Supporting Information

Breaking the Axiality of Pentagonal-Bipyramidal Dysprosium(III) Single-Molecule Magnets with Pyrazolate Ligands

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1. Infrared spectrum

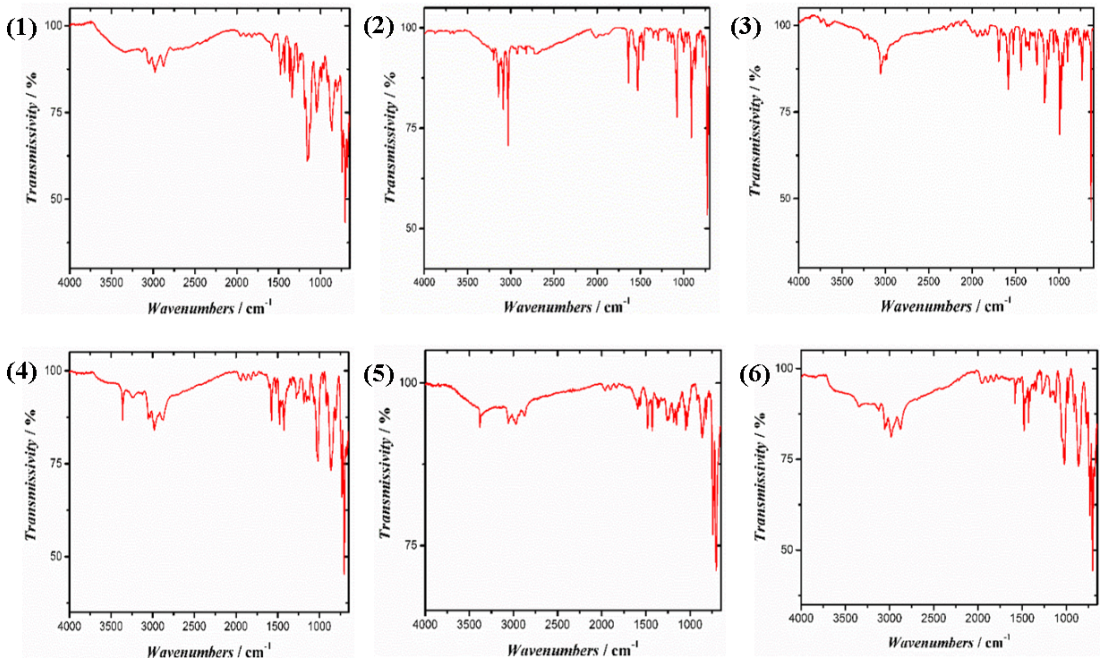

Figure S1. Infrared spectra of complexes **1 - 6**.

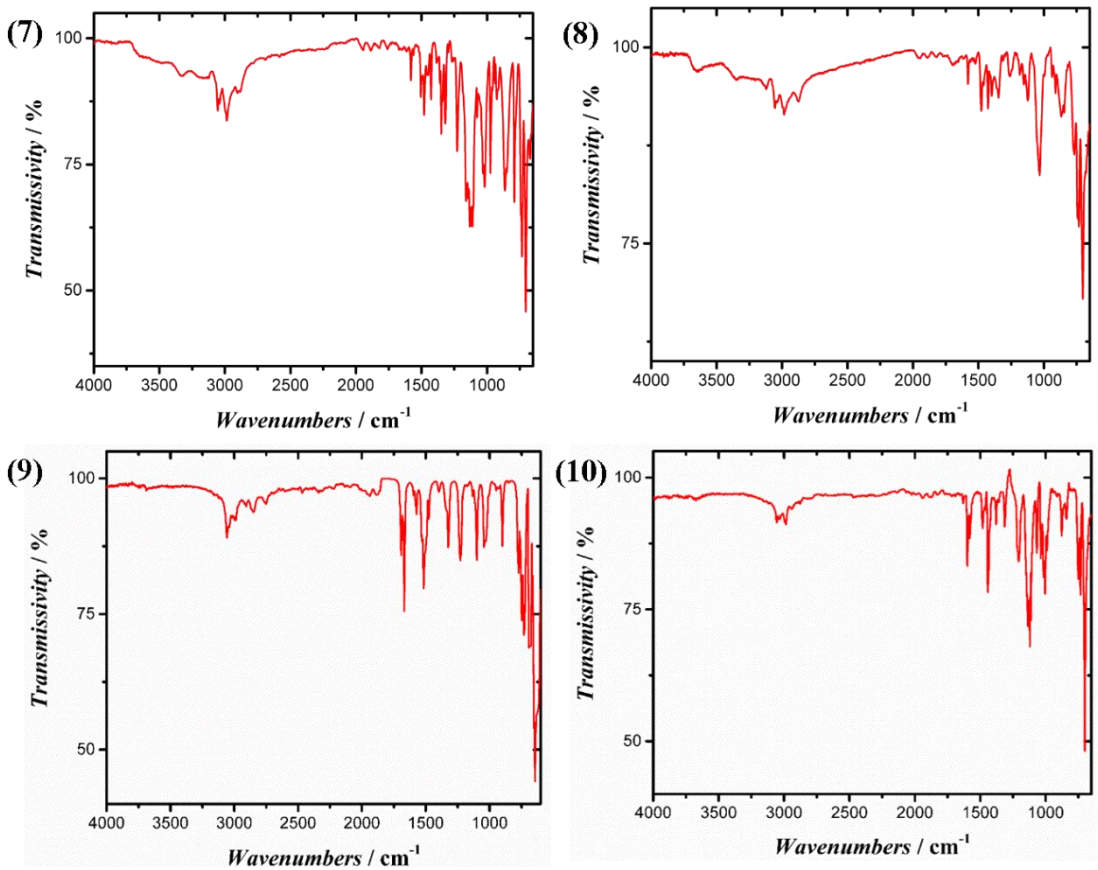

Figure S2. Infrared spectra of complexes **7 - 10**.

2. X-ray Crystallography Data

Table S1. Selected bond lengths (Å) and angles (deg) for complex **1**.

Dy(1)-N(1)	2.346(3)	Dy(1)-N(2)	2.426(4)
Dy(1)-cen(N-N)	2.303(5)	Dy(1)-O(1)	2.382(3)
Dy(1)-O(2)	2.431(3)	Dy(1)-O(3)	2.441(3)
Dy(1)-O(4)	2.385(3)	Dy(1)-O(5)	2.461(3)
Dy(1)-Cl(1)	2.6082(10)	O(1)-Dy(1)-O(2)	71.27(9)
O(2)-Dy(1)-O(3)	72.59(3)	O(3)-Dy(1)-O(4)	72.80(9)
O(4)-Dy(1)-O(5)	72.01(9)	O(5)-Dy(1)-O(1)	71.96(10)
cen(N-N)-Dy(1)-Cl(1)	175.80(2)		

Table S2. Selected bond lengths (Å) and angles (deg) for complex **2**.

Dy(1)-N(1)	2.364(4)	Dy(1)-N(2)	2.317(4)
Dy(1)-cen(N-N)	2.235(5)	Dy(1)-O(1)	2.458(3)
Dy(1)-O(2)	2.390(3)	Dy(1)-O(3)	2.448(3)
Dy(1)-O(4)	2.437(3)	Dy(1)-O(5)	2.457(3)
Dy(1)-Cl(1)	2.6216(13)	O(1)-Dy(1)-O(2)	72.39(12)
O(2)-Dy(1)-O(3)	73.13(12)	O(3)-Dy(1)-O(4)	72.37(11)
O(4)-Dy(1)-O(5)	71.79(10)	O(5)-Dy(1)-O(1)	70.44(10)
cen(N-N)-Dy(1)-Cl(1)	176.53(2)		

Table S3. Selected bond lengths (Å) and angles (deg) for complex **3**.

