Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Supporting Information

A terbium (III)-based coordination polymer for selective and sensitive sensing of nitroaromatics and ferric ion: synthesis, crystal structure and photoluminescence properties

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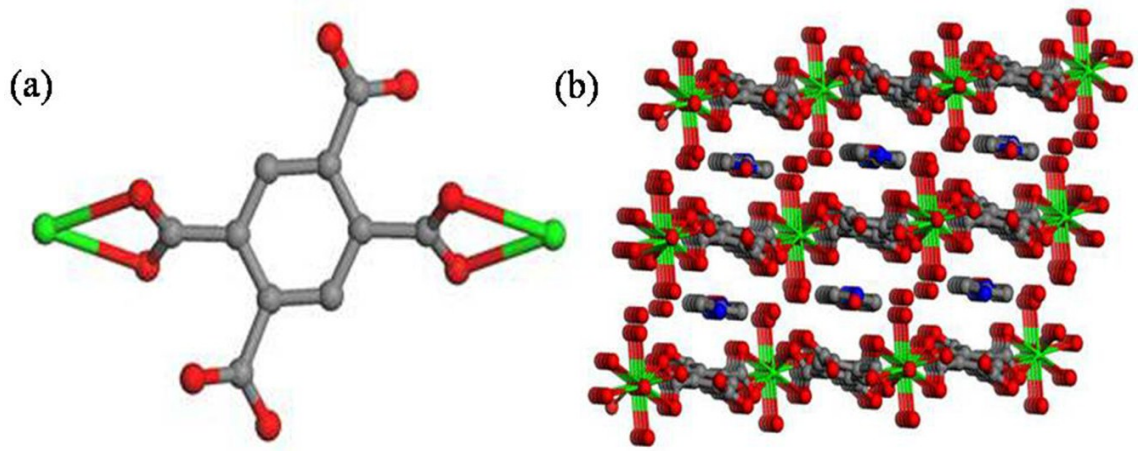

Fig. S1 View of coordination mode of BTEC (a), and interlayer channel (b) in **1**.

