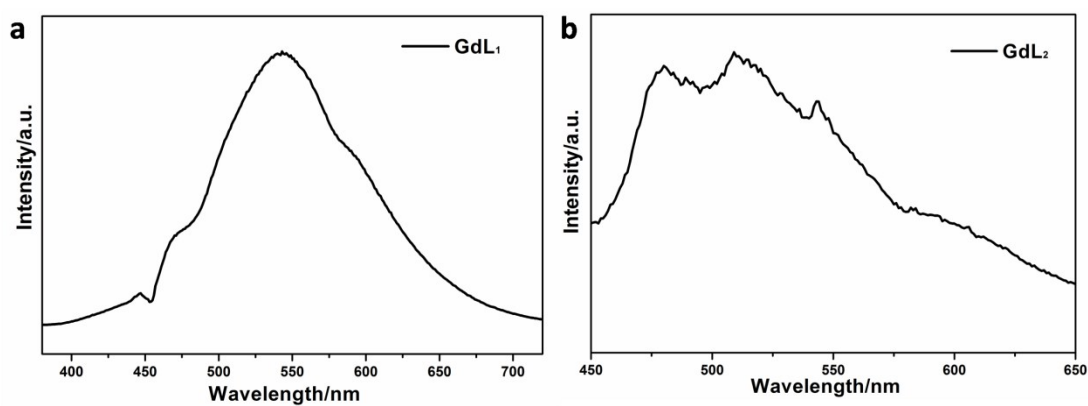
**Figure S7.** Changes in A) the absorption, B) the luminescence emission spectra of  $\text{L}_1$  (0.01 mM) upon titrating with  $\text{TbCl}_3\cdot 6\text{H}_2\text{O}$  (0→1.5 equivalents) in dichloro/methanol (1:1 v/v) at 298 K.



**Figure S8.** The luminescence excitation spectra of  $\text{Eu-L}_1$  (a),  $\text{Eu-L}_2$  (b) (monitored at 617 nm); and  $\text{Tb-L}_1$  (c),  $\text{Tb-L}_2$  (d) (monitored at 545 nm).



**Figure S9.** The decay curves of  $\text{Ln}^{3+}$  complexes dissolved in MeOH solution: (a)  $\text{Eu-L}_2$ , (b)  $\text{Eu-L}_1$  (excited at 345 nm and monitored at 617 nm); (c)  $\text{Tb-L}_1$ , (d)  $\text{Tb-L}_2$  (excited at 345 nm and monitored at 545 nm).



**Figure S10.** The luminescence spectra of  $\text{Gd(III)}$  complexes:  $\text{Gd-L}_1$  (a);  $\text{Gd-L}_2$  (b).