Dy(1)-N(1)	2.320(3)	Dy(1)-N(2)	2.353(3)
Dy(1)-cen(N-N)	2.232(3)	Dy(1)-O(1)	2.410(3)
Dy(1)-O(2)	2.478(2)	Dy(1)-O(3)	2.402(2)
Dy(1)-O(4)	2.464(2)	Dy(1)-O(5)	2.446(3)
Dy(1)-Cl(1)	2.6184(10)	O(1)-Dy(1)-O(2)	71.87(9)
O(2)-Dy(1)-O(3)	72.48(9)	O(3)-Dy(1)-O(4)	71.00(9)
O(4)-Dy(1)-O(5)	72.51(9)	O(5)-Dy(1)-O(1)	71.87(9)
cen(N-N)-Dy(1)-Cl(1)	177.44(3)		

Table S4. Selected bond lengths (Å) and angles (deg) for complex **4**.

Dy(1)-N(1)	2.331(7)	Dy(1)-N(2)	2.344(6)
Dy(1)-cen(N-N)	2.233(5)	Dy(1)-O(1)	2.427(6)
Dy(1)-O(2)	2.465(6)	Dy(1)-O(3)	2.452(6)
Dy(1)-O(4)	2.420(6)	Dy(1)-O(5)	2.493(6)
Dy(1)-Cl(1)	2.623(2)	O(1)-Dy(1)-O(2)	72.2 (2)
O(2)-Dy(1)-O(3)	72.3(2)	O(3)-Dy(1)-O(4)	71.1(2)
O(4)-Dy(1)-O(5)	73.3 (2)	O(5)-Dy(1)-O(1)	72.9(2)
cen(N-N)-Dy(1)-Cl(1)	177.94(6)		

Table S5. Selected bond lengths (Å) and angles (deg) for complex **5**.

Dy(1)-N(1)	2.348(5)	Dy(1)-N(2)	2.334(5)
Dy(1)-cen(N-N)	2.238(5)	Dy(1)-O(1)	2.438(4)
Dy(1)-O(2)	2.428(4)	Dy(1)-O(3)	2.476(4)
Dy(1)-O(4)	2.417(4)	Dy(1)-O(5)	2.474(4)
Dy(1)-Cl(1)	2.6122(15)	O(1)-Dy(1)-O(2)	70.31(13)
O(2)-Dy(1)-O(3)	73.44(13)	O(3)-Dy(1)-O(4)	74.91(13)
O(4)-Dy(1)-O(5)	71.51(13)	O(5)-Dy(1)-O(1)	72.75(13)
cen(N-N)-Dy(1)-Cl(1)	175.94(5)		

Table S6. Selected bond lengths (Å) and angles (deg) for complex **6**.

Dy(1)-N(1)	2.347(5)	Dy(1)-N(2)	2.333(5)
Dy(1)-cen(N-N)	2.242(5)	Dy(1)-O(1)	2.406(4)
Dy(1)-O(2)	2.464(4)	Dy(1)-O(3)	2.445(4)
Dy(1)-O(4)	2.435(4)	Dy(1)-O(5)	2.467 (4)
Dy(1)-Cl(1)	2.6194(18)	O(1)-Dy(1)-O(2)	71.96(15)
O(2)-Dy(1)-O(3)	71.38(14)	O(3)-Dy(1)-O(4)	71.04(14)
O(4)-Dy(1)-O(5)	72.57(15)	O(5)-Dy(1)-O(1)	73.17(16)
cen(N-N)-Dy(1)-Cl(1)	176.52(5)		

Table S7. Selected bond lengths (Å) and angles (deg) for complex **7**.

Dy(1)-N(1)	2.4505(18)	Dy(1)-N(2)	2.3553(19)
Dy(1)-N(3)	2.4505(18)	Dy(1)-N(4)	2.3553(19)
Dy(1)-cen(N-N)	2.306(5)	Dy(1)-O(1)	2.4508(15)
Dy(1)-O(2)	2.4213(15)	Dy(1)-O(3)	2.531(2)
Dy(1)-O(4)	2.4508(15)	Dy(1)-O(5)	2.4213(15)
O(1)-Dy(1)-O(2)	72.92(5)	O(2)-Dy(1)-O(3)	72.23(3)
O(3)-Dy(1)-O(4)	72.23(3)	O(4)-Dy(1)-O(5)	72.92(5)
O(5)-Dy(1)-O(1)	73.06(7)	cen(N-N)-Dy(1)- cen(N-N)	178.71(9)

Table S8. Selected bond lengths (Å) and angles (deg) for complex **8**.

Dy(1)-N(1)	2.370(6)	Dy(1)-N(2)	2.396(6)
Dy(1)-N(3)	2.382(8)	Dy(1)-N(4)	2.353(8)
Dy(1)-cen(N-N)(1)	2.296(8)	Dy(1)-cen(N-N)(2)	2.270(8)
Dy(1)-O(1)	2.470(6)	Dy(1)-O(2)	2.499(5)
Dy(1)-O(3)	2.451(4)	Dy(1)-O(4)	2.472(6)
Dy(1)-O(5)	2.462(7)	O(1)-Dy(1)-O(2)	71.4(2)
O(2)-Dy(1)-O(3)	72.4(2)	O(3)-Dy(1)-O(4)	75.5(2)
O(4)-Dy(1)-O(5)	70.7(2)	O(5)-Dy(1)-O(1)	71.81(17)
cen(N-N)-Dy(1)-cen(N-N)	174.23(27)	cen(N-N)-Dy(1)-N(5)	83.39(3)
cen(N-N)-Dy(1)-N(5)	95.50(4)	cen(N-N)-Dy(1)-N(5)	91.93(3)
cen(N-N)-Dy(1)-N(5)	84.57(2)	cen(N-N)-Dy(1)-N(5)	92.14(5)

Table S9. Selected bond lengths (Å) and angles (deg) for complex **9**.

Dy(1)-N(1)	2.407(3)	Dy(1)-N(2)	2.397(3)
Dy(1)-N(3)	2.364(3)	Dy(1)-N(4)	2.394(3)
Dy(1)-cen(N-N)(1)	2.301(6)	Dy(1)-cen(N-N)(2)	2.278(6)
Dy(1)-N(5)	2.567(3)	Dy(1)-N(6)	2.626(3)
Dy(1)-N(7)	2.534(3)	Dy(1)-N(8)	2.628(3)
Dy(1)-N(9)	2.578(3)	N(5)-Dy(1)-N(6)	70.71(10)
N(6)-Dy(1)-N(7)	76.52(10)	N(7)-Dy(1)-N(8)	72.93(10)
N(8)-Dy(1)-N(9)	69.77(10)	N(9)-Dy(1)-N(5)	73.27(10)
cen(N-N)-Dy(1)-cen(N-N)	177.66(22)	cen(N-N)-Dy(1)-N(5)	87.71(3)
cen(N-N)-Dy(1)-N(6)	89.50(5)	cen(N-N)-Dy(1)-N(7)	95.79(6)
cen(N-N)-Dy(1)-N(8)	81.00(3)	cen(N-N)-Dy(1)-N(9)	96.48(7)

Table S10. Selected bond lengths (Å) and angles (deg) for complex **10**.

Dy(1)-N(1)	2.384(5)	Dy(1)-N(2)	2.401(4)
Dy(1)-N(3)	2.434(4)	Dy(1)-N(4)	2.383(4)
Dy(1)-cen(N-N)(1)	2.291(16)	Dy(1)-cen(N-N)(2)	2.309(16)
Dy(1)-N(5)	2.549(5)	Dy(1)-N(6)	2.564(4)
Dy(1)-N(7)	2.576(4)	Dy(1)-N(8)	2.577(4)
Dy(1)-N(9)	2.577(5)	N(5)-Dy(1)-N(6)	75.62(14)
N(6)-Dy(1)-N(7)	69.58(14)	N(7)-Dy(1)-N(8)	71.10(14)
N(8)-Dy(1)-N(9)	70.72(13)	N(9)-Dy(1)-N(5)	78.29(14)
cen(N-N)-Dy(1)-cen(N-N)	175.16(37)	cen(N-N)-Dy(1)-N(5)	78.58(3)
cen(N-N)-Dy(1)-N(6)	96.94(4)	cen(N-N)-Dy(1)-N(7)	81.03(5)
cen(N-N)-Dy(1)-N(8)	94.86(4)	cen(N-N)-Dy(1)-N(9)	96.11(5)

Table S11. X-ray crystallographic data for complexes **1 - 4**.