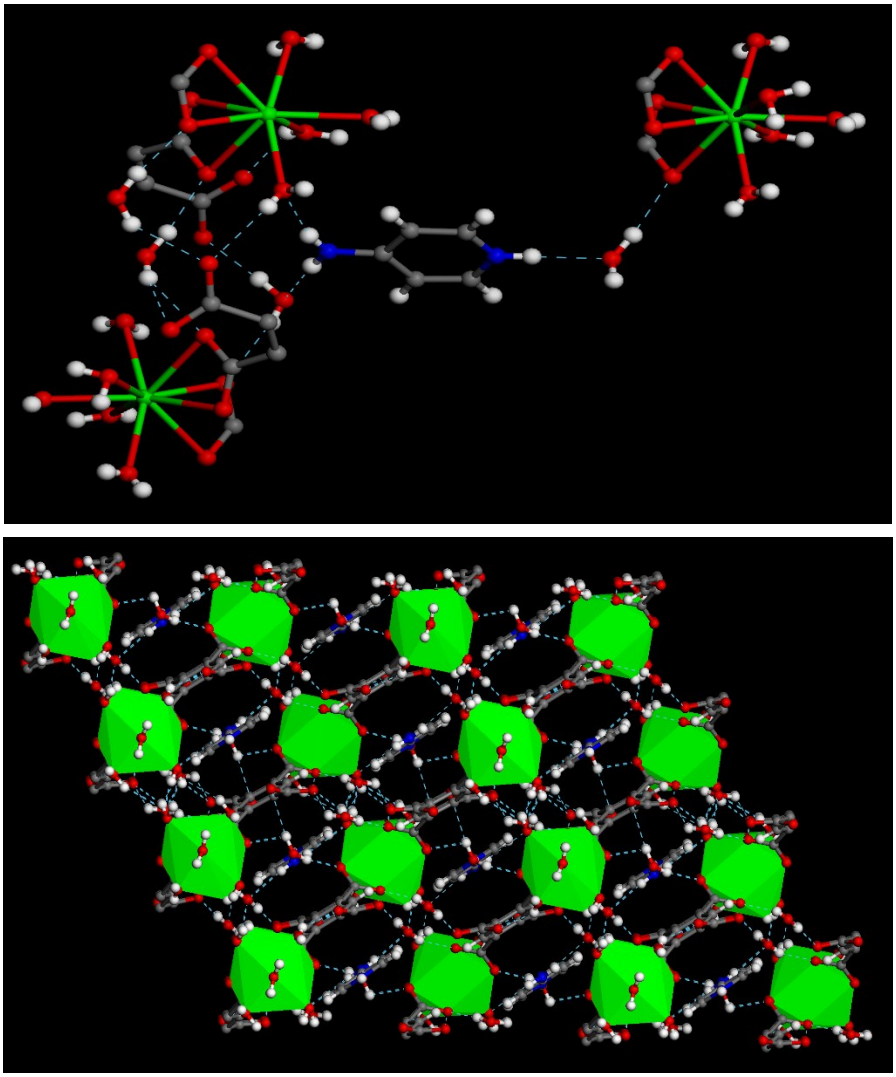

Fig. S2 Hydrogen bonds in **1.**

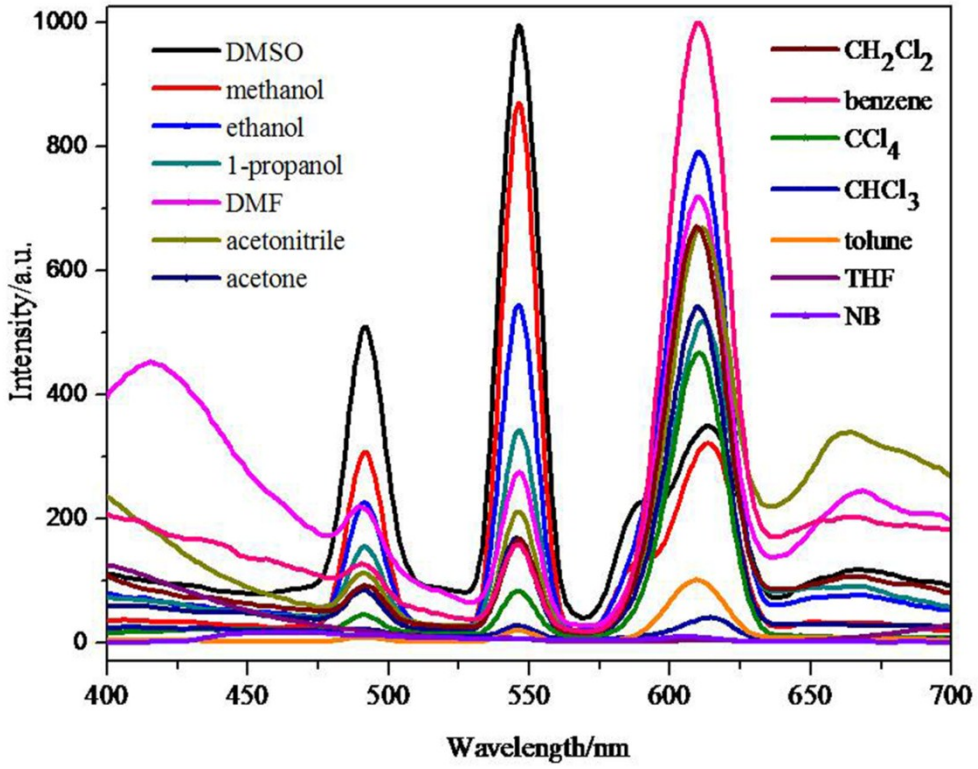

Fig. S3 Luminescence spectra of **1** excited at 290 nm in different organic solvents.

