Supplementary Material (ESI) for New Journal of Chemistry

Design of 3-D europium(III)-organic frameworks based on pyridine carboxylate N-oxide and acyclic binary carboxylate: syntheses, structures, and luminescent properties

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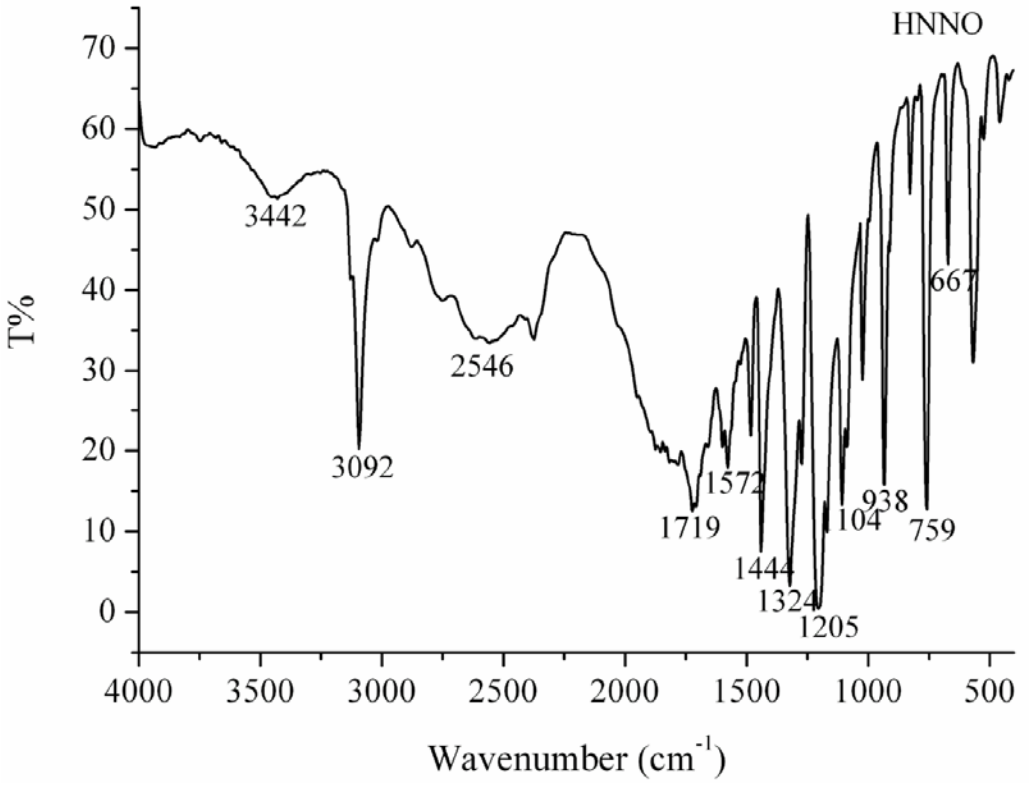


Figure S1 The IR spectrum of HNNO.