Complex	**1**	**2**	**3**	**4**
Empirical formula	$C_{52}H_{70}BClDyF_3N_2O_6$	$C_{48}H_{65}BClDyN_2O_5$	$C_{54}H_{69}BClDyN_2O_6$	$C_{53}H_{77}BClDyN_2O_7$
Formula weight / g mol^{-1}	1084.86	958.78	1050.87	1062.92
Temperature / K	150	150	150	150
Crystal system	monoclinic	monoclinic	triclinic	monoclinic
Space group	$P2_1/c$	$C2/c$	$P\bar{1}$	$C2/c$
a / Å	12.972(2)	19.719(8)	12.130(3)	17.416(6)
b / Å	23.064(4)	16.286(7)	12.685(3)	19.019(6)
c / Å	17.494(3)	28.674(12)	17.772(4)	33.756(13)
α / °	90	90	81.348(3)	90
β / °	104.213(2)	93.945(5)	77.247(3)	93.763(3)
γ / °	90	90	85.637(3)	90
V / Å^3	5073.7(15)	9186(6)	2634.2(11)	11157(7)
Z	4	8	2	8
ρ_{calc} / g cm^{-3}	1.420	1.384	1.325	1.266
F(000)	2236.0	3944.0	1086.0	4424.0
Crystal size/ mm^3	0.18×0.16×0.15	0.26 ×0.17×0.15	0.14×0.15×0.13	0.24×0.18×0.13
Radiation	MoKα (λ = 0.71073)	MoKα (λ = 0.71073)	MoKα (λ = 0.71073)	MoKα (λ = 0.71073)
2θ range / °	2.98 to 55.35	2.848 to 53.134	3.25 to 53.486	3.174 to 49.998
Reflections collected	54309	36222	28634	47832
Goodness-of-fit on F^2	1.105	1.103	1.026	1.172
R indexes [I>=2σ (I)]	R_1 = 0.0390, wR_2= 0.0883	R_1 =0.0406, wR_2 =0.0933	R_1 = 0.0375, wR_2 = 0.0936	R_1 = 0.0723, wR_2 = 0.1854
Final R indexes [all data]	R_1 = 0.0551, wR_2 = 0.0977	R_1 = 0.0566, wR_2 = 0.1001	R_1 = 0.0449, wR_2 = 0.0987	R_1 = 0.0890, wR_2 = 0.1949

Table S12. X-ray crystallographic data for complexes **5 - 7**.

Complex	**5**	**6**	**7**
Empirical formula	$C_{57}H_{85}BClDyN_2O_7$	$C_{51}H_{73}BClDyN_2O_7$	$C_{52}H_{64}BDyF_6N_4O_5$
Formula weight / g mol^{-1}	1119.03	1034.87	1112.38
Temperature / K	150	150	150
Crystal system	triclinic	triclinic	monoclinic
Space group	$P\bar{1}$	$P\bar{1}$	$C2/c$
a / Å	12.661(3)	12.861(6)	10.539(3)
b / Å	12.944(3)	13.033(6)	30.137(9)
c / Å	18.009(4)	16.666(8)	15.602(5)
α / °	75.837(3)	77.974(6)	90
β / °	86.900(3)	78.722(6)	96.835(4)
γ / °	82.869(3)	80.447(6)	90
V / Å^3	2838.7(11)	2657(2)	4920(3)
Z	2	2	4
ρ_{calc} / g cm^{-3}	1.307	1.287	1.502
F(000)	1166.0	1064.0	2276.0
Crystal size/ mm^3	0.22×0.19×0.17	0.15 ×0.14×0.12	0.3×0.26×0.24
Radiation	MoKα (λ = 0.71073)	MoKα (λ = 0.71073)	MoKα (λ = 0.71073)
2θ range / °	2.332 to 53.434	3.222 to 52.842	3.77 to 55.142
Reflections collected	29433	27616	28194
Goodness-of-fit on F^2	1.038	1.036	1.085
R indexes [I>=2σ (I)]	R_1 = 0.0533, wR_2 = 0.1406	R_1 =0.0506, wR_2 =0.1366	R_1 = 0.0233, wR_2 = 0.0578
Final R indexes [all data]	R_1 = 0.0784, wR_2 = 0.1577	R_1 = 0.0741, wR_2 = 0.1541	R_1 = 0.0262, wR_2 = 0.0594

Table S13. X-ray crystallographic data for complexes **8 - 10**.

Complex	**8**	**9**	**10**
Empirical formula	$C_{50}H_{66}BDyN_4O_5$	$C_{62}H_{58}BDyN_{11}$	$C_{45}H_{41}BDyN_9S_5$
Formula weight / g mol^{-1}	976.37	1130.50	1041.48
Temperature / K	150	150	150
Crystal system	orthorhombic	monoclinic	orthorhombic
Space group	$P2_12_12_1$	$P2_1/n$	Pbca
a / Å	10.841(4)	9.619(3)	19.857(14)
b / Å	13.215 (5)	30.938(8)	19.247(14)
c / Å	33.326(13)	18.634(5)	23.965(17)
α / °	90	90	90
β / °	90	94.845(4)	90
γ / °	90	90	90
V / Å^3	4774(3)	5526(3)	9159(11)
Z	4	4	8
ρ_{calc} / g cm^{-3}	1.358	1.359	1.511
F(000)	2020.0	2312.0	4200.0
Crystal size/ mm^3	0.32×0.25×0.19	0.32×0.16×0.15	0.66×0.54×0.48
Radiation	MoKα (λ = 0.71073)	MoKα (λ = 0.71073)	MoKα (λ = 0.71073)
2θ range / °	3.316 to 52.116	3.426 to 52.928	3.398 to 53.108
Reflections collected	45410	33129	70169
Goodness-of-fit on F^2	1.016	1.035	1.150
R indexes [I>=2σ (I)]	R_1 = 0.0387, wR_2 = 0.0865	R_1 = 0.0387, wR_2 = 0.0865	R_1 = 0.0440, wR_2 = 0.1031
Final R indexes [all data]	R_1 = 0.0506, wR_2 = 0.0918	R_1 = 0.0506, wR_2 = 0.0918	R_1 = 0.0649, wR_2 = 0.1148

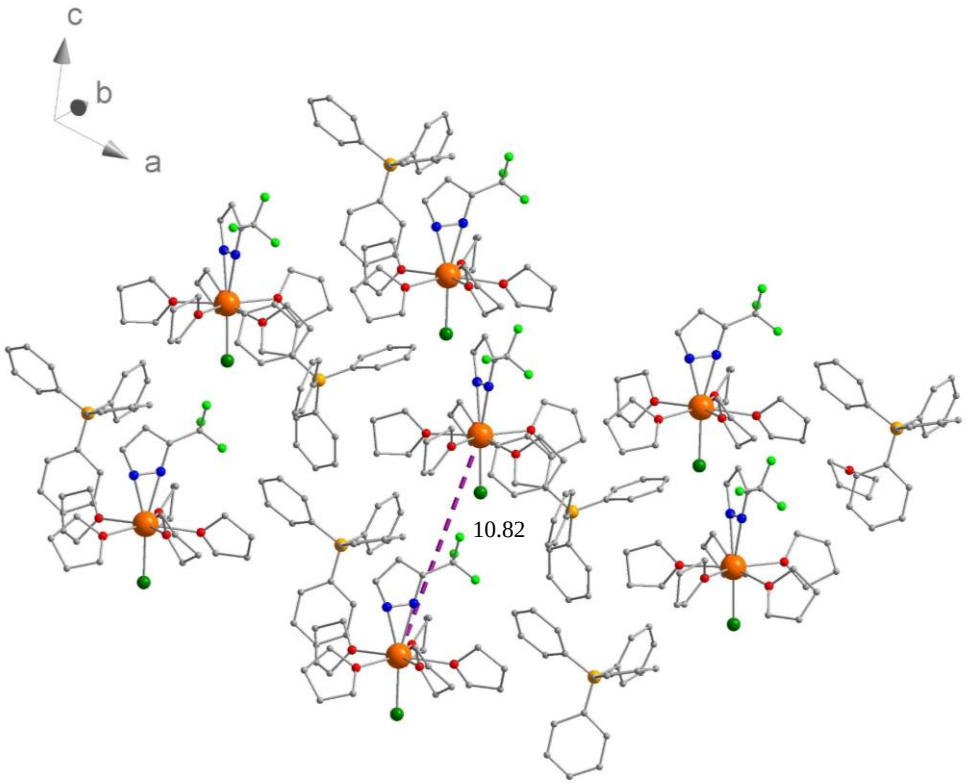

Figure S3. Molecular packing arrangement of **1**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; F, light green; B, light orange; C, grey.

