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SUPPLEMENTARY MATERIAL

Structure and Stereochemistry of Adducts of Tris(dipivaloylmethane)europium(III), Eu(dpm)$_3$, with Some Dipolar Aprotic Unidentate *O*-Donors

Eric J. Chan,[A] Jack M. Harrowfield,[A,B,D] Brian W. Skelton,[A] Alexandre N. Sobolev,[A] and Allan H. White[A,C]

[A]School of Molecular Sciences, The University of Western Australia, M310, 35 Stirling Highway, Perth, WA 6009, Australia.

[B]Current address: Institut de Science et d'Ingenierie Supramoléculaires, Université de Strasbourg, 8, allée Gaspard Monge, 67083 Strasbourg, France.

[C]Deceased.

[D]Corresponding author. Email: harrowfield@unistra.fr

Tables S1 and S2 of crystallographic data: europium environments in the Class B and Class C systems presently studied.

Table S1

Europium environments, *cis*-[(L-*O*)Eu(*O*,*O*′-dpm)]$_3$

L/Component	nmp*	tmp	ompa1 (170K)	ompa2 (170K)	ompa1 (300k)	hmpa†
Distances (Å)						
Eu-O(12)	2.340(2)	2.319(2)	2.329 (3)	2.330(2)	2.322 (5)	2.325 (8)
Eu-O(14)	2.317(2)	2.350(2)	2.364 (2)	2.373 (2)	2.363(5)	2.374 (9)
Eu-O(22)	2.372(2)	2.356(2)	2.362 (2)	2.352(2)	2.348 (5)	2.44 (3)
Eu-O(24)	2.329(2)	2.288(2)	2.315 (2	2.311 (2)	2.298 (4)	2.38 (5)
Eu-O(32)	2.335(2)	2.330(2)	2.337 (2)	2.318(2)	2.333 (4)	2.47(3)
Eu-O(34)	2.293(2)	2.300(2)	2.305 (2)	2.311(2)	2.295(5)	2.35(3)
Eu-O(L)	2.364(5)	2.379(2)	2.348(2)	2.361 (2)	2.358 (4)	2.32 (1)
Angles (°)						
O(12)-Eu-O(L)	106.3 (2)	113.57 (8)	100.6(1)	97.90 (9)	98.7(2)	98.3(4)
O(14)-Eu-O(L)	81.1 (2)	75.85 (9)	80.13 (9)	77.90 (9)	79.7(2)	78.6(3)
O(22)-Eu-O(L)	79.6 (2)	77.15 (8)	78.16 (9)	81.82 (9)	79.8(2)	79.5 (7)
O(24)-Eu-O(L)	113.7 (2)	111.19 (8)	114.43 (9)	116.74 (9)	114.2(2)	117 (1)
O(32)-Eu-O(L)	83.2 (2)	84.78 (8)	81.07 (9)	82.16 (9)	82.1(2)	86.2 (8)
O(34)-Eu-O(L)	154.9 (2)	152.10 (9)	153.21 (9)	154.73 (9)	156.7 (2)	152.9 (6)
O(12)-Eu-O(14)	71.73 (6)	71.15 (8)	70.81 (9)	70.94 (8)	70.7(2)	70.7 (3)
O(12)-Eu-O(22)	156.43 (6)	159.73 (8)	157.3(1)	161.69 (9)	156.8(2)	163.6 (6)
O(12)-Eu-O(24)	123.47 (7)	116.32 (8)	126.6(1)	122.96 (9)	127.0(2)	126 (1)
O(12)-Eu-O(32)	78.65 (6)	80.61 (8)	80.27 (9)	81.79 (9)	79.7(2)	79.7 (7)
O(12)-Eu-O(34)	80.42 (7)	80.43 (9)	85.6(1)	85.93 (9)	85.4(2)	89.9 (6)
O(14)-Eu-O(22)	131.77 (6)	129.09 (8)	130.26 (9)	126.34 (8)	130.8(2)	124.1 (6)
O(14)-Eu-O(24)	76.77 (6)	78.75 (9)	76.81 (9)	73.86 (8)	75.6(2)	77 (1)
O(14)-Eu-O(32)	140.79 (7)	135.05 (9)	141.67 (9)	143.29 (8)	142.2(2)	144.1 (8)
O(14)-Eu-O(34)	123.57 (6)	132.02 (9)	126.14 (9)	126.44 (9)	122.9(2)	128.4 (6)
O(22)-Eu-O(24)	71.53 (6)	72.05 (8)	72.56 (9)	72.19 (8)	73.0(2)	69 (1)
O(22)-Eu-O(32)	79.46 (7)	83.46 (8)	77.11 (9)	80.03 (8)	77.2(2)	83.9 (9)
O(22)-Eu-O(34)	85.35 (6)	83.08 (9)	86.2(1)	86.86 (9)	87.5(2)	85.4 (9)
O(24)-Eu-O(32)	142.24 (6)	146.11 (8)	141.52 (9)	142.83 (8)	142.2(2)	138(1)
O(24)-Eu-O(34)	79.66 (6)	80.48 (9)	80.56 (9)	80.54 (8)	79.9(2)	77 (1)

