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Electronic Supplementary Information

Lanthanide coordination complexes framed by sodium ions: Slow relaxation of the magnetization on the Dy^{3+} derivative.

Andreas Konstantatos,[a] Mikkel A. Sørensen, [a] Jesper Bendix[a] and Høgni Weihe[a]

[a] *Department of Chemistry, University of Copenhagen, Universitetsparket 5, DK-2100, Copenhagen, Denmark*

Structural details and powder x-ray diffraction

Table S.1 Selected bond lengths, angles and interatomic distances for complexes **1-3**

1			
Bond	Bond length (Å)	Bond	Bond length (Å)
Dy1–O1	2.342	Dy2 – O1	2.288
Dy1–O2	2.309	Dy2 – O5	2.397
Dy1–O3	2.332	Dy2 – O6	2.428
Dy1–O3’	2.352	Dy2 – O7	2.451
Dy1–O4	2.466	Dy2 – O8	2.223
Dy1–O5	2.351	Dy2 – O9	2.410
Dy1–O6	2.378	Dy2 – O10	2.440
Dy1–N1	2.480	Dy2 – N2	2.507
Angle		Angle size (°)	
Dy1–O1–Dy2		100.29	
Dy1–O5–Dy2		97.00	
Dy1–O6–Dy2		95.44	
Dy1–O3–Dy1’		106.65	

2			
Bond	Bond length (Å)	Bond	Bond length (Å)
Ho1 – O1	2.325	Ho2 – O1	2.278
Ho1–O2	2.298	Ho2 – O5	2.378
Ho1–O3	2.342	Ho2 – O6	2.401
Ho1–O3’	2.320	Ho2 – O7	2.440
Ho1–O4	2.449	Ho2 – O8	2.217
Ho1–O5	2.334	Ho2 – O9	2.396
Ho1–O6	2.375	Ho2 – O10	2.421
Ho1–N1	2.466	Ho2 – N2	2.492
Angle		Angle size	
Ho1–O1–Ho2		100.21	
Ho1–O5–Ho2		97.12	
Ho1–O6–Ho2		95.38	
Ho1–O3–Ho1’		106.94	

3			
Bond	Bond length (Å)	Bond	Bond length (Å)
Er1–O1	2.331	Er2 – O1	2.262
Er1–O2	2.296	Er2 – O5	2.356
Er1–O3	2.332	Er2 – O6	2.396
Er1–O3’	2.318	Er2 – O7	2.442
Er1–O4	2.442	Er2 – O8	2.210
Er1–O5	2.330	Er2 – O9	2.392
Er1–O6	2.371	Er2 – O10	2.405
Er1–N1	2.458	Er2 – N2	2.484
Angle		Angle size (°)	
Er1–O1–Er2		99.9	
Er1–O5–Er2		97.2	
Er1–O6–Er2		95.0	
Er1–O3–Er1’		107.14	