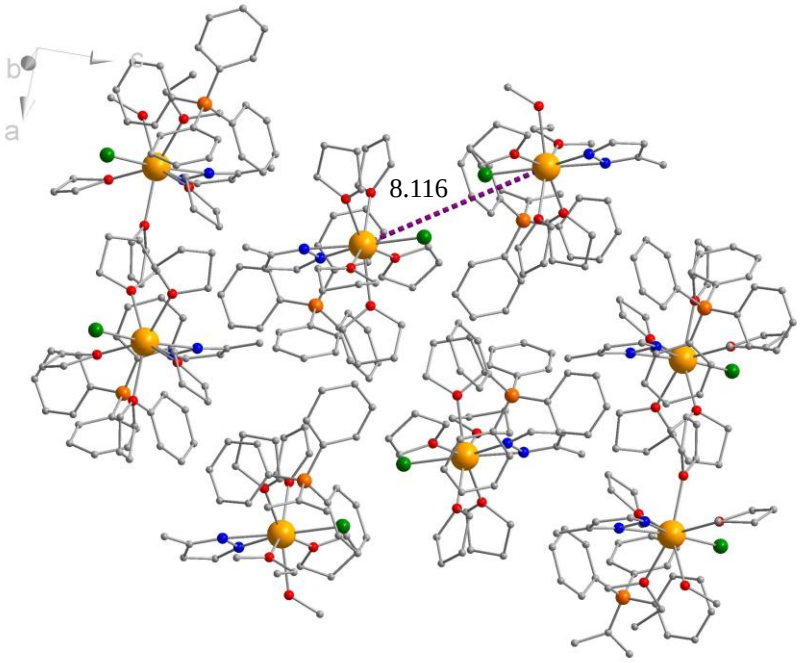

Figure S4. Molecular packing arrangement of **2**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; F, light green; B, light orange; C, grey.

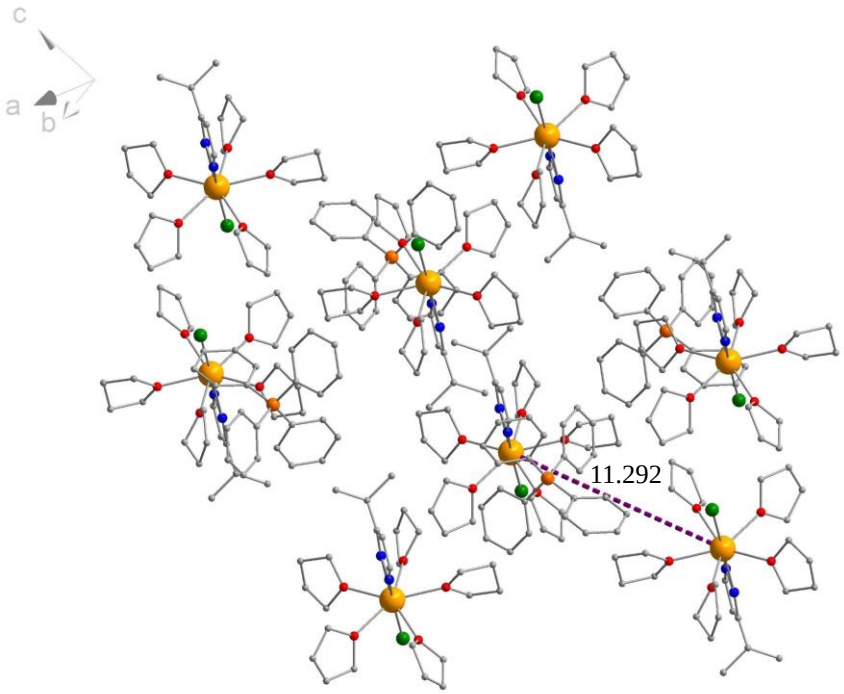

Figure S5. Molecular packing arrangement of **3**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; F, light green; B, light orange; C, grey.

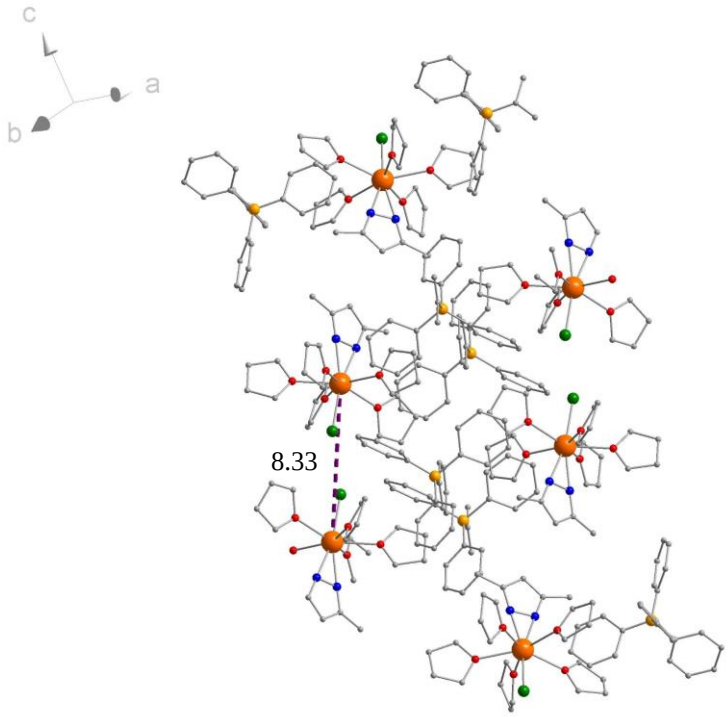

Figure S6. Molecular packing arrangement of **4**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; B, light orange; C, grey.

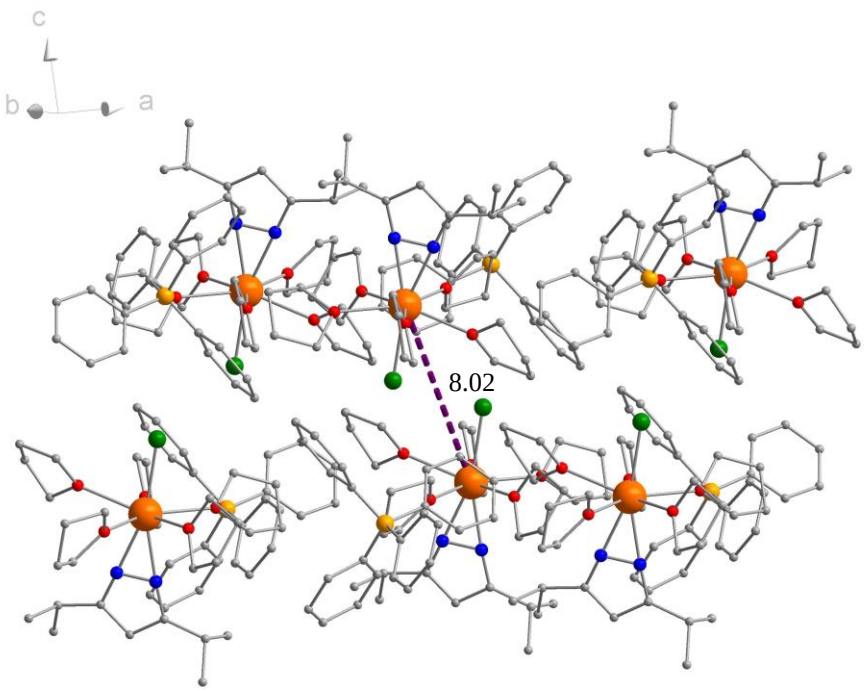

Figure S7. Molecular packing arrangement of **5**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; B, light orange; C, grey.