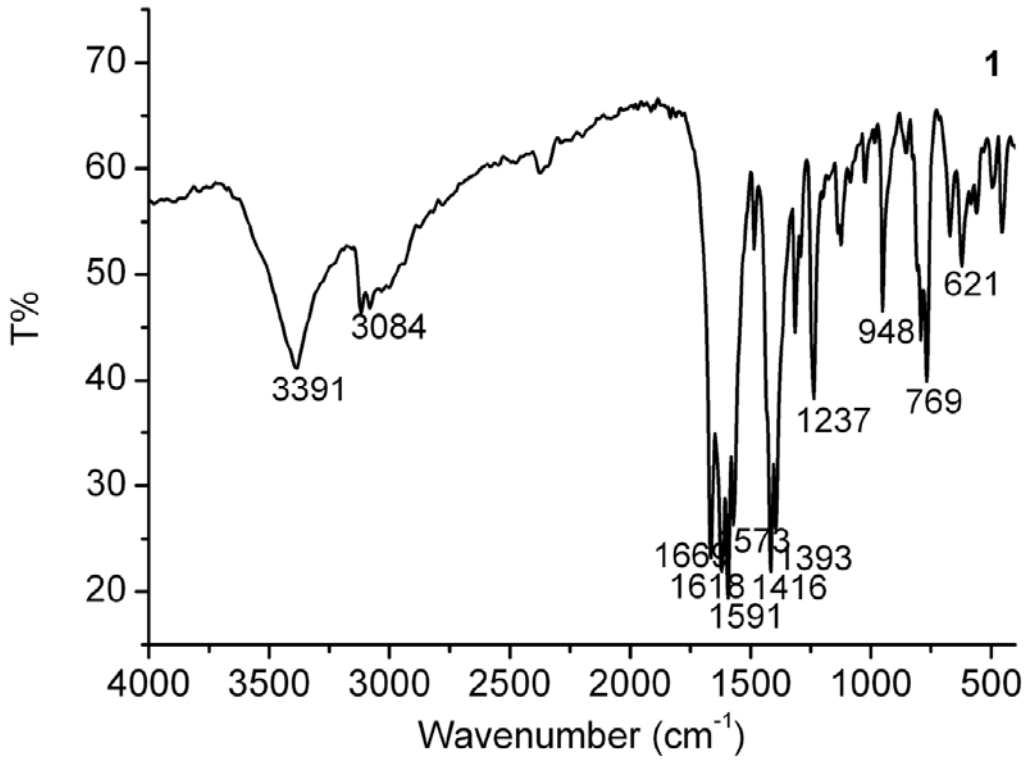


Figure S2 The IR spectrum of **1**.

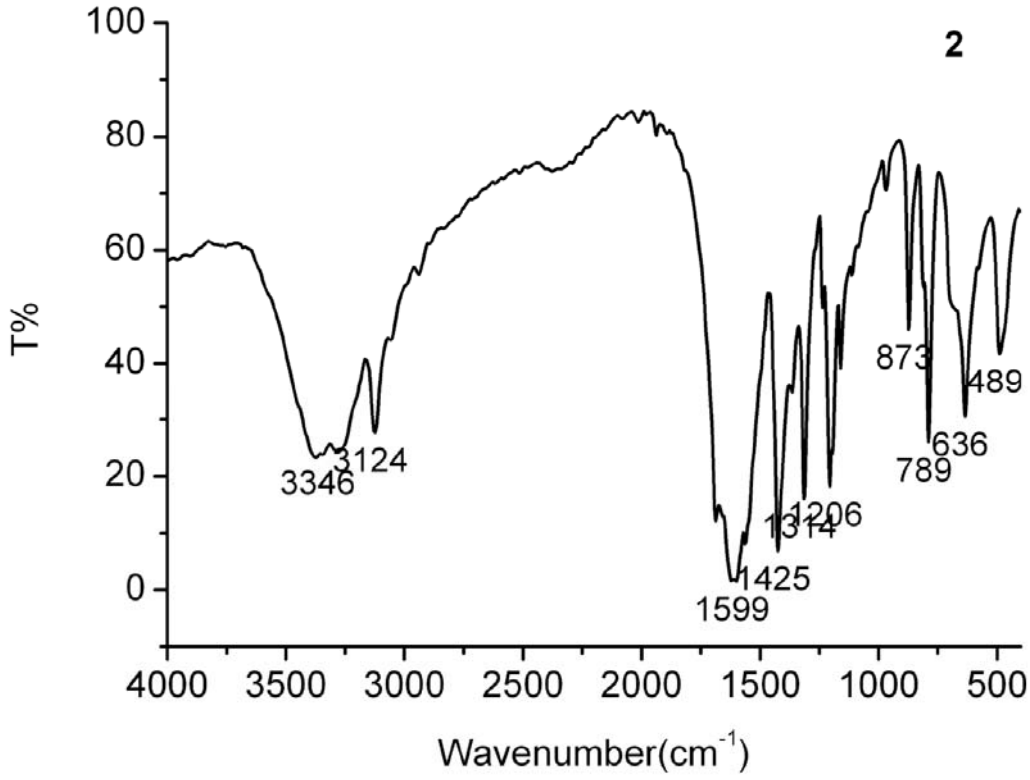


Figure S3 The IR spectrum of **2**.

