Electronic Supplementary Material (ESI) for Nanoscale.

Supplementary Information

Eu-based Coordination Polymer Microrods for Low-loss Optical Waveguiding Application

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Supplementary Figures and Tables

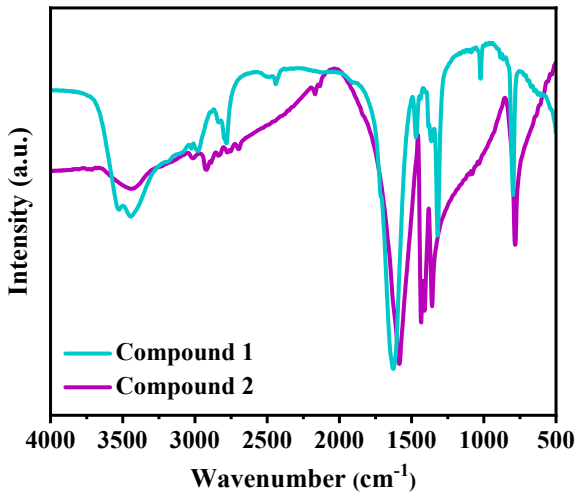

Figure S1. FTIR spectrum of compounds **1** (blue) and **2** (purple) in solid state.

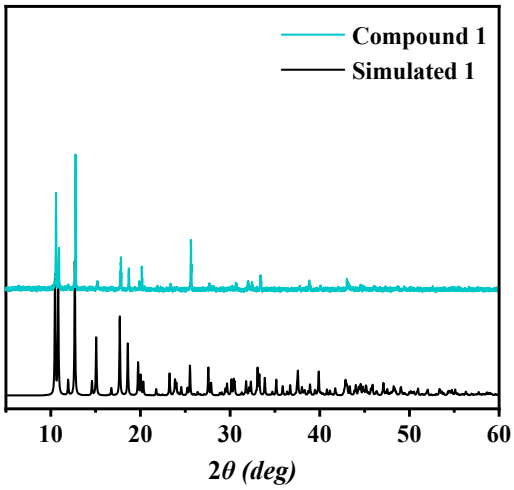

Figure S2. The PXRD pattern of compound **1** (blue) and simulated pattern (black) from the crystal structure data.

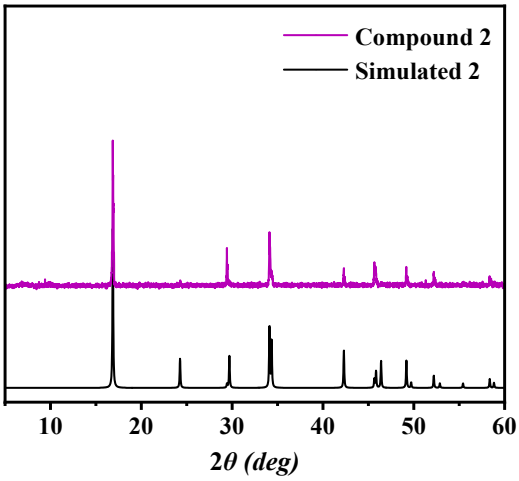

Figure S3. The PXRD pattern of compound **2** (purple) and simulated pattern (black) from the crystal structure data.

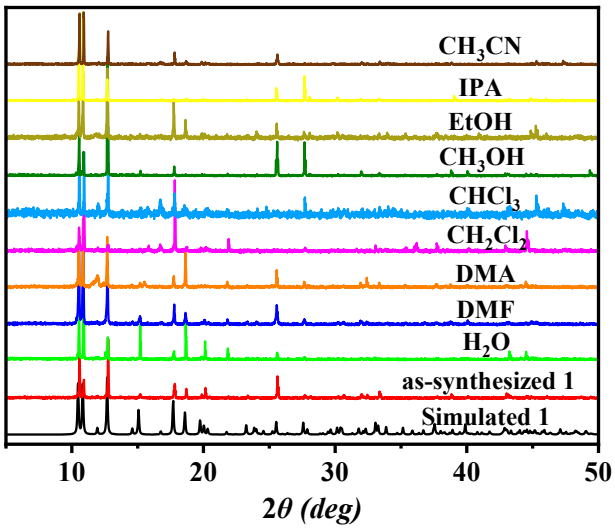

Figure S4. The PXRD patterns of compound **1** after immersing in H_2O and various organic solvents.