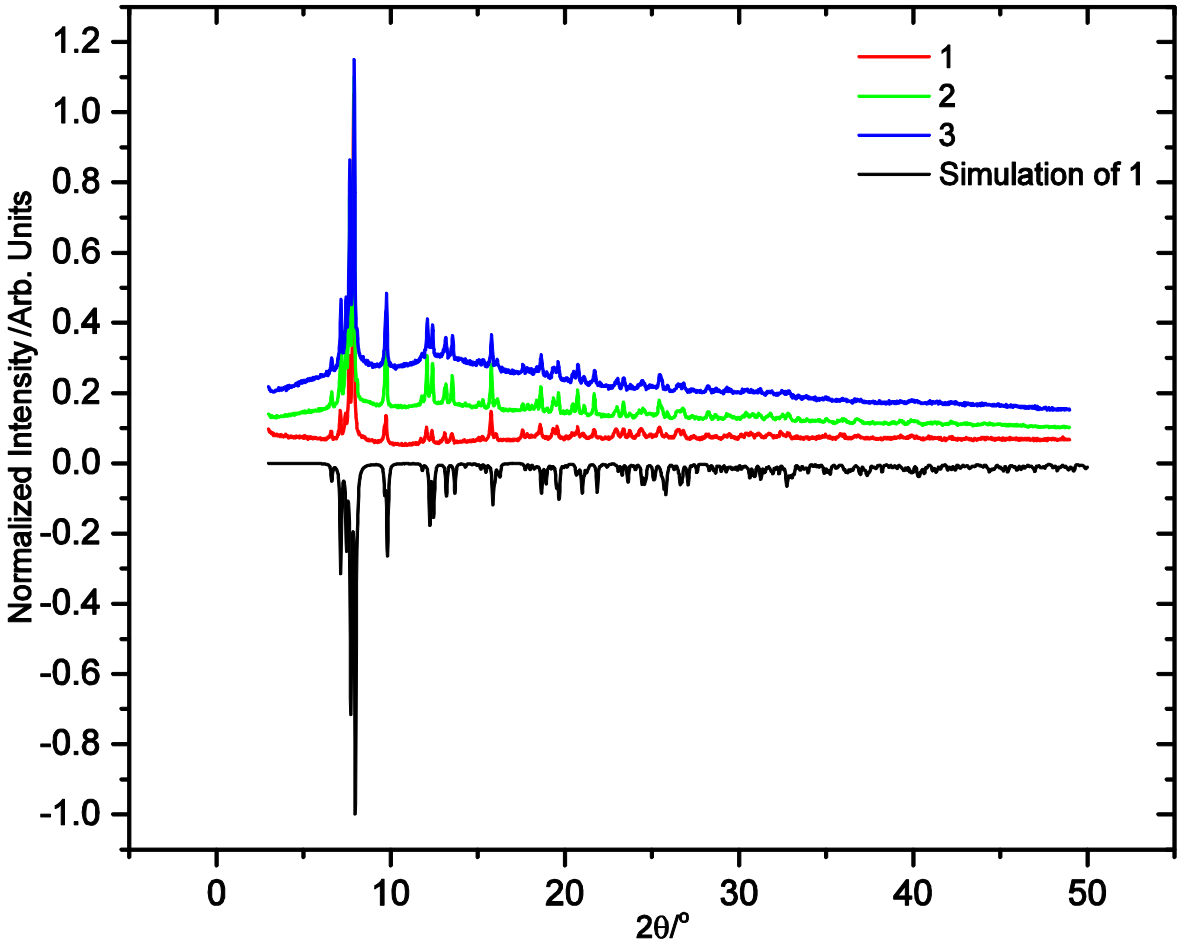

Figure S. 1 Powder X-ray diffractograms for complexes **1**, **2** and **3**. Black line represents the simulated spectrum based on complex **1**.

Continuous symmetry measures

Table S. 2 Continuous symmetry measures for the two crystallographically independent Ln(III) ions of complexes **1**, **2** and **3**.

Complex \ Symmetry		Square antiprism	Triangular dodecahedron	Johnson biaugmented trigonal prism (J50)	Biaugmented trigonal prism	Johnson snub disphenoid (J84)
1	Dy1	9.656	7.871	6.222	7.623	5.407
	Dy2	6.437	7.436	5.574	6.660	6.391
2	Ho1	9.709	7.906	6.207	7.629	5.398
	Ho2	6.393	7.447	5.500	6.630	6.352
3	Er1	9.747	7.896	6.175	7.605	5.346
	Er2	6.315	7.410	5.432	6.581	6.188