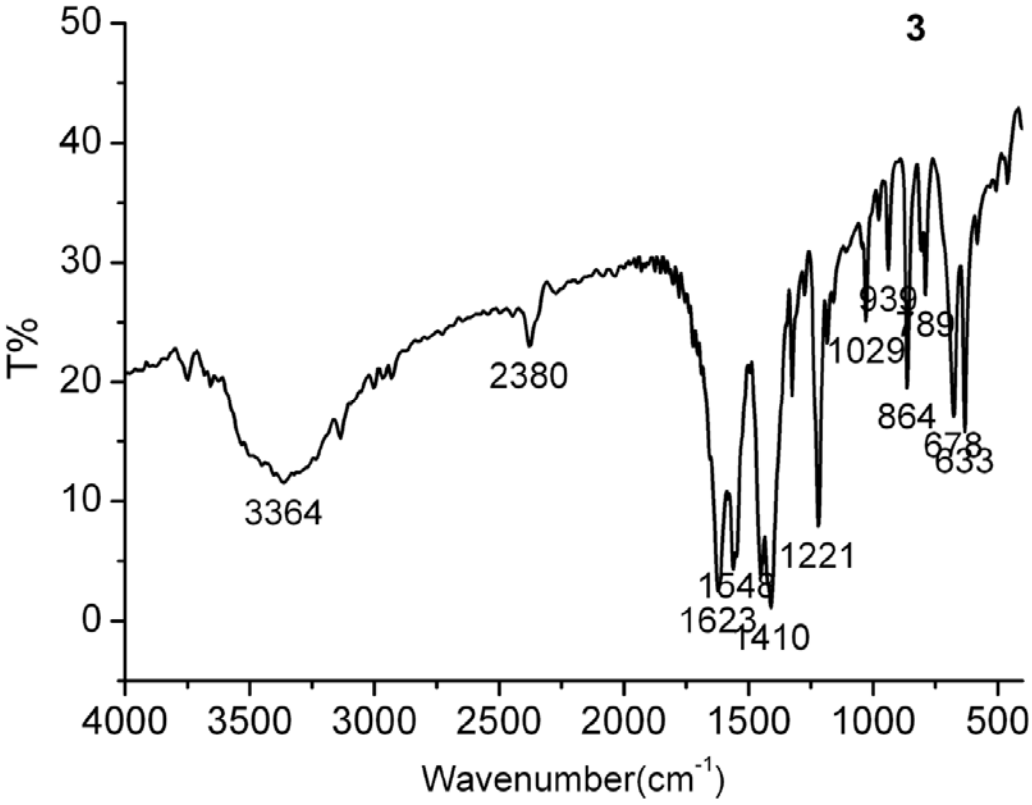


Figure S4 The IR spectrum of **3**.