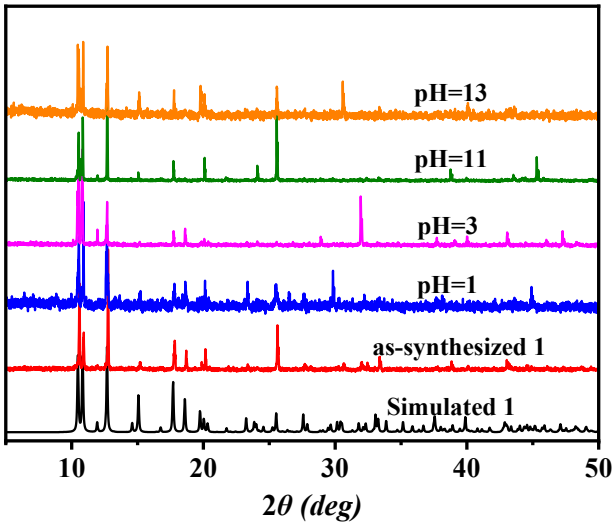

Figure S5. The PXRD patterns of compound **1** after exposure to different acid or base aqueous solutions.

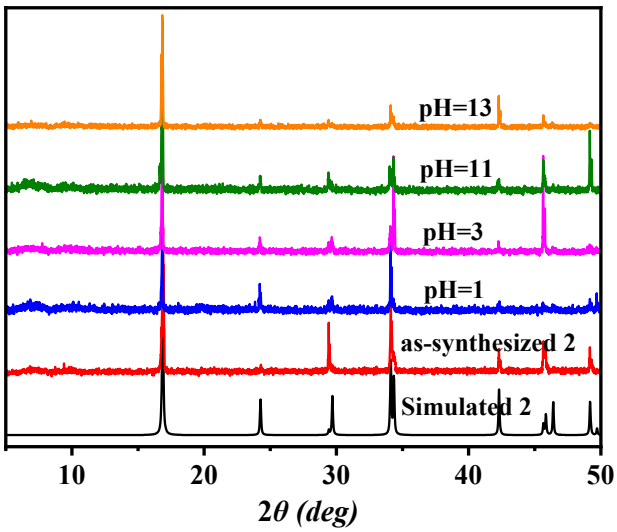

Figure S6. The PXRD patterns of compound **2** after exposure to different acid or base aqueous solutions.

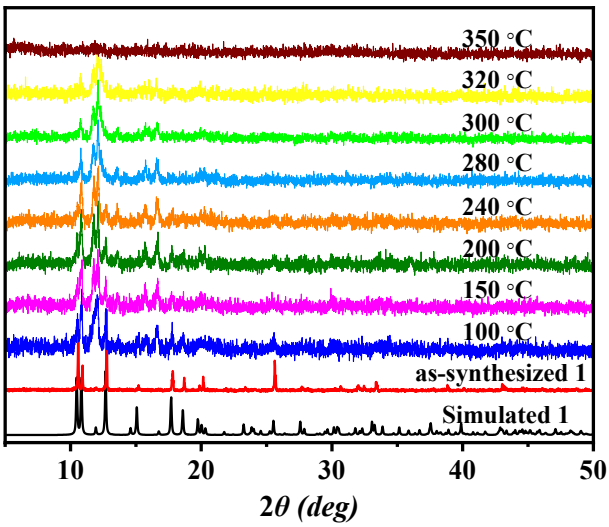

Figure S7. The PXRD patterns of compound **1** after different temperature treatments.

