Field-induced slow magnetic relaxation in chiral seven-coordinated mononuclear lanthanide complexes

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Supporting information

Table S1 Selected bond lengths (Å) and angles (°) for **2**.

Dy1–O10	2.204(5)	Dy1–O11	2.215(5)
Dy1–O4	2.302(6)	Dy1–O1	2.313(4)
Dy1–O7	2.340(4)	Dy1–N1	2.429(6)
Dy1–N2	2.551(6)	Dy2–O22	2.215(5)
Dy2–O21	2.257(5)	Dy2–O12	2.292(4)
Dy2–O18	2.297(4)	Dy2–O15	2.318(4)
Dy2–N3	2.469(5)	Dy2–N4	2.481(6)
O10–Dy1–O11	94.6(2)	O11–Dy1–O4	161.8(2)
O4–Dy1–O1	76.9(2)	O1–Dy1–O7	81.9(2)
O10–Dy1–N1	74.4(2)	O10–Dy1–N2	114.0(2)
O1–Dy1–N2	146.2(2)	N1–Dy1–N2	64.5(2)
O22–Dy2–O21	93.0(2)	O21–Dy2–O12	101.4(2)
O12–Dy2–O18	81.5(1)	O21–Dy2–O15	162.1(2)
O18–Dy2–N3	137.9(2)	O15–Dy2–N3	122.5(2)
O22–Dy2–N4	73.3(2)	N3–Dy2–N4	66.7(2)

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Table S2 Selected bond lengths (Å) and angles (°) for **4**.

Dy1–O11	2.186(6)	Dy1–O10	2.205(6)
Dy1–O1	2.218(6)	Dy1–O7	2.311(6)
Dy1–O4	2.321(6)	Dy1–N1	2.460(7)
Dy1–N2	2.490(8)	Dy2–O22	2.199(6)
Dy2–O18	2.244(6)	Dy2–O15	2.298(6)
Dy2–O12	2.304(6)	Dy2–O21	2.335(5)
Dy2–N4	2.457(6)	Dy2–N3	2.506(6)
O11–Dy1–O10	92.7(2)	O10–Dy1–O1	83.3(2)
O1–Dy1–O7	80.1(2)	O7–Dy1–O4	76.9(2)
O4–Dy1–N1	76.2(2)	O11–Dy1–N2	74.8(2)
N1–Dy1–N2	64.2(2)	O22–Dy2–O18	95.1(2)
O18–Dy2–O15	74.3(2)	O15–Dy2–O12	80.1(2)
O12–Dy2–O21	84.4(2)	O21–Dy2–N4	123.4(2)
O22–Dy2–N3	117.7(2)	N4–Dy2–N3	66.5(2)

Table S3 Selected bond lengths (Å) and angles (°) for **6**.

N1–Tb1	2.418(5)	N2–Tb1	2.492(6)
N3–Tb2	2.477(6)	N4–Tb2	2.487(4)
O1–Tb1	2.278(4)	O4–Tb1	2.274(5)
O7–Tb1	2.313(5)	O10–Tb1	2.203(5)
O11–Tb1	2.228(5)	O12–Tb2	2.305(5)
O15–Tb2	2.296(4)	O18–Tb2	2.290(5)
O21–Tb2	2.224(5)	O22–Tb2	2.242(5)
O10–Tb1–O11	94.7(2)	O11–Tb1–O4	163.1(2)
O4–Tb1–O1	79.4(2)	O1–Tb1–O7	80.4(2)
O7–Tb1–N1	112.3 (2)	O10–Tb1–N2	116.5(2)
N1–Tb1–N2	64.4(2)	O21–Tb2–O22	93.6 (2)
O22–Tb2–O18	160.6(2)	O18–Tb2–O15	78.4(2)
O15–Tb2–O12	79.4(1)	O12–Tb2–N3	113.4(2)
O21–Tb2–N4	116.4(2)	N3–Tb2–N4	66.4 (2)

Table S4 Selected bond lengths (Å) and angles (°) for **8**.