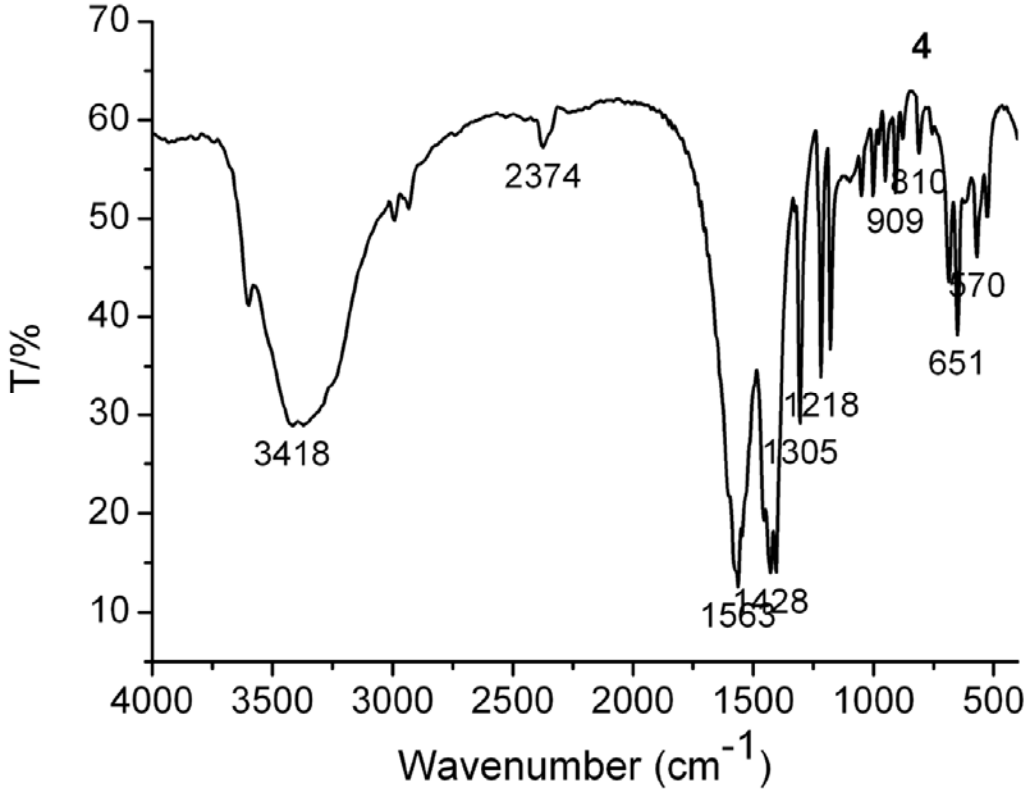
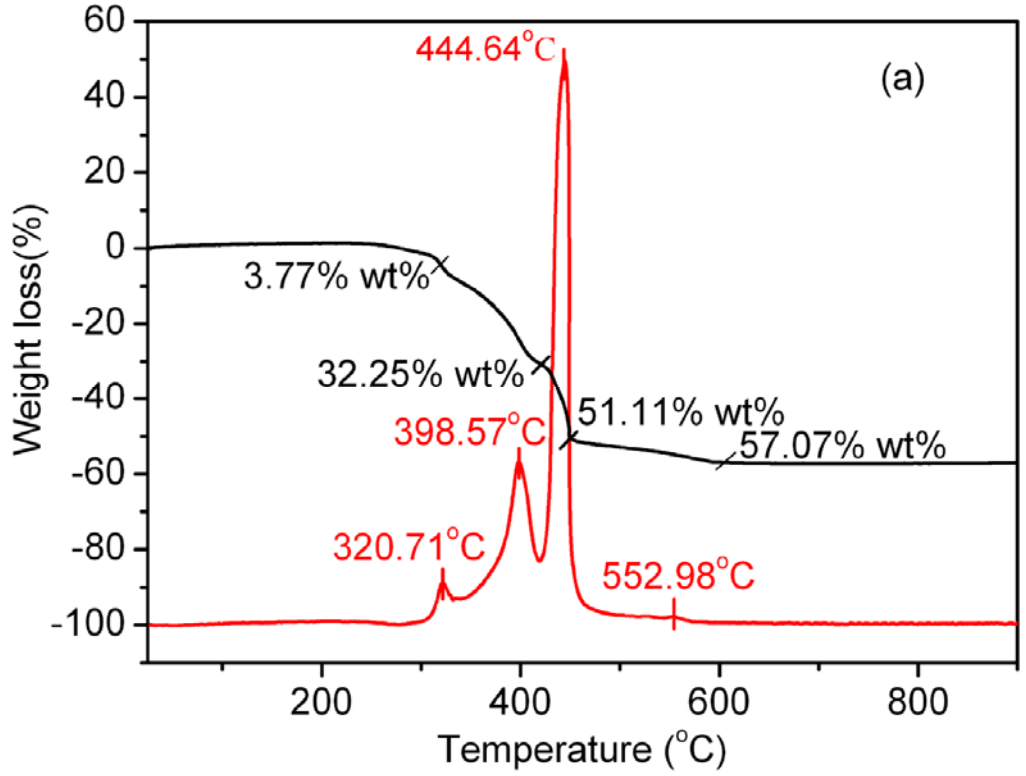


Figure S5 The IR spectrum of **4**.