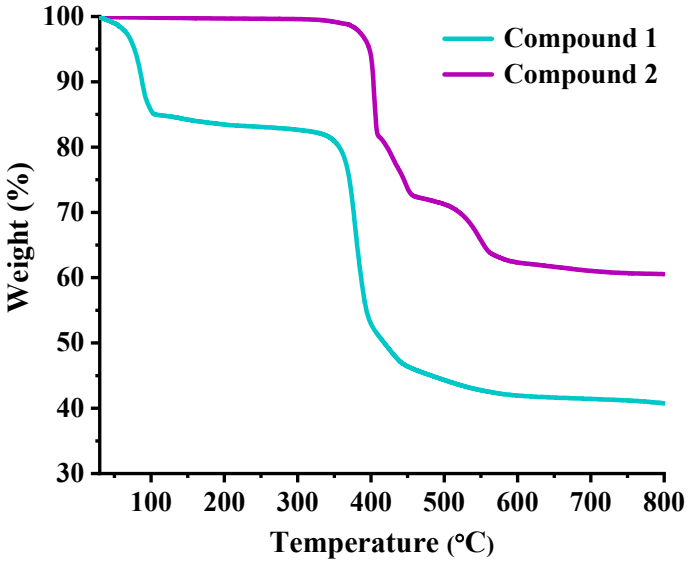

Figure S8. Thermogravimetric analysis (TGA) curves of compounds **1** and **2**.

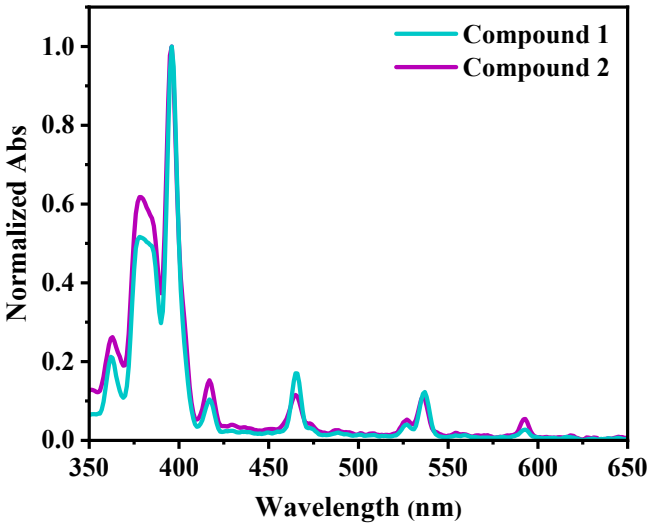

Figure S9. Solid-state UV-vis absorption spectra of compounds **1** and **2**.

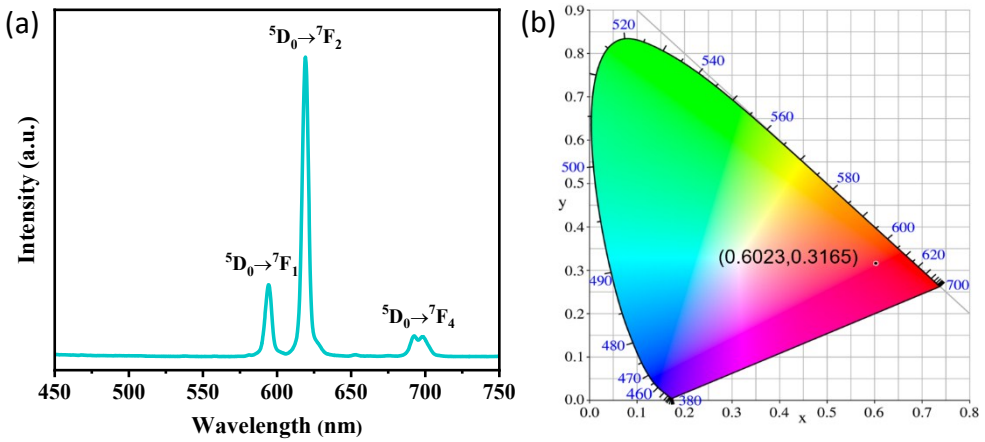

Figure S10. (a) Solid-state emission spectra of compound **1** excited at 400 nm. (b) The CIE chromaticity diagram for compound **1**.