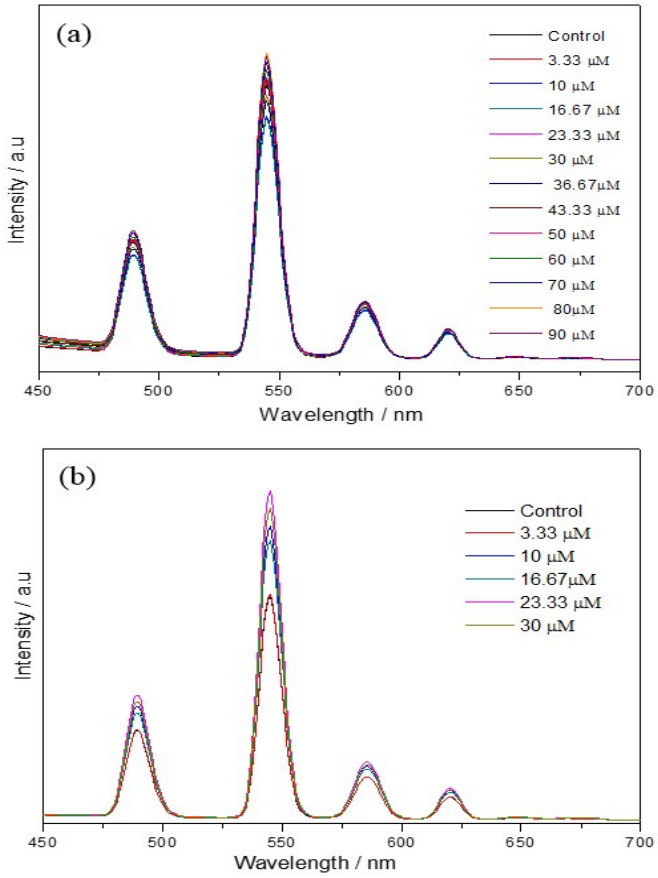

Fig. S4 Photoluminescence spectra of **1** interacting with 2-NP (a) and 3-NP (b).

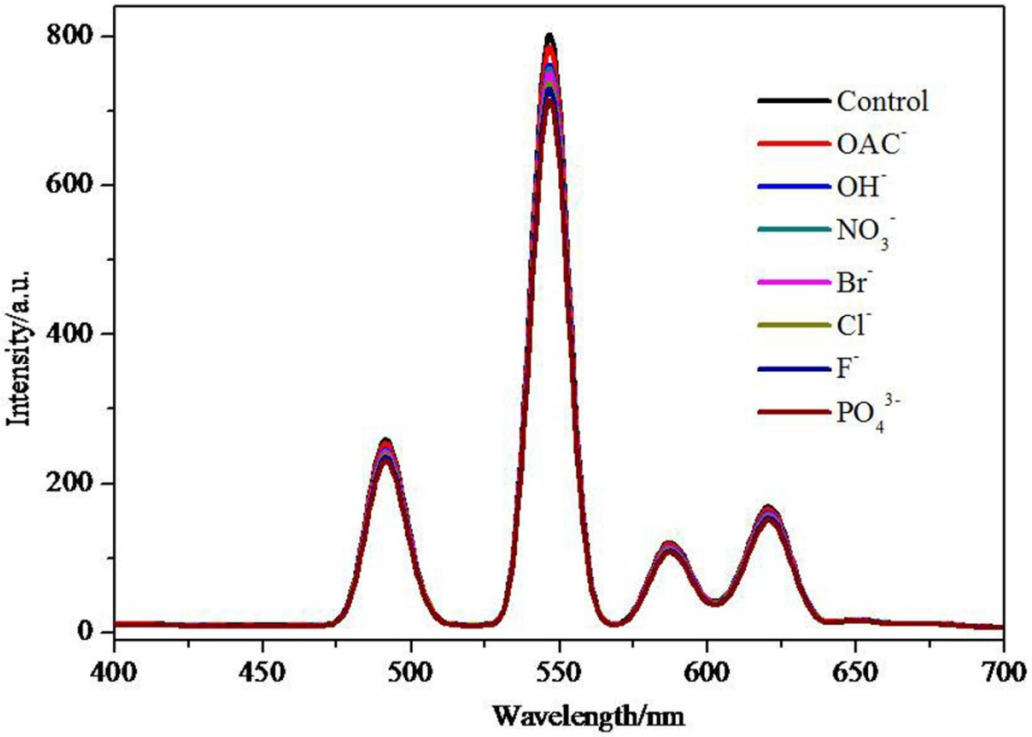

Fig. S5 Luminescence spectra of **1** interacting with different anions under the same conditions.

