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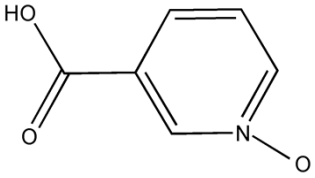
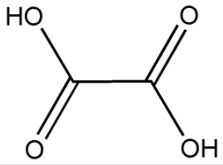
Supporting Information

Two series of reactants' ratio-dependent lanthanide organic frameworks derived from nicotinic acid N-oxide and oxalate: Synthesis, crystal structures and luminescence properties

Yanyan Yu, Lijuan Zhang, Yunshan Zhou* and Zareen Zuhra*

State Key Laboratory of Chemical Resource Engineering, Institute of Science, Beijing University of Chemical Technology, Beijing 100029, P. R. China

Chart S1 The ligands' structural formulae and abbreviations used in the present work

Name of ligands	Structural formulae	Abbreviations
Nicotinc N-oxide		HNNO
Oxalic aid		H_2OX

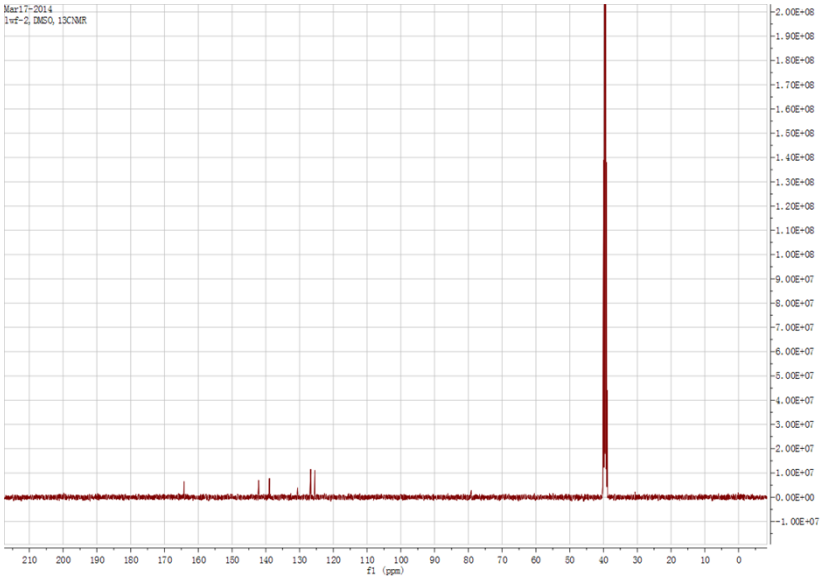


Fig. S1 The ^{13}C spectrum of HNNO in DMSO.