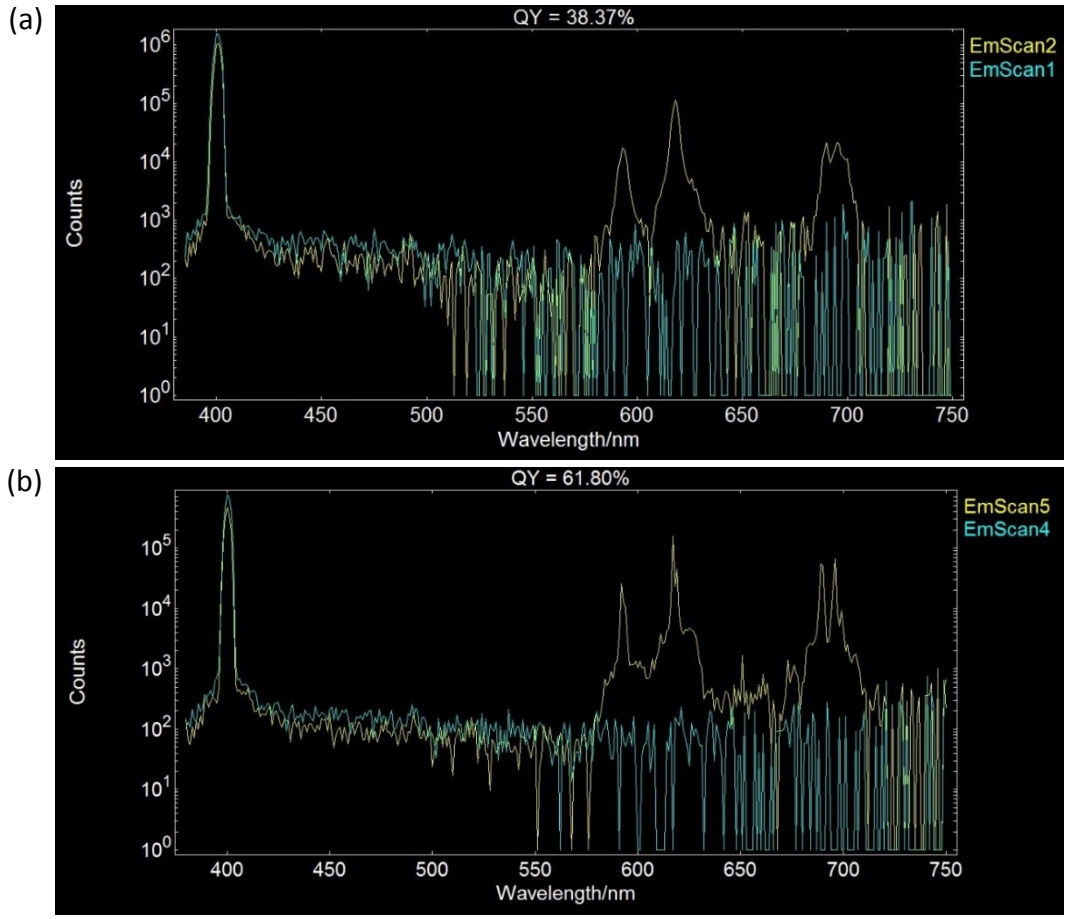

Figure S11. The photoluminescence quantum yields (PLQY) of compounds **1** (a) and **2** (b).

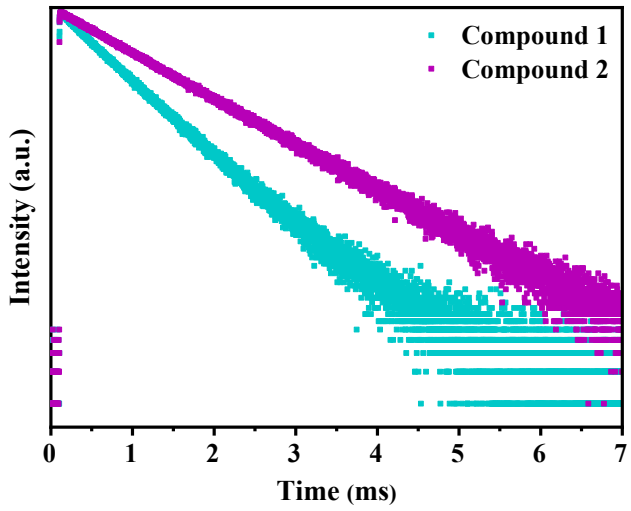

Figure S12. Time-resolved emission decay curves of compounds **1** and **2**.