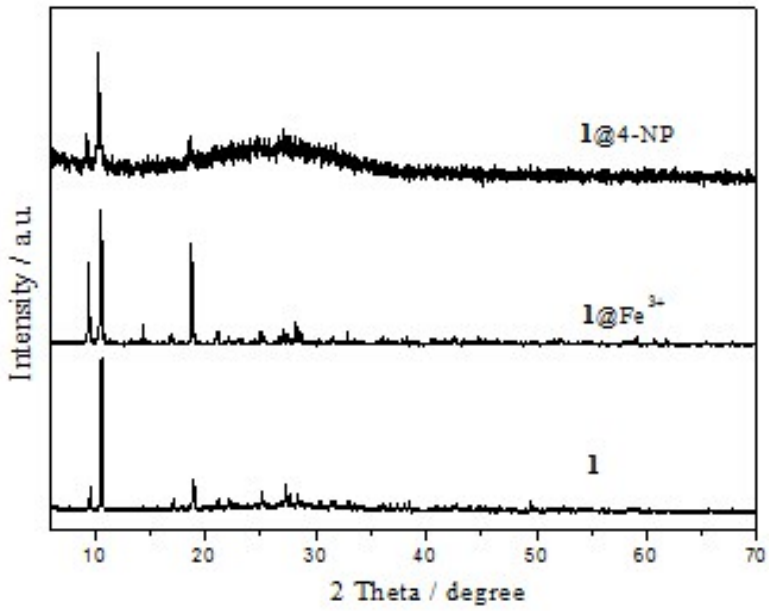

Fig. S6 XRD patterns of **1** before and after treated with 4-NP and Fe^{3+} aqueous solution