O(32)-Eu-O(34)	74.31 (6)	73.48 (8)	74.26 (8)	73.64 (8)	76.1(2)	70 (1)
Eu-O(12)-C(12)	137.3(2)	139.4 (2)	138.1(3)	136.4 (2)	137.3 (5)	140.0 (7)
Eu-O(14)-C(14)	137.2(2)	138.3 (2)	136.9(2)	134.5 (2)	136.6(5)	138.9 (7)
Eu-O(22)-C(22)	128.8(2)	132.4 (2)	133.9 (2)	133.8 (2)	136.1(4)	137(1)
Eu-O(24)-C(24)	131.0(2)	135.2 (2)	135.1 (2)	136.7 (2)	137.5 (4)	139 (3)
Eu-O(32)-C(32)	133.8(2)	135.9 (2)	135.1 (2)	135.9 (2)	136.8 (5)	140(2)
Eu-O(34)-C(34)	135.5(2)	136.8 (2)	135.9(2)	136.9 (2)	134.4 (5)	140(2)
Eu-O(L)-C,P,S	*	147.1(2)	156.3(2)	154.4(2)	157.5(3)	171.5 (7)
Out-of-plane deviations (δLn, Å)						
Eu-C_5O_2(1)	0.320(3)	0.079(4)	0.345(6)	0.572(4)	0.47(1)	0.22(1)
Eu-C_5O_2(2)	0.919(3)	0.613(4)	0.557(4)	0.552(4)	0.483(9)	0.46(6)
Eu-C_5O_2(3)	0.299(3)	0.069(4)	0.190(5)	0.042(4)	0.10(1)	0.24(4)

* Values for disordered components (nmp, site occupancy = 0.5): Eu-O(10) = 2.364(5)Å; Eu-O(20) = 2.375(4) Å ; O(12)-Eu-O(10) = 106.3(2)°; O(12)-Eu-O(20) = 109.7(2)°; O(14)-Eu-O(10) = 81.1(2)°; O(14)-Eu-O(20) = 76.9(2)°; O(22)-Eu-O(10) = 79.6(2)°; O(22)-Eu-O(20) = 78.8(2)°; O(24)-Eu-O(10) = 113.7(2)°; O(24)-Eu-O(20) = 107.2(2)°; O(32)-Eu-O(10) = 113.7(2)°; O(32)-Eu-O(20) = 89.9(2)°; O(34)-Eu-O(10) = 154.9(2)°; O(34)-Eu-O(20) = 159.5(2)°; Eu-O(10)-C(102) = 153.0(6)° ; Eu-O(20)-C202 163.0(7)° .

†*cis* component of isomeric disorder site occupancy = 0.5.