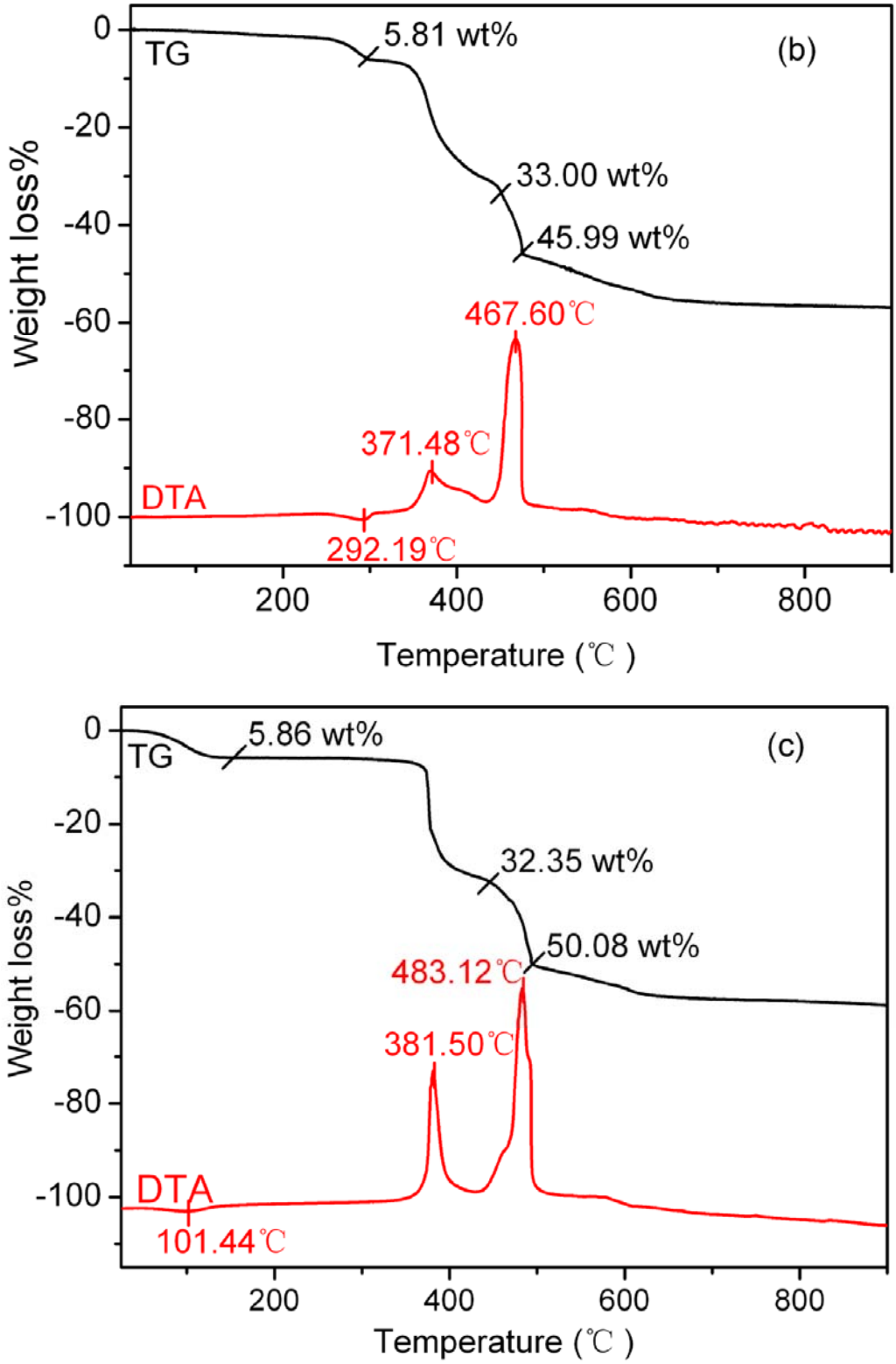


Figure S6 The TG and DTA curves for **1** (a), **2** (b) and **3** (c)

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Table S1 Selected bond lengths(Å) and bond angles(°) for **1**, **2**, **3** and **4**.

1

Eu(1)-O(2)	2.416(2)	Eu(1)-O(7)	2.447(2)
Eu(1)-O(4)	2.389(2)	Eu(1)-O(9)	2.448(2)
Eu(1)-O(6)#3	2.409(2)	Eu(1)-O(5)#1	2.352(2)
Eu(1)-O(1)#2	2.377(2)	Eu(1)-O(8)#4	2.421(2)
O(5)#1-Eu(1)-O(1)#2	85.25(7)	O(2)-Eu(1)-O(8)#4	141.04(7)
O(5)#1-Eu(1)-O(4)	143.78(7)	O(5)#1-Eu(1)-O(7)	85.59(7)
O(1)#2-Eu(1)-O(4)	110.34(7)	O(1)#2-Eu(1)-O(7)	69.68(7)
O(5)#1-Eu(1)-O(6)#3	106.59(7)	O(4)-Eu(1)-O(7)	70.85(7)
O(1)#2-Eu(1)-O(6)#3	147.43(7)	O(6)#3-Eu(1)-O(7)	139.87(7)
O(4)-Eu(1)-O(6)#3	78.11(7)	O(2)-Eu(1)-O(7)	117.79(7)
O(5)#1-Eu(1)-O(2)	142.76(7)	O(8)#4-Eu(1)-O(7)	66.86(7)
O(1)#2-Eu(1)-O(2)	77.57(7)	O(5)#1-Eu(1)-O(9)	71.51(8)
O(4)-Eu(1)-O(2)	73.46(7)	O(1)#2-Eu(1)-O(9)	78.44(7)
O(6)#3-Eu(1)-O(2)	74.97(7)	O(4)-Eu(1)-O(9)	142.12(8)
O(5)#1-Eu(1)-O(8)#4	73.13(7)	O(6)#3-Eu(1)-O(9)	76.99(8)
O(1)#2-Eu(1)-O(8)#4	132.41(7)	O(2)-Eu(1)-O(9)	72.79(8)
O(4)-Eu(1)-O(8)#4	72.44(7)	O(8)#4-Eu(1)-O(9)	129.63(7)
O(6)#3-Eu(1)-O(8)#4	80.10(7)	O(7)-Eu(1)-O(9)	142.08(8)