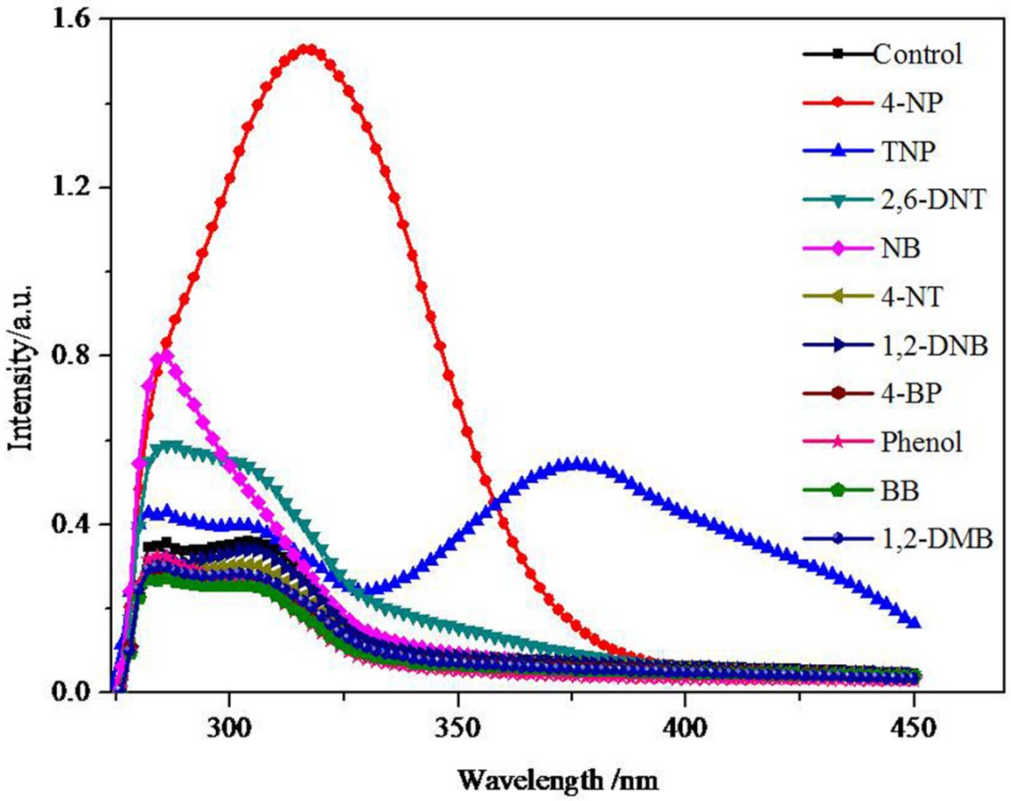

Fig. S7 UV-Vis absorption spectra of **1** after treated with the same volumes (240 μL) of different compounds (1 mM).

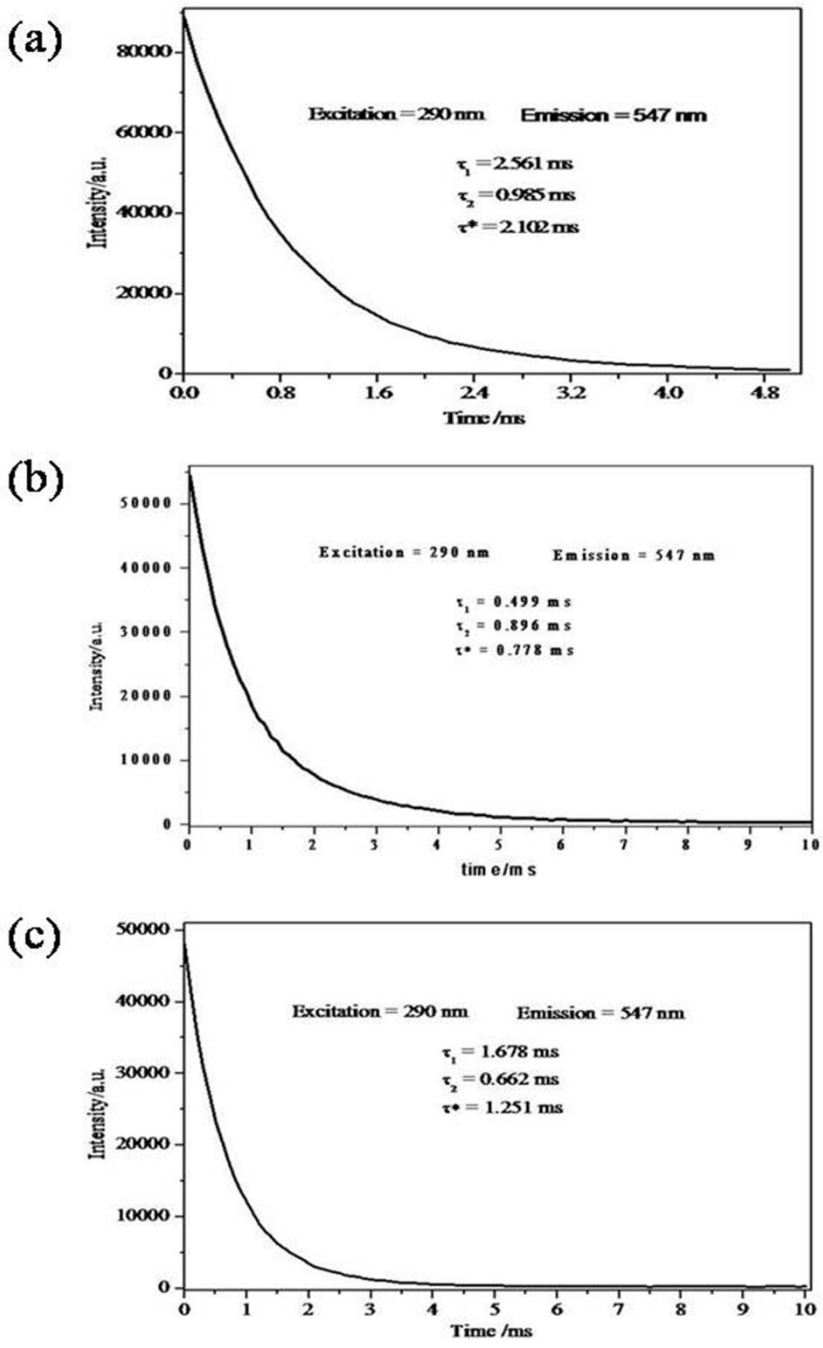

Fig. S8 Fluorescence lifetime curves of **1** dispersed in DMSO (a), after treated with 4-NP (b) and Fe^{3+} aqueous solution (c).