Table S1 Selected bond lengths [Å] and angles [°] for compound **1**

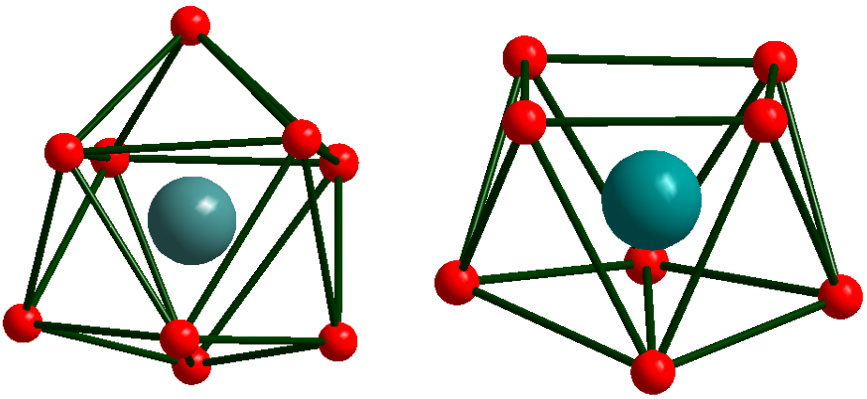
Compound 1			
Bond	Distance	Bond	Distance
Eu(1)-O(4)	2.486(3)	Eu(1)-O(5) #3	2.447(3)
Eu(1)-O(3)	2.421(3)	Eu(1)-O(8)	2.454(3)
Eu(1)-O(6)	2.428(3)	Eu(1) -O(9)	2.528(3)
Eu(1)-O(1)#1	2.530(3)	Eu(1)-O(7)#4	2.468(3)
Eu(1)-O(2)#2	2.355(3)	Eu(1) -C(8)	3.246(3)
Moiety	Angle	Moiety	Angle
O(1)#1-Eu(1)-O(4)	73.32(10)	O(8) -Eu(1)-O(7) #3	93.69(11)
O(9) -Eu(1)-O(4)	120.53(10)	O(8) -Eu(1)-C(8)	73.52(10)
C(7)#2-Eu(1)-O(4)	46.97(10)	O(9) -Eu(1)-O(1)#1	137.94(11)
C(8) -Eu(1)-O(4)	139.67(9)	O(9) -Eu(1)-C(7)#2	136.16(10)
O(4) -Eu(1)-O(3)	68.94(10)	O(9) -Eu(1)-C(8)	97.59(11)
O(6) -Eu(1)-O(3)	132.74(10)	O(7)#3-Eu(1)-O(4)	137.77(10)
O(1)#1-Eu(1)-O(3)	141.94(10)	O(7) #3-Eu(1)-O(1)#1	79.20(10)
O(5)#2-Eu(1)-O(3)	77.17(10)	O(7) #3-Eu(1)-O(9)	64.55(10)
O(8) -Eu(1)-O(3)	70.62(11)	O(7) #3-Eu(1)-O(4)	157.74(9)
O(9) -Eu(1)-O(3)	69.63(11)	O(7)#3-Eu(1)-C (7)#2	46.82(10)
C(7)#2-Eu(1)-O(3)	67.10(10)	O(7)#3-Eu(1)-C(8)	113.32(10)
O(7)#3-Eu(1)-O(3)	134.18(10)	C(7) -O(4)- Eu(1)	118.1(3)
C(8) -Eu(1)-O(3)	144.11(10)	C(6)- O(3)- Eu(1)	134.0(3)
O(4) -Eu(1)-O(6)	130.10(9)	C(8)- O(6)- Eu(1)	120.7(3)
O(1)#1-Eu(1)-O(6)	71.21(10)	N(1)-O(1)- Eu(1) #5	126.7(3)

Symmetry transformations used to generate equivalent atoms: (#1) +x, +y, 1+z; (#2) 1-*x*, 1-y, 1-*z*; (#3) 1-*x*, 2-y, 1-*z*;(#4) -x, 1-y, 2-z; (#5) +*x*, +y, -1+*z*;.

Table S2 Selected bond lengths [Å] and angles [°] for compound **7**

Compound 7			
Bond	Distance	Bond	Distance
Tb(1)-O(3)	2.318(3)	Tb(1)-O(7)#1	2.399(3)
Tb(1)-O(8)	2.417(3)	Tb(1)-O(9)	2.426(3)
Tb(1)-O(5)#2	2.380(3)	Tb(1)-O(4)	2.360(3)
Tb(1)-O(1)#4	2.374(3)	O(5)- Tb(1)#2	2.380(3)
Moiety	Angle	Moiety	Angle
O(3)-Tb(1)-O(7))#1	72.58(10)	O(3) -Tb(1)-O(8)	85.38(10)
O(3)- Tb(1)-O(9)	71.68(10)	O(3) - Tb(1)- O(5)#2	143.48(10)
O(3)-Tb(1)-O(4)	84.86(11)	O(3)-Tb(1)-O(2)#3	105.64(11)
O(3)-Tb(1)-O(1)#4	143.13(10)	O(7)#1-Tb(1)-O(8)	67.63(10)
O(7)#1-Tb(1)-O(9)	129.28(10)	O(8)-Tb(1)-O(9)	141.50(10)
O(5)#2-Tb(1)-O(7)#1	140.90(10)	O(5)#2-Tb(1)-O(8)	117.22(10)
O(5)#2-Tb(1)-O(9)	73.31(10)	O(4)-Tb(1)-O(7)#1	132.80(11)
O(4)-Tb(1)-O(8)	69.74(10)	O(4)-Tb(1)-O(9)	77.58(10)
O(4)-Tb(1)-O(5)#2	77.79(11)	O(4)-Tb(1)-O(2)#3	147.01(9)
O(4)-Tb(1)-O(1)#4	112.58(11)	O(2)#3-Tb(1)-O(7)#1	79.93(10)
O(2)#3-Tb(1)-O(8)	140.93(10)	O(2)#3-Tb(1)-O(9)	76.41(11)
O(2)#3-Tb(1)-O(5)#2	75.55(11)	O(2)#3-Tb(1)-O(1)#4	77.76(11)
O(1)#4-Tb(1)-O(7)#1	71.97(10)	O(1)#4-Tb(1)-O(8)	72.06(11)
O(1)#4-Tb(1)-O(9)	141.84(11)	O(1)#4-Tb(1)-O(5)#2	73.36(10)
C(13)-O(8)- Tb(1)	117.2(3)	N(2)-O(4)-Tb(1)	124.3(2)