Table S1 Selected bond lengths (Å) and bond angles (°) for compound **1**.

Bond distances			
Eu(1)-O(1)	2.471(2)	C(10)-C(12)	1.560(4)
Eu(1)-O(2)	2.423(2)	N(6AA)-C(0AA)	1.469(5)
Eu(1)-O(3)	2.415(2)	N(6AA)-C(2)	1.463(6)
Eu(1)-O(4)	2.426(2)	O(1)-C(10)#1	1.249(4)
Eu(1)-O(6)	2.463(2)	O(3)-C(12)#1	1.240(3)
Eu(1)-O(0AA)	2.464(2)	Eu(1)-O(3AA)#2	2.487(2)
Eu(1)-O(1AA)	2.464(2)	O(3AA)-Eu(1)#2	2.487(2)
Eu(1)-O(2AA)	2.499(2)	C(3)-C(3)#2	1.540(6)
O(4)-C(12)	1.252(3)	O(2)-C(1)#3	1.249(4)
O(6)-C(10)	1.248(4)	C(1)-O(2)#3	1.249(4)
O(0AA)-C(1)	1.248(4)	C(1)-C(1)#3	1.544(6)
O(1AA)-C(3)	1.254(3)	C(10)-O(1)#4	1.249(4)
O(3AA)-C(3)	1.244(3)	C(12)-O(3)#4	1.240(3)
Bond angles			
O(1)-Eu(1)-O(2AA)	82.23(7)	O(0AA)-Eu(1)-O(2AA)	66.87(8)
O(2)-Eu(1)-O(1)	82.55(7)	O(1AA)-Eu(1)-O(1)	73.48(7)
O(2)-Eu(1)-O(4)	84.88(7)	O(1AA)-Eu(1)-O(2AA)	141.12(7)
O(2)-Eu(1)-O(6)	138.76(7)	O(6)-C(10)-C(12)	116.7(3)
O(2)-Eu(1)-O(0AA)	65.88(7)	O(4)-C(12)-C(10)	116.6(3)
O(2)-Eu(1)-O(1AA)	74.12(7)	O(3AA)-C(3)-O(1AA)	126.1(3)
O(2)-Eu(1)-O(2AA)	132.73(8)	C(2)-N(6AA)-C(0AA)	114.2(4)
O(3)-Eu(1)-O(1)	66.52(7)	O(1)-Eu(1)-O(3AA)#2	135.99(7)
O(3)-Eu(1)-O(2)	138.69(7)	O(2)-Eu(1)-O(3AA)#2	72.21(8)
O(3)-Eu(1)-O(4)	136.01(7)	O(3)-Eu(1)-O(3AA)#2	111.59(7)
O(3)-Eu(1)-O(6)	72.75(7)	O(4)-Eu(1)-O(3AA)#2	69.57(7)
O(3)-Eu(1)-O(0AA)	124.13(7)	O(6)-Eu(1)-O(3AA)#2	70.27(7)
O(3)-Eu(1)-O(1AA)	71.33(7)	O(0AA)-Eu(1)-O(3AA)#2	124.26(7)