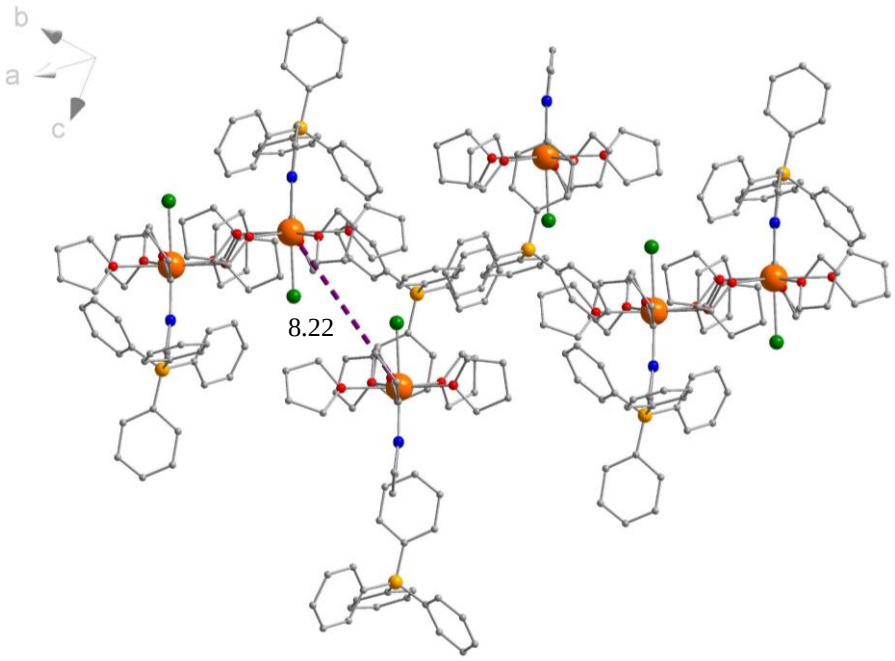

Figure S8. Molecular packing arrangement of **6**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; B, light orange; C, grey.

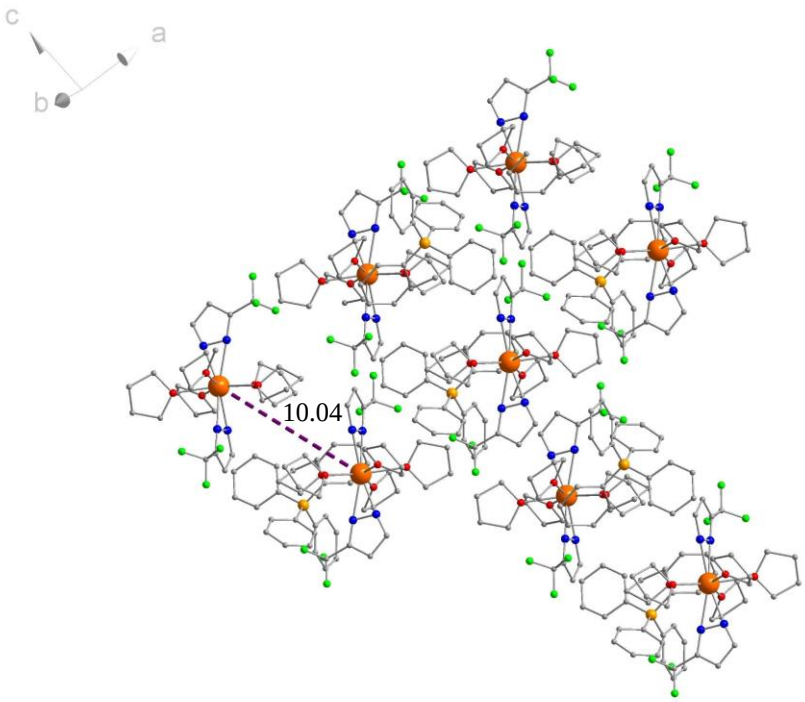

Figure S9. Molecular packing arrangement of **7**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; F, light green; B, light orange; C, grey.

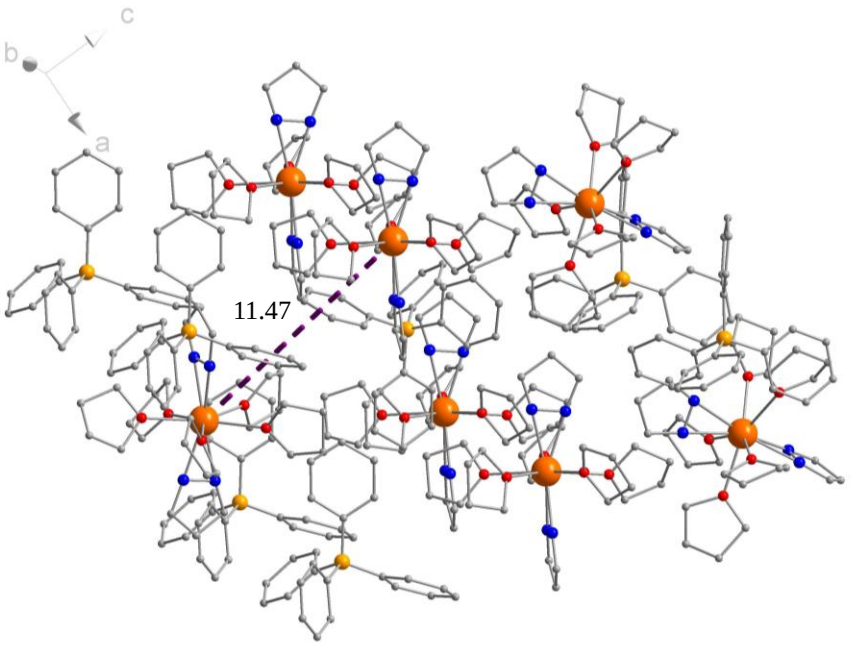

Figure S10. Molecular packing arrangement of **8**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; F, light green; B, light orange; C, grey.

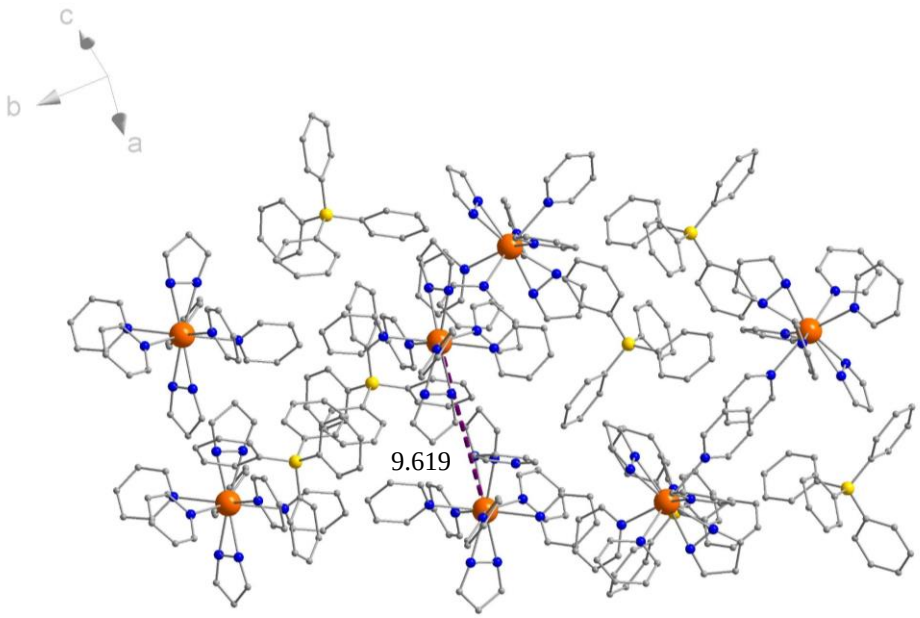

Figure S11. Molecular packing arrangement of **9**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; F, light green; B, light orange; C, grey.