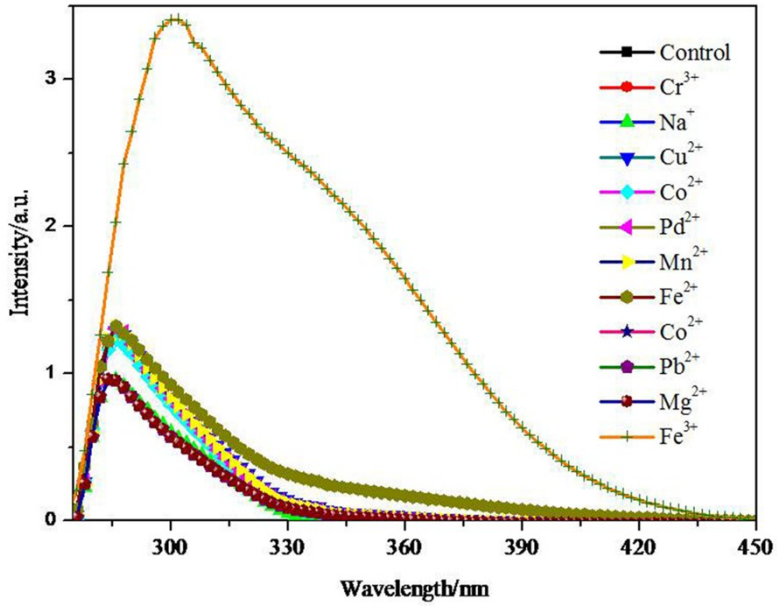

Fig. S9 UV-Vis absorption spectra of **1** after treated with the same volumes (185 μL) of different metal ions (1 mM).