O(3)-Eu(1)-O(2AA)	71.29(7)	O(1AA)-Eu(1)-O(3AA)#2	65.32(7)
O(4)-Eu(1)-O(1)	144.15(7)	O(3AA)#2-Eu(1)-O(2AA)	140.87(7)
O(4)-Eu(1)-O(6)	66.51(7)	O(1AA)-C(3)-C(3)#2	116.8(3)
O(4)-Eu(1)-O(0AA)	71.64(7)	O(3AA)-C(3)-C(3)#2	117.1(3)
O(4)-Eu(1)-O(1AA)	134.12(7)	O(0AA)-C(1)-O(2)#3	127.0(3)
O(4)-Eu(1)-O(2AA)	82.02(7)	O(0AA)-C(1)-C(1)#3	116.3(3)
O(6)-Eu(1)-O(1)	137.62(7)	O(2)#3-C(1)-C(1)#3	116.7(3)
O(6)-Eu(1)-O(0AA)	125.48(7)	O(1)#4-C(10)-C(12)	116.4(3)
O(6)-Eu(1)-O(1AA)	104.44(7)	O(6)-C(10)-O(1)#4	126.9(3)
O(6)-Eu(1)-O(2AA)	74.02(8)	O(3)#4-C(12)-O(4)	126.5(3)
O(0AA)-Eu(1)-O(1)	72.57(7)	O(3)#4-C(12)-C(10)	117.0(3)
O(0AA)-Eu(1)-O(1AA)	129.88(7)		

Symmetry transformations used to generate equivalent atoms:
#1 1/2-X, -1/2+Y, 1/2-Z; #2 1-X, 1-Y, 1-Z; #3 -X, 1-Y, 1-Z; #4 1/2-X, 1/2+Y, 1/2-Z

Table S2 Selected bond lengths (Å) and bond angles (°) for compound **2**.

Bond distances			
Eu(1)-O(1)	2.359(16)	Eu(1)-O(0AA)#9	2.52(2)
Eu(1)-O(1)#1	2.359(16)	Eu(1)-O(0AA)#10	2.52(2)
Eu(1)-O(1)#2	2.359(16)	Eu(1)-O(0AA)#11	2.52(2)
Eu(1)-O(1)#3	2.359(16)	O(0AA)-Eu(1)#12	2.52(2)
Eu(1)-O(1)#4	2.359(16)	O(0AA)-Eu(1)#13	2.55(2)
Eu(1)-O(1)#5	2.359(16)	O(1)-C(1)	1.28(4)
Eu(1)-O(0AA)#6	2.52(2)	O(0AA)-C(1)	1.08(3)
Eu(1)-O(0AA)#7	2.52(2)	C(1)-C(1)#15	1.556(19)
Eu(1)-O(0AA)#8	2.52(2)		
Bond angles			
O(1)-Eu(1)-O(1)#2	180.0	O(1)#2-Eu(1)-O(1)#5	60.02(2)
O(1)-Eu(1)-O(1)#3	60.02(2)	O(1)#2-Eu(1)-O(0AA)#6	72.7(4)
O(1)-Eu(1)-O(1)#5	119.98(3)	O(1)#2-Eu(1)-O(0AA)#11	107.3(4)
O(1)-Eu(1)-O(0AA)#6	107.3(4)	O(1)#2-Eu(1)-O(0AA)#8	72.7(4)
O(1)-Eu(1)-O(0AA)#11	72.7(4)	O(1)#2-Eu(1)-O(0AA)#7	107.3(4)
O(1)-Eu(1)-O(0AA)#8	107.3(4)	O(1)#2-Eu(1)-O(0AA)#9	51.2(6)
O(1)-Eu(1)-O(0AA)#7	72.7(4)	O(1)#2-Eu(1)-O(0AA)#10	128.8(6)
O(1)-Eu(1)-O(0AA)#9	128.8(6)	O(1)#3-Eu(1)-O(1)#5	180.0
O(1)-Eu(1)-O(0AA)#10	51.2(6)	O(1)#3-Eu(1)-O(0AA)#6	72.7(4)
O(1)#1-Eu(1)-O(1)	60.02(2)	O(1)#3-Eu(1)-O(0AA)#8	128.8(6)
O(1)#1-Eu(1)-O(1)#4	180.0(4)	O(1)#3-Eu(1)-O(0AA)#7	107.3(4)
O(1)#1-Eu(1)-O(1)#2	119.98(2)	O(1)#3-Eu(1)-O(0AA)#9	107.3(4)
O(1)#1-Eu(1)-O(1)#3	119.98(2)	O(1)#3-Eu(1)-O(0AA)#10	72.7(4)
O(1)#1-Eu(1)-O(1)#5	60.02(2)	O(1)#3-Eu(1)-O(0AA)#6	107.3(4)
O(1)#1-Eu(1)-O(0AA)#6	128.8(6)	O(1)#3-Eu(1)-O(0AA)#11	128.8(6)
O(1)#1-Eu(1)-O(0AA)#11	107.3(4)	O(1)#5-Eu(1)-O(0AA)#8	51.2(6)