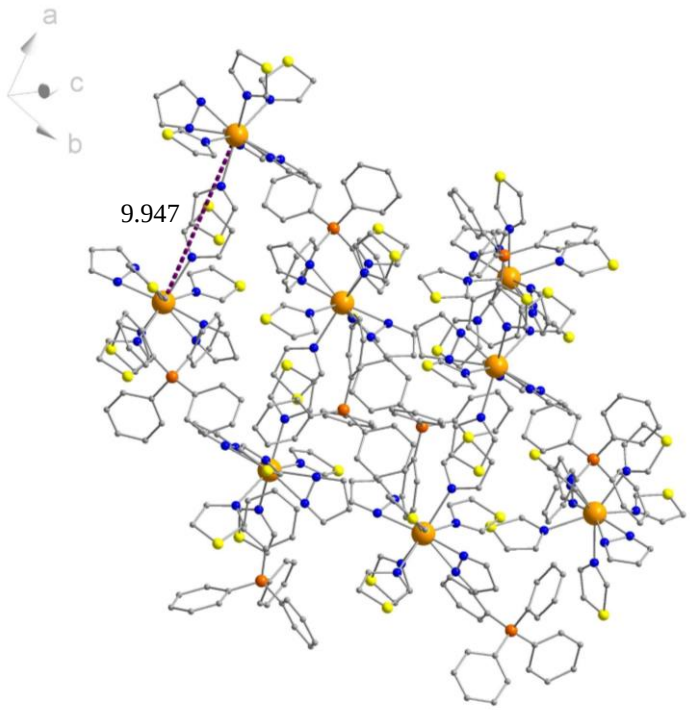

Figure S12. Molecular packing arrangement of **10**; dashed line shows the nearest intermolecular Dy···Dy separation (Å). Hydrogen atoms and solvent molecules are omitted for clarity. Color codes: Dy, orange; O, red; N, blue; Cl, green; F, light green; B, light orange; C, grey.

3. Magnetic Property

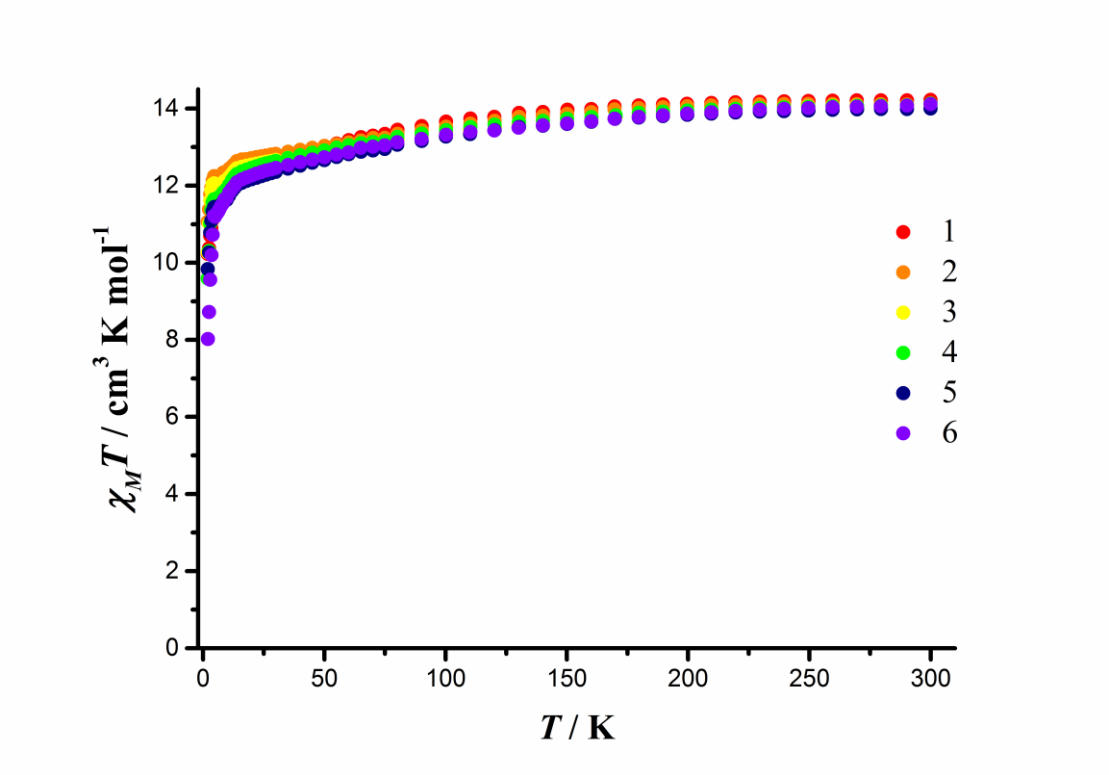

Figure S13. Temperature-dependent dc magnetic susceptibility (measured under 1000 Oe) for **1 - 6**.

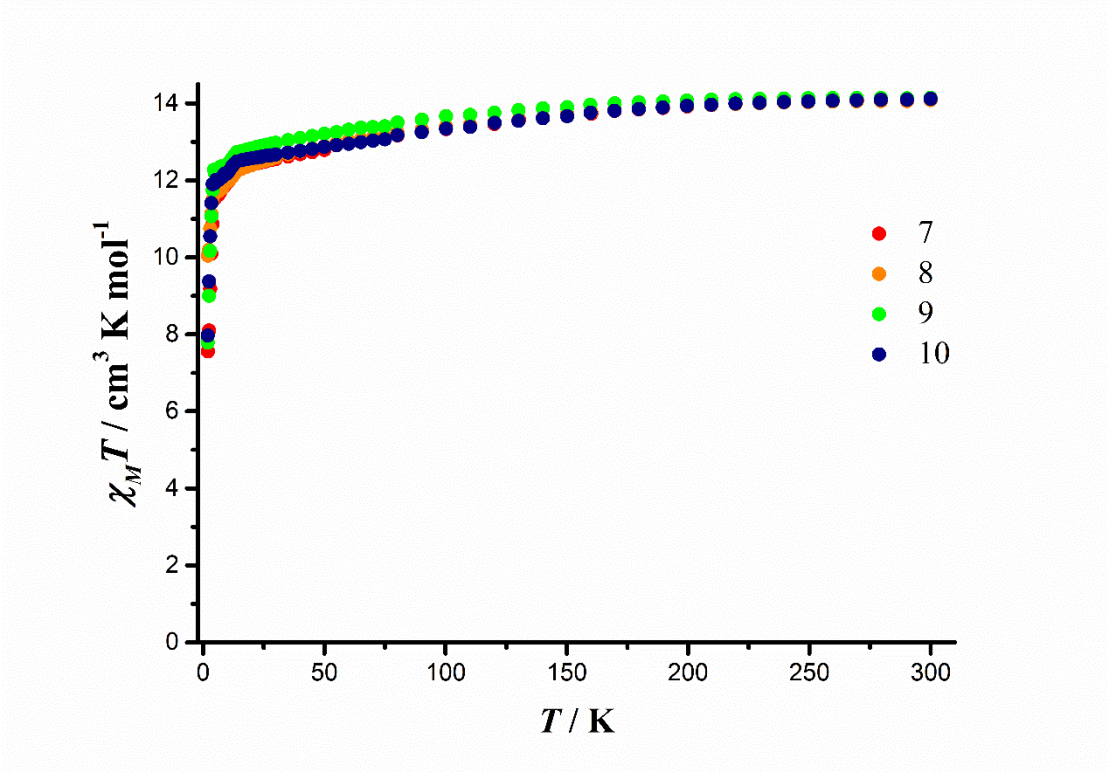

Figure S14. Temperature-dependent dc magnetic susceptibility (measured under 1000 Oe) for **7 - 10**.