Ho1–O10	2.211(6)	Ho1–O11	2.223(6)
Ho1–O4	2.261(6)	Ho1–O7	2.297(6)
Ho1–O1	2.297(6)	Ho1–N2	2.417(7)
Ho1–N1	2.522(7)	Ho2–O21	2.191(6)
Ho2–O22	2.232(5)	Ho2–O12	2.289(6)
Ho2–O15	2.306(5)	Ho2–O18	2.308(6)
Ho2–N3	2.473(6)	Ho2–N4	2.490(7)
O10–Ho1–O11	91.9(2)	O11–Ho1–O4	166.3(2)
O4–Ho1–O7	78.1(2)	O7–Ho1–O1	78.5(2)
O1–Ho1–N2	144.2(2)	O10–Ho1–N1	74.9(2)
N2–Ho1–N1	66.1(2)	O21–Ho2–O22	92.2(2)
O22–Ho2–O12	162.9 (2)	O12–Ho2–O15	80.8(2)
O15–Ho2–O18	79.8(2)	O18–Ho2–N3	116.0(2)
O21–Ho2–N4	116.5(2)	N3–Ho2–N4	66.6(2)

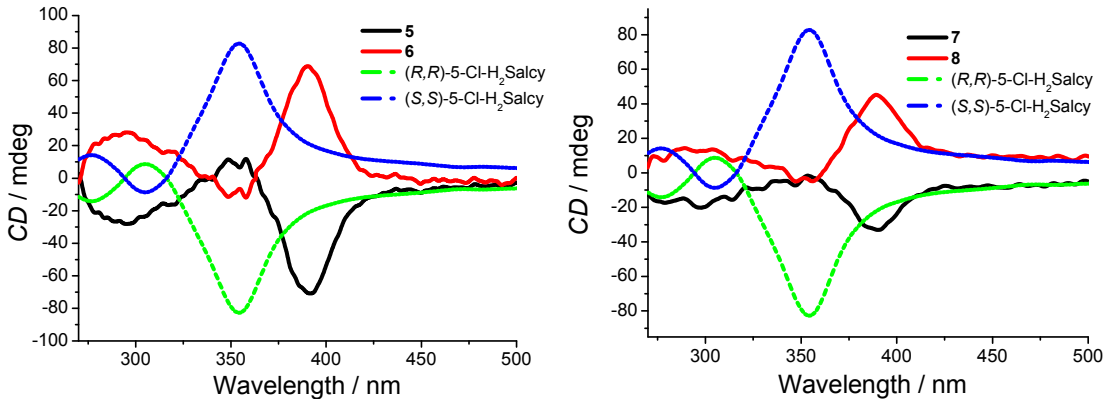

Fig. S1. Left: CD spectra of **5**, **6**, (*R,R*)-5-Cl-H_2salcy and (*S,S*)-5-Cl-H_2salcy in KBr pellets. Right: CD spectra of **7**, **8**, (*R,R*)-5-Cl-H_2salcy and (*S,S*)-5-Cl-H_2salcy in KBr pellets.