O(1)#1-Eu(1)-O(0AA)#8	72.7(4)	O(1)#5-Eu(1)-O(0AA)#7	72.7(4)
O(1)#1-Eu(1)-O(0AA)#7	51.2(6)	O(1)#5-Eu(1)-O(0AA)#9	72.7(4)
O(1)#1-Eu(1)-O(0AA)#9	107.3(4)	O(1)#5-Eu(1)-O(0AA)#10	107.3(4)
O(1)#1-Eu(1)-O(0AA)#10	72.7(4)	O(0AA)#6-Eu(1)-O(0AA)#11	115.5(8)
O(1)#4-Eu(1)-O(1)	119.98(2)	O(0AA)#6-Eu(1)-O(0AA)#8	64.5(8)
O(1)#4-Eu(1)-O(1)#2	60.02(2)	O(0AA)#6-Eu(1)-O(0AA)#7	180.000(5)
O(1)#4-Eu(1)-O(1)#3	60.02(2)	O(0AA)#6-Eu(1)-O(0AA)#9	115.5(8)
O(1)#4-Eu(1)-O(1)#5	119.98(2)	O(0AA)#6-Eu(1)-O(0AA)#10	64.5(8)
O(1)#4-Eu(1)-O(0AA)#6	51.2(6)	O(0AA)#8-Eu(1)-O(0AA)#11	180.000(2)
O(1)#4-Eu(1)-O(0AA)#11	72.7(4)	O(0AA)#7-Eu(1)-O(0AA)#11	64.5(8)
O(1)#4-Eu(1)-O(0AA)#8	107.3(4)	O(0AA)#7-Eu(1)-O(0AA)#8	115.5(8)
O(1)#4-Eu(1)-O(0AA)#7	128.8(6)	O(0AA)#7-Eu(1)-O(0AA)#9	64.5(8)
O(1)#4-Eu(1)-O(0AA)#9	72.7(4)	O(0AA)#7-Eu(1)-O(0AA)#10	115.5(8)
O(1)#4-Eu(1)-O(0AA)#10	107.3(4)	O(0AA)#9-Eu(1)-O(0AA)#11	64.5(8)
O(1)#2-Eu(1)-O(1)#3	119.98(2)	O(0AA)#9-Eu(1)-O(0AA)#8	115.5(8)
O(0AA)#10-Eu(1)-O(0AA)#11	115.5(8)	O(1)-C(1)-C(1)#15	92(2)
O(0AA)#10-Eu(1)-O(0AA)#8	64.5(8)	O(0AA)-C(1)-O(1)	146.0(16)
O(0AA)#10-Eu(1)-O(0AA)#9	180.000(3)	O(0AA)-C(1)-C(1)#15	122(3)

Symmetry transformations used to generate equivalent atoms:

#1 +Y, 1-X+Y, -Z; #2 2-X, 2-Y, -Z; #3 1-Y+X, +X, -Z; #4 2-Y, 1+X-Y, +Z; #5 1+Y-X, 2-X, +Z; #6 -2/3+Y, 2/3-X+Y, -1/3-Z; #7 8/3-Y, 4/3+X-Y, 1/3+Z; #8 4/3-Y+X, -1/3+X, -1/3-Z; #9 -1/3+X, -2/3+Y, 1/3+Z; #10 7/3-X, 8/3-Y, -1/3-Z; #11 2/3+Y-X, 7/3-X, 1/3+Z; #12 1/3+X, 2/3+Y, -1/3+Z; #13 1/3+X, 2/3+Y, 2/3+Z; #14 5/3-Y+X, 1/3+X, 1/3-Z; #15 4/3-Y+X, 8/3-Y, 2/3-Z