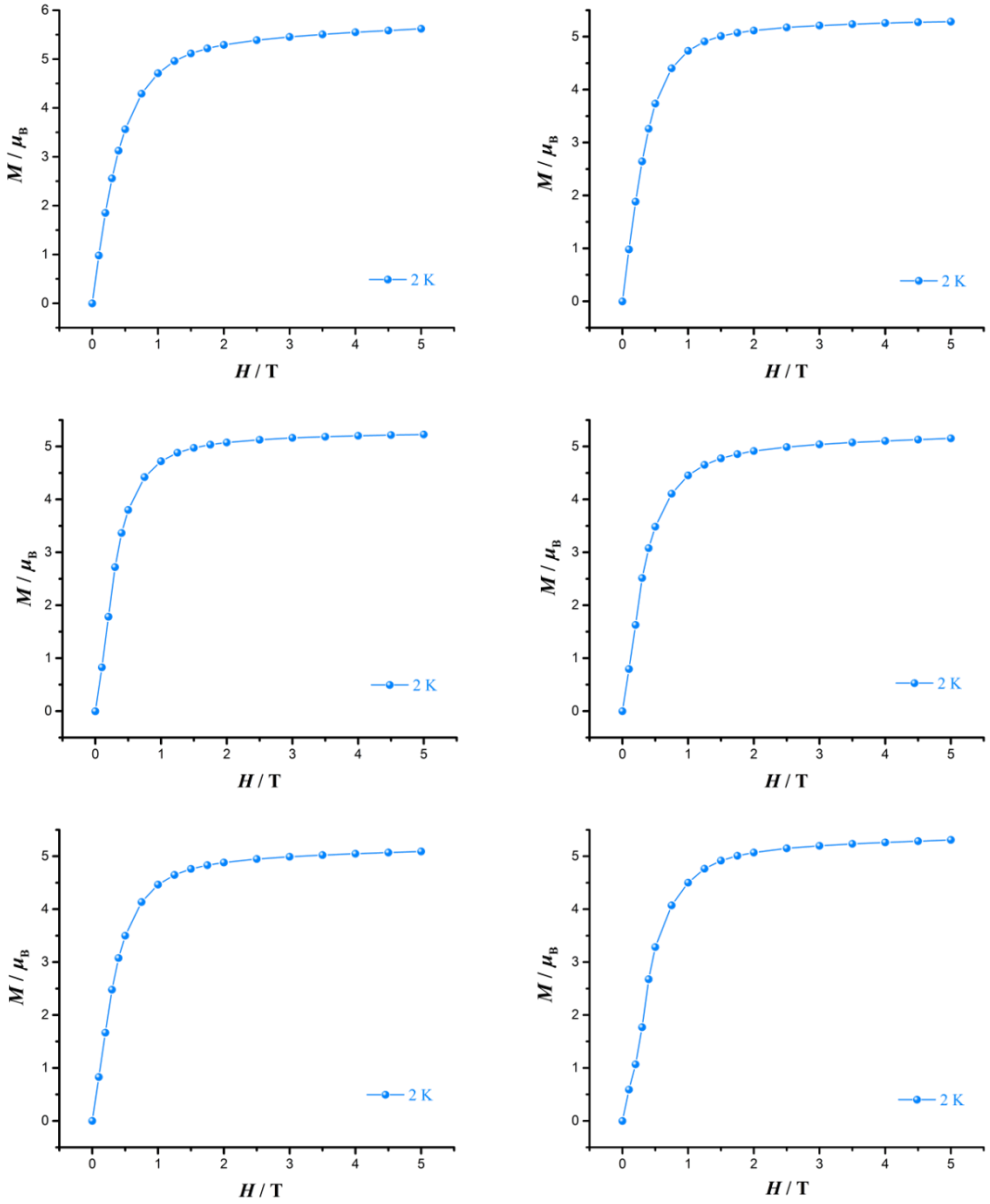

Figure S15. Field dependent magnetization for **1 - 6**.

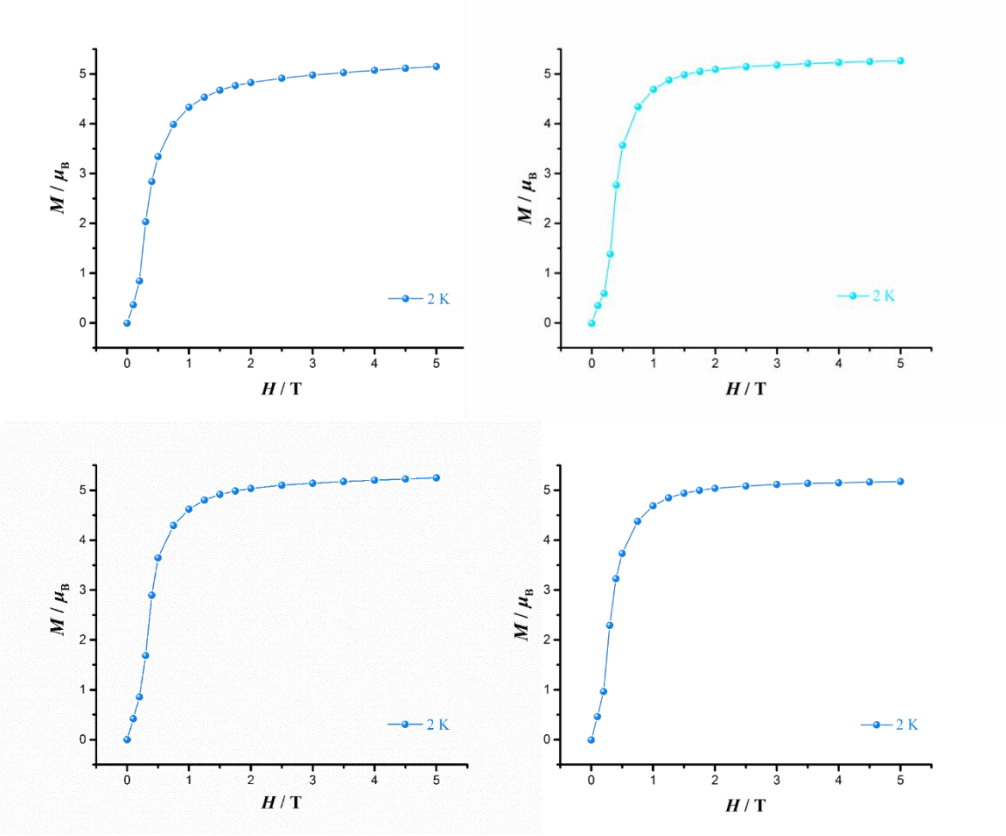

Figure S16. Field dependent magnetization for **7 - 10**.

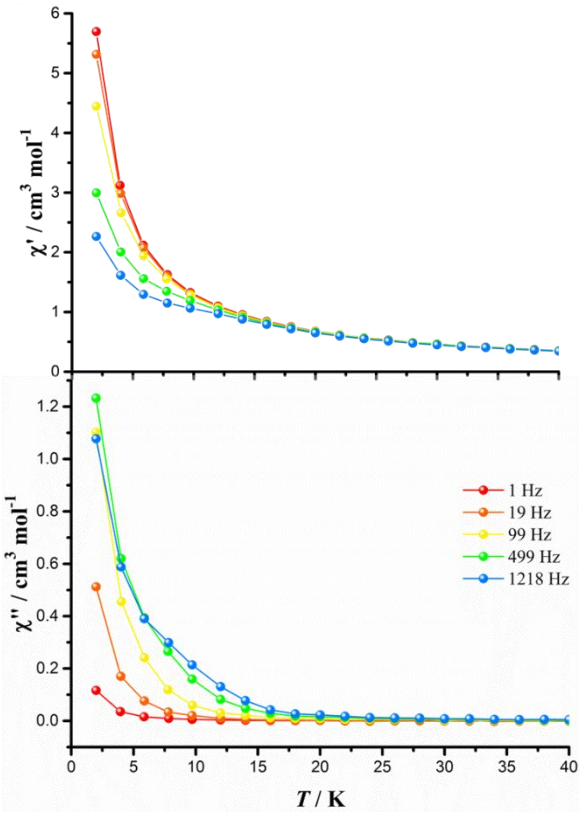

Figure S17. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **1**, in zero static field and an oscillating field of 3.5 Oe.