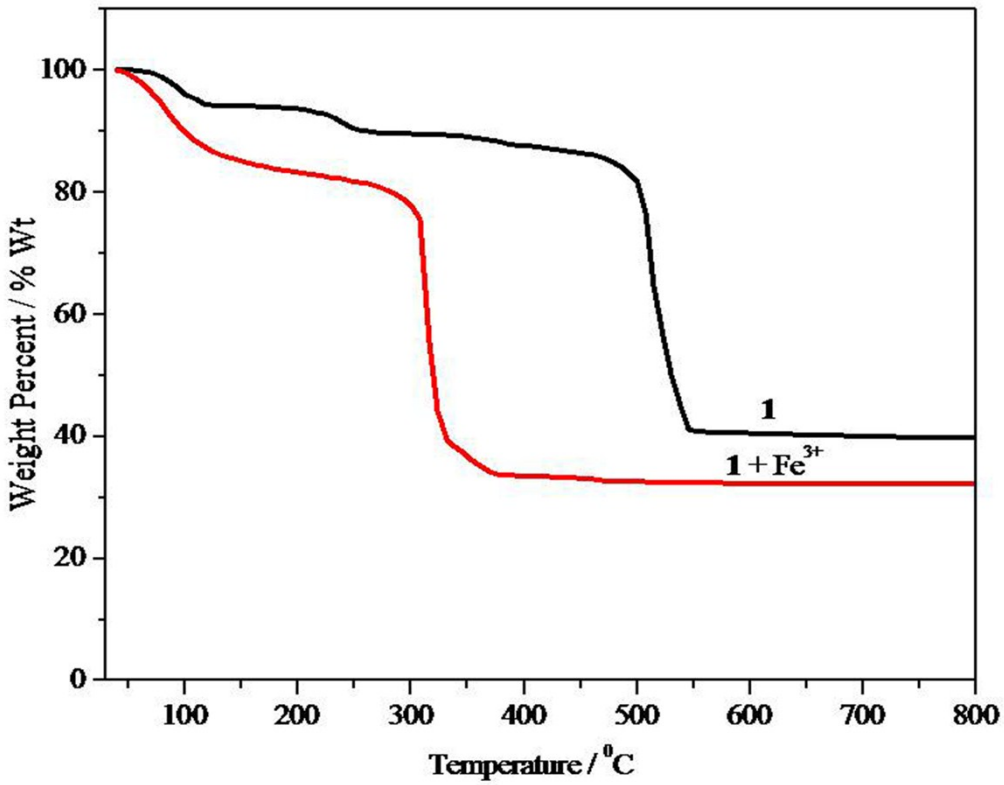

Fig. S10 TGA analysis of **1** before and after immersed in Fe^{3+} aqueous solution.

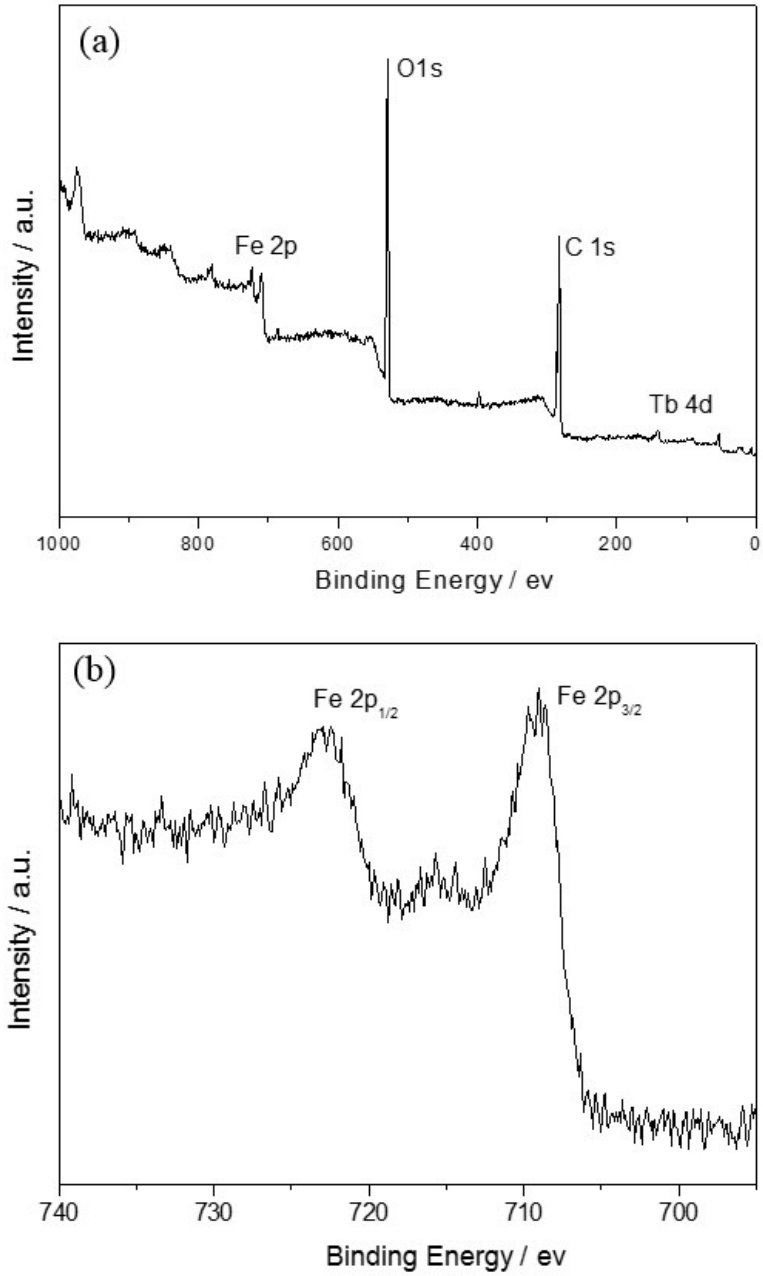

Fig. S11 XPS spectra of compound **1** after immersed in Fe^{3+} aqueous solution**.**

Table S1 Crystal data and structure refinement for **1**.