2

Eu(1)-O(2)#1	2.308(2)	Eu(1)-O(1)	2.450(3)
Eu(1)-O(5)#2	2.381(3)	Eu(1)-O(7)#4	2.451(3)
Eu(1)-O(3)#3	2.391(3)	Eu(1)-O(4)	2.452(3)
Eu(1)-O(6)	2.392(3)	Eu(1)-O(8)	2.470(3)

O(2)#1-Eu(1)-O(5)#2	92.98(9)	O(1)-Eu(1)-O(7)#4	132.97(8)
O(2)#1-Eu(1)-O(3)#3	102.66(9)	O(2)#1-Eu(1)-O(4)	78.26(9)
O(5)#2-Eu(1)-O(3)#3	147.59(9)	O(5)#2-Eu(1)-O(4)	67.02(9)
O(2)#1-Eu(1)-O(6)	137.50(9)	O(3)#3-Eu(1)-O(4)	143.66(9)
O(5)#2-Eu(1)-O(6)	109.25(8)	O(6)-Eu(1)-O(4)	78.03(9)
O(3)#3-Eu(1)-O(6)	77.70(8)	O(1)-Eu(1)-O(4)	119.80(8)
O(2)#1-Eu(1)-O(1)	148.66(9)	O(7)#4-Eu(1)-O(4)	76.71(8)
O(5)#2-Eu(1)-O(1)	74.03(9)	O(2)#1-Eu(1)-O(8)	74.61(9)
O(3)#3-Eu(1)-O(1)	78.08(9)	O(5)#2-Eu(1)-O(8)	79.00(9)
O(6)-Eu(1)-O(1)	73.70(8)	O(3)#3-Eu(1)-O(8)	78.10(9)
O(2)#1-Eu(1)-O(7)#4	73.31(9)	O(6)-Eu(1)-O(8)	143.56(9)
O(5)#2-Eu(1)-O(7)#4	143.22(9)	O(1)-Eu(1)-O(8)	74.95(9)
O(3)#3-Eu(1)-O(7)#4	69.11(9)	O(7)#4-Eu(1)-O(8)	126.82(9)
O(6)-Eu(1)-O(7)#4	67.21(8)	O(4)-Eu(1)-O(8)	134.83(9)

3

Eu(1)-O(7)#1	2.351(3)	Eu(1)-O(1)#4	2.460(3)
Eu(1)-O(3)#2	2.394(3)	Eu(1)-O(4)	2.489(3)
Eu(1)-O(2)	2.395(3)	Eu(1)-O(6)#5	2.506(3)
Eu(1)-O(5)	2.430(3)	Eu(1)-O(7)#5	2.578(3)
Eu(1)-O(1)#3	2.444(3)		

O(7)#1-Eu(1)-O(3)#2	73.53(9)	O(5)-Eu(1)-O(4)	53.22(9)
O(7)#1-Eu(1)-O(2)	75.89(9)	O(1)#3-Eu(1)-O(4)	73.39(9)
O(3)#2-Eu(1)-O(2)	136.97(9)	O(1)#4-Eu(1)-O(4)	101.99(9)
O(7)#1-Eu(1)-O(5)	82.06(9)	O(7)#1-Eu(1)-O(6)#5	122.93(9)
O(3)#2-Eu(1)-O(5)	77.13(10)	O(3)#2-Eu(1)-O(6)#5	87.25(10)
O(2)-Eu(1)-O(5)	127.33(10)	O(2)-Eu(1)-O(6)#5	84.65(10)
O(7)#1-Eu(1)-O(1)#3	147.45(9)	O(5)-Eu(1)-O(6)#5	145.51(10)