Table S2

Europium environments, *trans*-(L-*O*)Eu(*O*,*O*′-dpm)$_3$

L/Component	dma1	dma2	dmso1	dmso2*	ompa2 (300K)	hmpa†
Distances (Å)						
Eu-O(12)	2.344 (2)	2.335 (2)	2.321 (4)	2.331 (3)	2.281 (5)	2.325 (8)
Eu-O(14)	2.350 (2)	2.348 (2)	2.341 (3)	2.315 (3)	2.365 (5)	2.374 (9)
Eu-O(22)	2.333 (2)	2.342 (2)	2.348 (4)	2.301 (4)	2.327 (5)	2.27(3)
Eu-O(24)	2.356 (2)	2.355 (2)	2.317 (4)	2.377 (3)	2.331 (4)	2.26(3)
Eu-O(32)	2.308 (2)	2.307 (2)	2.295 (4)	2.312 (4)	2.290 (5)	2.31(3)
Eu-O(34)	2.343 (2)	2.352 (2)	2.333 (4)	2.309 (3)	2.304 (5)	2.29(3)
Eu-O(L)	2.343 (2)	2.346 (2)	2.356 (4)	2.28 (2)	2.373 (4)	2.32(1)
Angles (°)						
O(12)-Eu-O(L)	91.74 (8)	93.79 (8)	84.74(2)	98.4 (6)	96.4 (2)	98.3(4)
O(14)-Eu-O(L)	79.68 (8)	79.51 (8)	75.4 (1)	77.3 (6)	77.7(2)	78.6(3)
O(22)-Eu-O(L)	95.89 (9)	92.48 (8)	90.6(2)	80.6 (5)	80.3(2)	79.3 (9)
O(24)-Eu-O(L)	77.24 (8)	77.95 (8)	81.4(2)	84.7 (7)	81.9(2)	82.9 (8)
O(32)-Eu-O(L)	171.95 (8)	170.22 (8)	172.0 (2)	167.6 (6)	159.4(2)	162.0 (7)
O(34)-Eu-O(L)	103.14 (8)	104.60 (8)	115.6 (2)	114.1 (6)	120.7(2)	120 (1)
O(12)-Eu-O(14)	70.88 (7)	71.00 (7)	71.5 (1)	70.9 (1)	73.7(2)	70.7 (3)
O(12)-Eu-O(22)	73.72 (7)	74.61 (7)	80.1 (1)	77.8 (1)	81.3(2)	84.6 (9)
O(12)-Eu-O(24)	141.81 (7)	144.39 (7)	148.1 (1)	148.4 (1)	154.6(2)	153.5 (6)
O(12)-Eu-O(32)	95.79 (8)	94.17 (8)	91.6 (1)	84.7 (1)	82.1(2)	81.6 (7)
O(12)-Eu-O(34)	140.10 (8)	137.92 (8)	133.0 (1)	126.9 (1)	123.2(2)	119(1)
O(14)-Eu-O(22)	144.12 (7)	143.97 (7)	149.3 (1)	138.2 (1)	144.4(2)	144(1)
O(14)-Eu-O(24)	139.70 (7)	138.68 (8)	131.0 (1)	139.6 (1)	129.7(2)	134.7 (6)
O(14)-Eu-O(32)	105.48 (8)	108.51 (8)	110.2 (1)	114.9(1)	121.0(2)	117.8 (7)
O(14)-Eu-O(34)	75.65 (7)	75.57 (7)	73.7 (1)	76.5 (1)	74.4(2)	73(1)
O(22)-Eu-O(24)	71.28 (7)	71.27 (7)	71.5 (1)	71.6 (1)	73.4(2)	70(1)
O(22)-Eu-O(32)	83.53 (8)	84.18 (8)	81.6 (1)	88.40 (2)	79.1(2)	83(1)
O(22)-Eu-O(34)	139.07 (8)	139.99 (7)	136.6 (1)	145.2 (1)	141.2(2)	143(2)
O(24)-Eu-O(32)	95.02 (8)	92.27 (8)	98.3 (1)	86.4 (1)	90.7(2)	89.3 (9)
O(24)-Eu-O(34)	78.02 (7)	77.25 (8)	78.7 (1)	78.4 (1)	77.7(2)	82(1)
O(32)-Eu-O(34)	72.71 (7)	72.87 (7)	72.0 (1)	72.4 (1)	75.8(2)	74(1)
Eu-O(12)-C(12)	136.3 (2)	136.5 (2)	133.0 (3)	134.6 (3)	135.2 (6)	140.0 (7)
Eu-O(14)-C(14)	134.8 (2)	135.2 (2)	131.9 (3)	134.6 (3)	136.4 (5)	138.9 (7)
Eu-O(22)-C(22)	137.9 (2)	137.9 (2)	135.7 (4)	136.6 (4)	136.1 (5)	137(2)
Eu-O(24)-C(24)	136.7(2)	136.8(2)	136.5 (4)	134.2 (3)	133.4 (5)	139(2)

Eu-O(32)-C(32)	134.3(2)	132.4(2)	136.5 (4)	133.5 (3)	138.2 (6)	140(2)
Eu-O(34)-C(34)	135.0(2)	134.2(2)	136.8 (4)	134.9 (3)	134.5 (6)	140(2)
Eu-O(L)-C,P,S	134.4 (2)	135.5 (2)	152.9 (3)	154 (2)	159.9 (3)	171.5(7)
Out-of-plane deviations (δLn, Å)						
Eu-C5O2(1)	0.627(4)	0.604(4)	0.788(6)	0.663(6)	0.327(9)	0.22(1)
Eu-C5O2(2)	0.299(4)	0.288(4)	0.597(8)	0.471(7)	0.498(9)	0.35(4)
Eu-C5O2(3)	0.463(4)	0.568(4)	0.332(7)	0.598(6)	0.24(1)	0.65(4)

* Values for disordered components (dmso2): (second component) Eu-O(L) = 2.44(2)Å; O(12)-Eu-O(L) = 103.2(4)°; O(14)-Eu-O(L) = 73.7(4)°; O(22)-Eu-O(L) = 87.6(4)°; O(24)-Eu-O(L) = 83.8(4)°; O(32)-Eu-O(L) = 170.2(4)°; O(34)-Eu-O(L) = 106.5(4)°; Eu-O(L)-S = 147(1)°; (third component) Eu-O(L) = 2.30(1)Å; O(12)-Eu-O(L) = 117.4(4)°; O(14)-Eu-O(L) = 78.6(4)°; O(22)-Eu-O(L) = 92.4(3)°; O(24)-Eu-O(L) = 72.6(4)°; O(32)-Eu-O(L) = 157.6(4)°; O(34)-Eu-O(L) = 95.1(3)°; Eu-O(L)-S = 129.3 (9)°.

†*trans* component of isomeric disorder site occupancy = 0.5