Magnetic properties

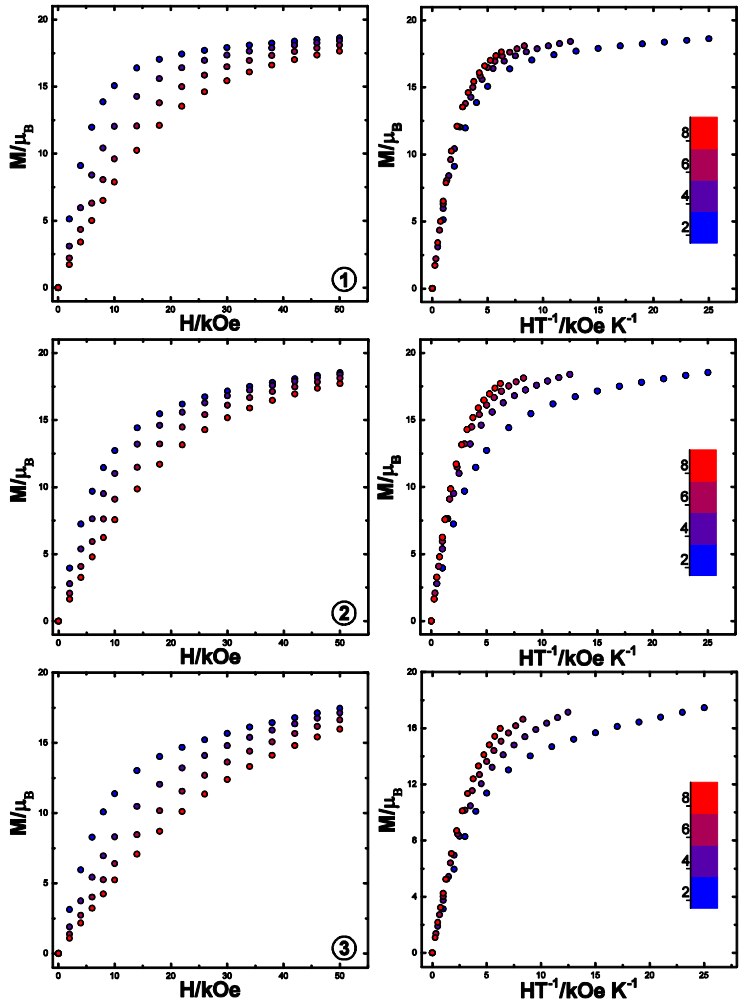

Figure S. 2 Left: Plots of the field dependence of the magnetization for complexes **1** (top), **2** (middle) and **3** (bottom) at T = 2, 4, 6 and 8 K. Right: Reduced magnetization plots for complexes **1, 2** and **3**.