O(3)#2-Eu(1)-O(1)#3	138.66(9)	O(1)#3-Eu(1)-O(6)#5	73.14(9)
O(2)-Eu(1)-O(1)#3	78.11(9)	O(1)#4-Eu(1)-O(6)#5	73.83(10)
O(5)-Eu(1)-O(1)#3	98.75(9)	O(4)-Eu(1)-O(6)#5	144.20(9)
O(7)#1-Eu(1)-O(1)#4	144.04(9)	O(7)#1-Eu(1)-O(7)#5	71.97(10)
O(3)#2-Eu(1)-O(1)#4	76.16(9)	O(3)#2-Eu(1)-O(7)#5	71.20(9)
O(2)-Eu(1)-O(1)#4	140.00(9)	O(2)-Eu(1)-O(7)#5	70.99(9)
O(5)-Eu(1)-O(1)#4	72.66(9)	O(5)-Eu(1)-O(7)#5	143.45(9)
O(1)#3-Eu(1)-O(1)#4	63.66(10)	O(1)#3-Eu(1)-O(7)#5	117.02(9)
O(7)#1-Eu(1)-O(4)	81.69(9)	O(1)#4-Eu(1)-O(7)#5	115.48(9)
O(3)#2-Eu(1)-O(4)	127.02(10)	O(4)-Eu(1)-O(7)#5	142.00(9)
O(2)-Eu(1)-O(4)	76.41(10)	O(6)#5-Eu(1)-O(7)#5	50.96(9)

4

Eu(1)-O(4)#1	2.324(2)	Eu(1)-O(7)	2.476(2)
Eu(1)-O(5)#2	2.413(2)	Eu(1)-O(6)	2.488(2)
Eu(1)-O(2)#2	2.430(2)	Eu(1)-O(1)	2.508(2)
Eu(1)-O(3)#3	2.446(2)	Eu(1)-O(2)	2.516(2)
Eu(1)-O(5)	2.469(2)		

O(4)#1-Eu(1)-O(5)#2	76.19(9)	O(3)#3-Eu(1)-O(6)	103.20(9)
O(4)#1-Eu(1)-O(2)#2	76.45(8)	O(5)-Eu(1)-O(6)	52.49(8)
O(5)#2-Eu(1)-O(2)#2	68.98(8)	O(7)-Eu(1)-O(6)	70.86(8)
O(4)#1-Eu(1)-O(3)#3	143.64(8)	O(4)#1-Eu(1)-O(1)	81.83(9)
O(5)#2-Eu(1)-O(3)#3	74.03(8)	O(5)#2-Eu(1)-O(1)	70.48(8)
O(2)#2-Eu(1)-O(3)#3	73.73(8)	O(2)#2-Eu(1)-O(1)	137.40(8)
O(4)#1-Eu(1)-O(5)	131.31(8)	O(3)#3-Eu(1)-O(1)	106.92(8)
O(5)#2-Eu(1)-O(5)	151.85(3)	O(5)-Eu(1)-O(1)	114.15(8)
O(2)#2-Eu(1)-O(5)	107.71(8)	O(7)-Eu(1)-O(1)	72.31(8)
O(3)#3-Eu(1)-O(5)	78.24(8)	O(6)-Eu(1)-O(1)	143.14(8)

O(4)#1-Eu(1)-O(7)	73.32(9)	O(4)#1-Eu(1)-O(2)	128.20(8)
O(5)#2-Eu(1)-O(7)	134.41(8)	O(5)#2-Eu(1)-O(2)	102.82(8)
O(2)#2-Eu(1)-O(7)	132.59(8)	O(2)#2-Eu(1)-O(2)	152.74(2)
O(3)#3-Eu(1)-O(7)	143.03(8)	O(3)#3-Eu(1)-O(2)	79.02(8)
O(5)-Eu(1)-O(7)	69.41(8)	O(5)-Eu(1)-O(2)	66.75(8)
O(4)#1-Eu(1)-O(6)	86.42(9)	O(7)-Eu(1)-O(2)	72.22(8)
O(5)#2-Eu(1)-O(6)	139.60(8)	O(6)-Eu(1)-O(2)	116.40(8)
O(2)#2-Eu(1)-O(6)	71.62(8)	O(1)-Eu(1)-O(2)	51.40(7)

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