Symmetry transformations used to generate equivalent atoms: (#1) -x, 1-y, -z; (#2) 1-*x*, 2-y, 1-*z*; (#3) 1-*x*, 1-y, -*z*;(#4) +x, 1+y, +z; (#5) +*x*, -1+y, +*z*.



(a) (b)

Fig. S2 The coordination geometry of Eu in compound **1** (a) and Tb in compound **7** (b).

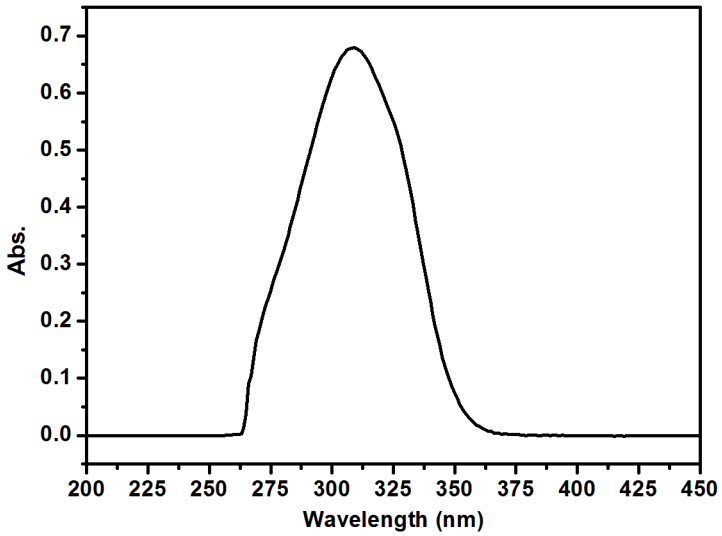


Fig. S3 The UV-Vis spectrum of HNNO in DMF (Concentration: 0.1mmol/L)

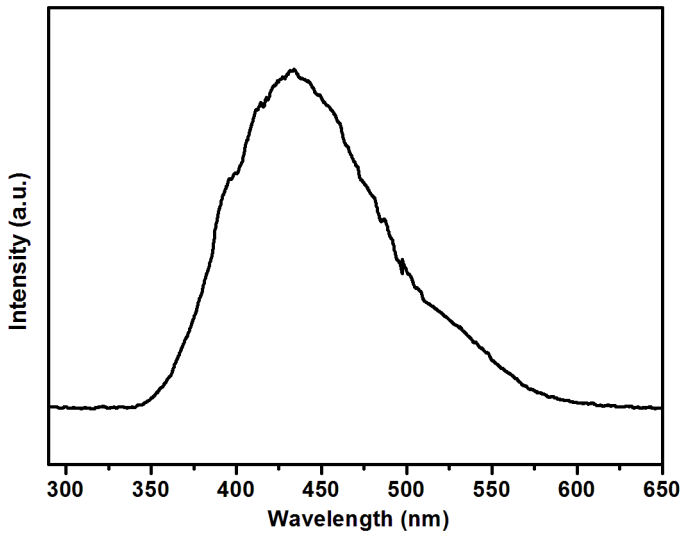


Fig. S4 The phosphorescence spectrum of compound **5** at 77K.