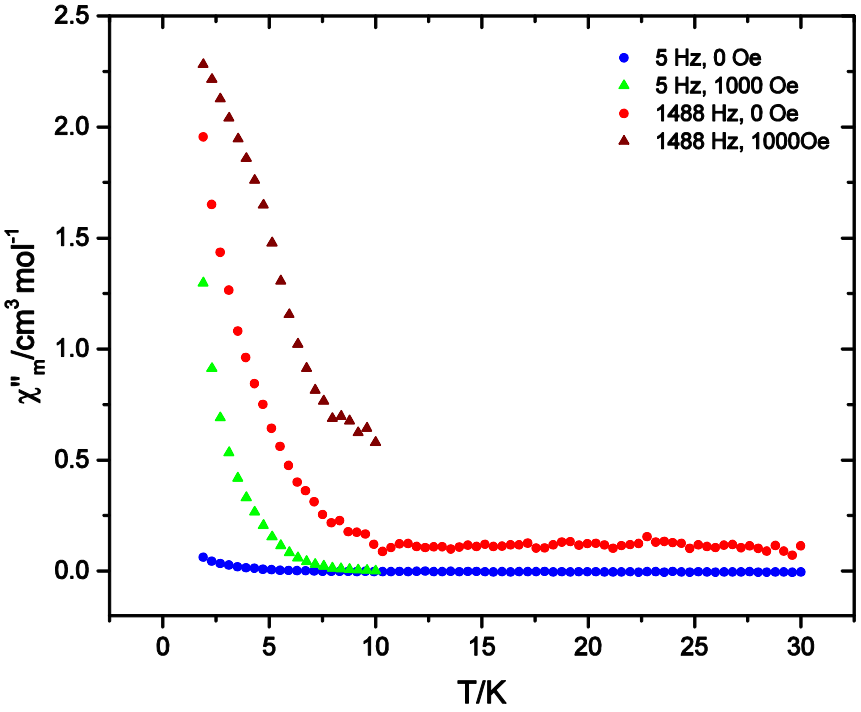

Figure S. 3 Temperature dependence of the out-of-phase ac susceptibility at two frequencies (5 and 1488 Hz) and at two different applied dc fields (0 and 1000 Oe) for complex **1**.

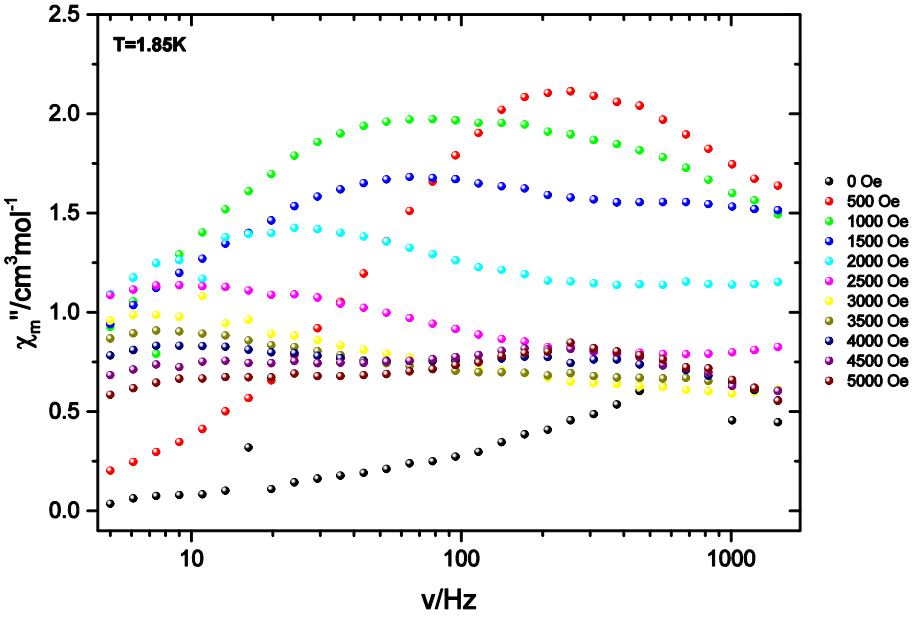

Figure S. 4 Frequency dependence of the out-of-phase ac susceptibility at T = 1.8 K and at various applied dc-fields for complex **1**.

Table S. 3 Relaxation times τ_1 and τ_2 with their respective α values for complex **1**.

T	τ_1	α_1	τ_2	α_1
1.9	0.01071	0.30787	6.79586E-5	0.53792
2.3	0.00829	0.32338	9.42049E-5	0.34831
2.7	0.00588	0.34935	9.38326E-5	0.21184
3.1	0.00591	0.28226	4.72949E-5	0.46082
3.5	0.00501	0.27908	4.45027E-5	0.40175
3.9	0.00457	0.24716	3.7206E-5	0.4731
4.3	0.00403	0.23744	4.40064E-5	0.41672
4.7	0.0034	0.28964	2.14178E-5	0.14313
5.1	0.00294	0.21457	2.53147E-5	0.47442
5.5	0.00239	0.17791	4.73832E-5	0.3912
5.9	0.002	0.11422	9.56599E-5	0.42325
6.7	0.00135	0.07581	1.85801E-4	0.22294
7.5	5.50981E-4	0.16228	-	-
8.3	3.69892E-4	0.12006	-	-
9.1	2.4255E-4	0.0895	-	-
9.9	1.61656E-4	0.07648	-	-
10.7	1.18835E-4	0.03744	-	-
11.5	8.1817E-5	0.06749	-	-