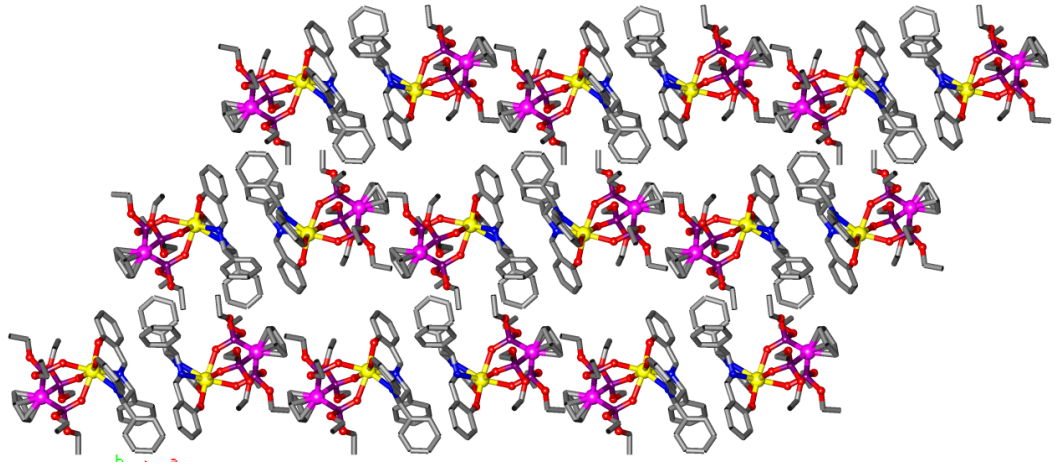

Fig. S2. Crystal packing of compound **1**.

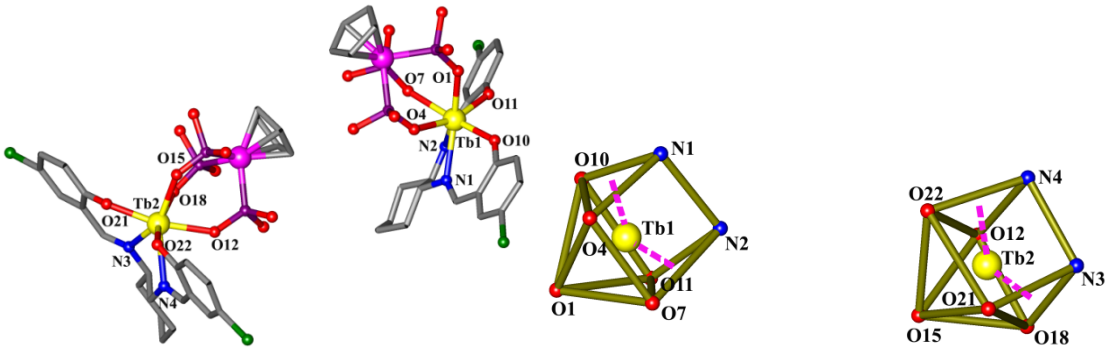

Fig. S3. Left: X-ray structure of **5**. Ethyl groups of the phosphates and H atoms are omitted for clarity. Right: Local coordination geometry of Tb(III) ion in **5**.

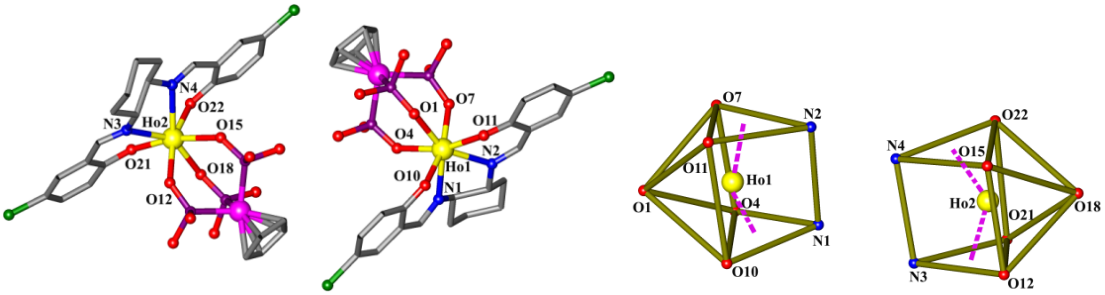

Fig. S4. Left: X-ray structure of **7**. Ethyl groups of the phosphates and H atoms are omitted for clarity. Right: Local coordination geometry of Ho(III) ion in **7**.