Empirical formula	$C_{15}H_{25}N_2O_{16}Tb$
Formula weight	648.30
Crystal system	Monoclinic, *P*2(1)/c
a (Å)	13.0587(7)
b (Å)	11.2253(6)
c (Å)	17.2297(8)
α(°)	90
β (°)	120.987
γ(°)	90
Volume (Å^3)	2165.21(19)
Z	4
D_{Calc}（mg/m^{-3}）	1.989
μ (mm^{-1})	3.353
$F_{(000)}$	1288
R_{int}	0.0234
GOF on F^2	1.039
R_1 [$I>2\sigma(I)$]*	0.0255
wR_2 [$I>2\sigma(I)$]*	0.0631
R_1 (all data) *	0.0336
wR_2 (all data)*	0.0690

*$R_1 = \Sigma||F_o| - |F_c||/\Sigma|F_o|$; $wR_2 = \{\Sigma[w(F_o^2-F_c^2)^2]/\Sigma[w(F_o^2)]^2\}^{1/2}$

Table S2 Selected bond lengths [Å] and angles [°] for **1**.

Tb(1)-O(10)	2.366(2)	O(9)-Tb(1)-O(6)	121.22(7)
Tb(1)-O(13)	2.391(2)	O(1)-Tb(1)-O(6)	77.61(8)
Tb(1)-O(11)	2.390(2)	O(10)-Tb(1)-O(12)	68.98(7)
Tb(1)-O(9)	2.397(2)	O(13)-Tb(1)-O(12)	68.21(7)
Tb(1)-O(1)	2.4332(19)	O(11)-Tb(1)-O(12)	78.55(7)
Tb(1)-O(6)	2.4343(19)	O(9)-Tb(1)-O(12)	79.61(8)
Tb(1)-O(12)	2.470(2)	O(1)-Tb(1)-O(12)	142.46(7)
Tb(1)-O(5)	2.5317(19)	O(6)-Tb(1)-O(12)	139.92(7)
Tb(1)-O(2)	2.5532(19)	O(10)-Tb(1)-O(5)	139.32(7)
O(10)-Tb(1)-O(13)	137.12(8)	O(13)-Tb(1)-O(5)	69.19(7)
O(10)-Tb(1)-O(11)	93.48(8)	O(11)-Tb(1)-O(5)	125.23(7)
O(13)-Tb(1)-O(11)	80.59(8)	O(9)-Tb(1)-O(5)	69.72(7)
O(10)-Tb(1)-O(9)	77.67(8)	O(1)-Tb(1)-O(5)	73.15(7)
O(13)-Tb(1)-O(9)	92.26(8)	O(6)-Tb(1)-O(5)	52.19(6)
O(11)-Tb(1)-O(9)	158.13(9)	O(12)-Tb(1)-O(5)	125.48(6)
O(10)-Tb(1)-O(1)	76.96(7)	O(10)-Tb(1)-O(2)	69.90(7)
O(13)-Tb(1)-O(1)	142.14(7)	O(13)-Tb(1)-O(2)	141.21(7)
O(11)-Tb(1)-O(1)	119.76(7)	O(11)-Tb(1)-O(2)	68.65(6)
O(9)-Tb(1)-O(1)	78.12(7)	O(9)-Tb(1)-O(2)	124.71(7)
O(10)-Tb(1)-O(6)	143.81(7)	O(1)-Tb(1)-O(2)	52.04(6)
O(13)-Tb(1)-O(6)	76.55(7)	O(6)-Tb(1)-O(2)	74.21(6)
O(11)-Tb(1)-O(6)	77.42(7)	O(12)-Tb(1)-O(2)	124.62(6)
O(5)-Tb(1)-O(2)	109.89(7)		