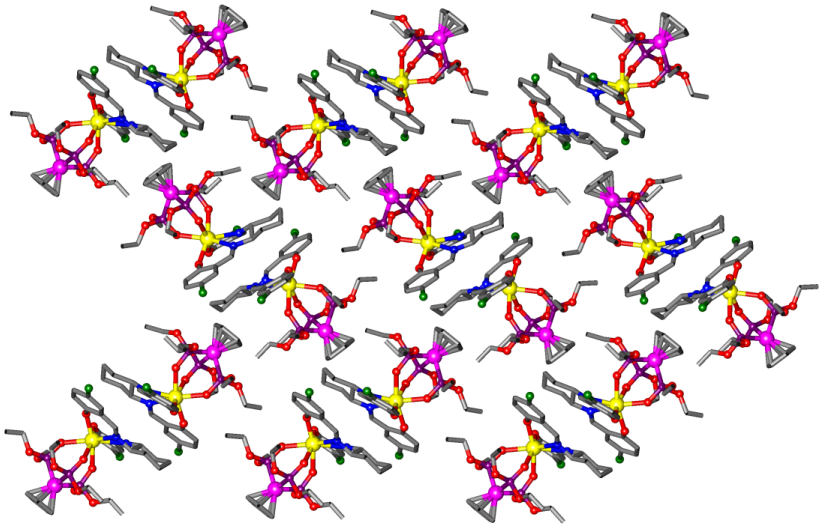

Fig. S5. Crystal packing of compound **3**, **5** and **7**.

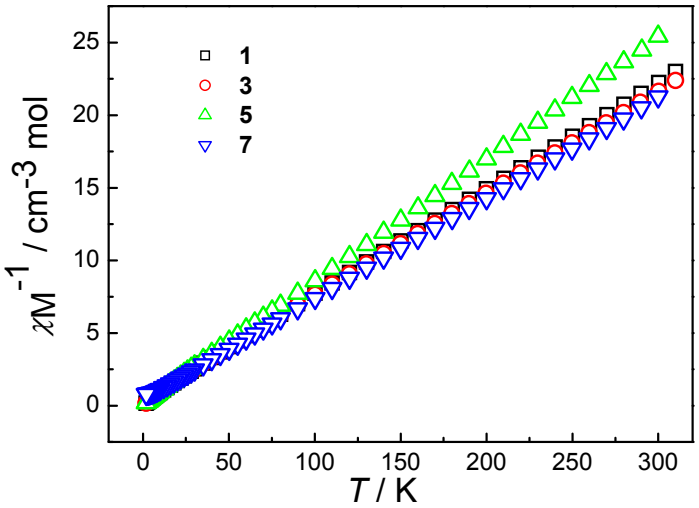

Fig. S6. plots of χ_M^{-1} determined at 100 Oe upon T from 1.8 to 300 K for **1**, **3**, **5** and **7**.

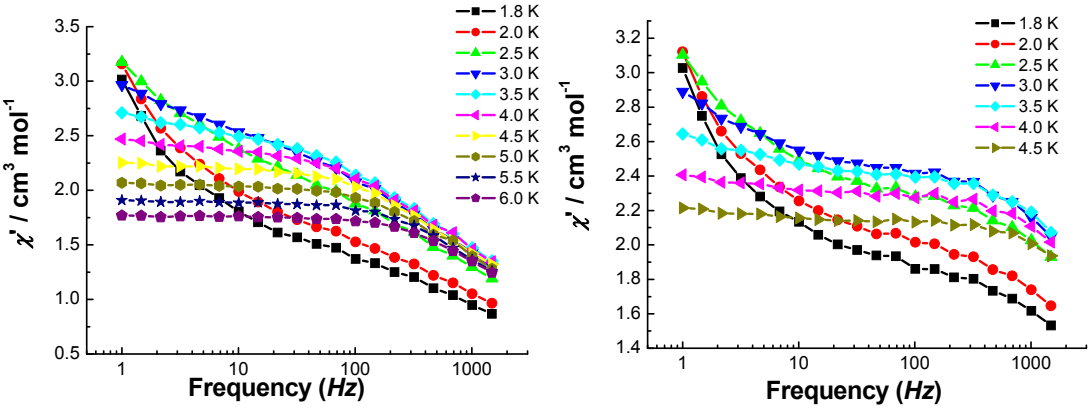

Fig. S7. Left: Frequency dependence of the in-of-phase ac susceptibility (χ') of **1** from 1.8 to 6.0 K at a 2 kOe dc field. Right: Frequency dependence of the in-of-phase ac susceptibility (χ') of **3** from 1.8 to 4.5 K at a 2 kOe dc field.