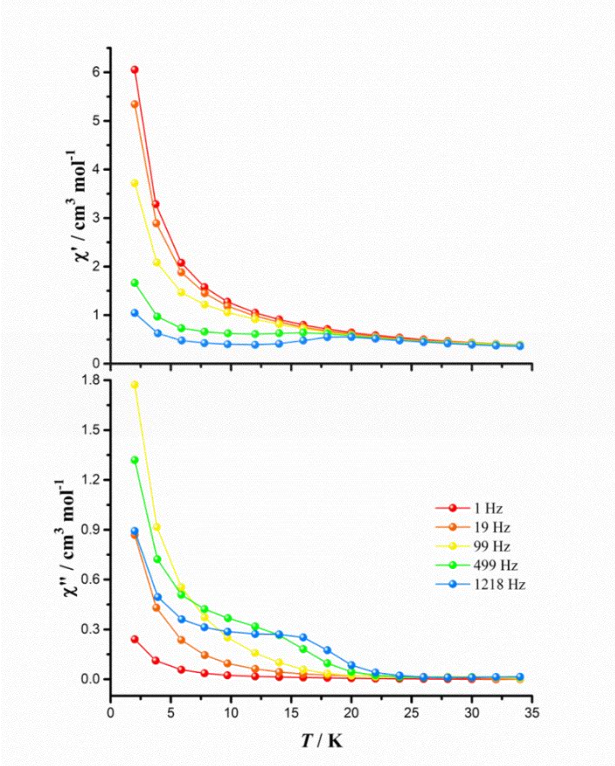

Figure S18. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **2**, in zero static field and an oscillating field of 3.5 Oe.

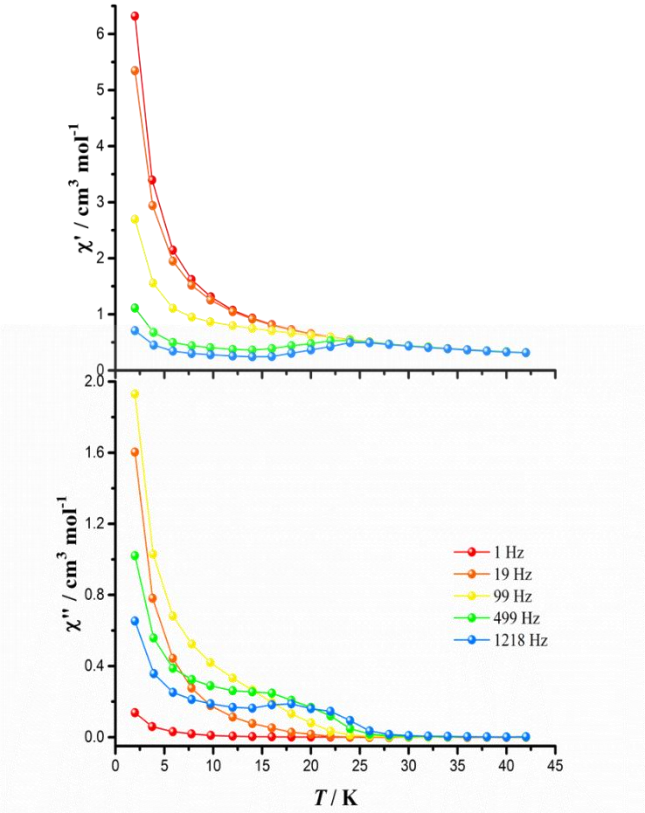

Figure S19. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **3**, in zero static field and an oscillating field of 3.5 Oe.

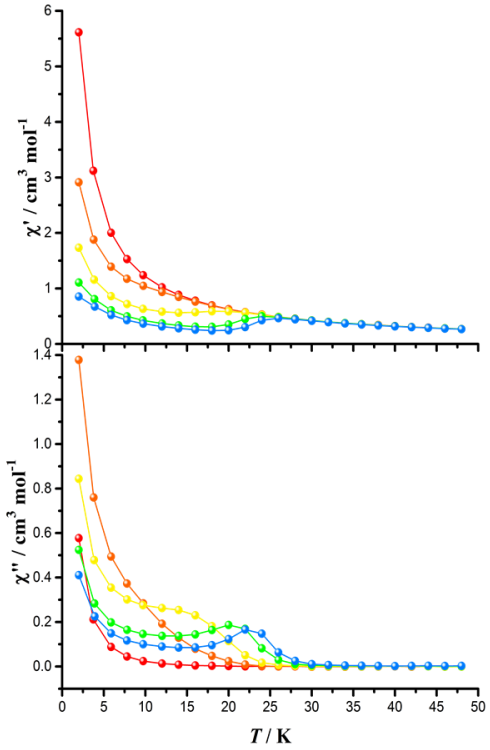

Figure S20. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **4**, in zero static field and an oscillating field of 3.5 Oe.

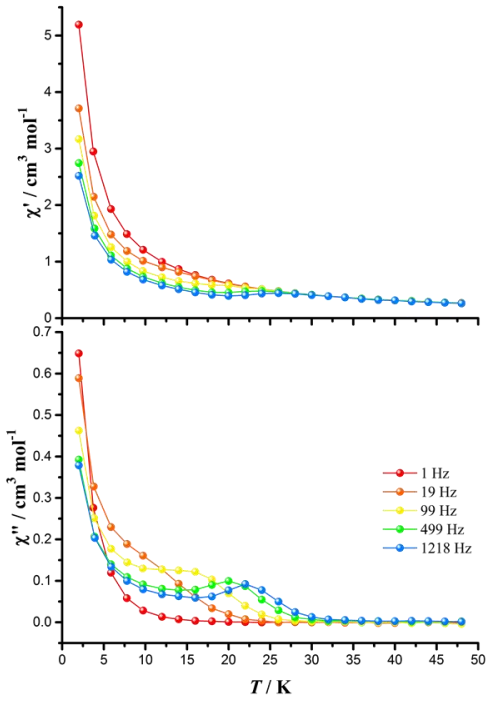

Figure S21. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **5**, in zero static field and an oscillating field of 3.5 Oe.

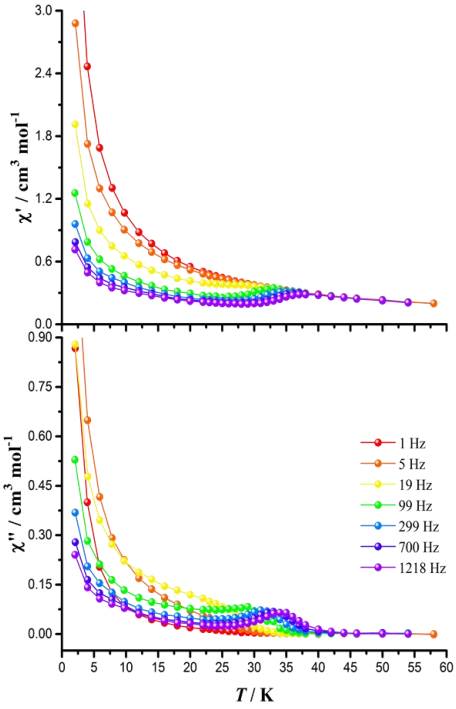

Figure S22. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **6**, in zero static field and an oscillating field of 3.5 Oe.

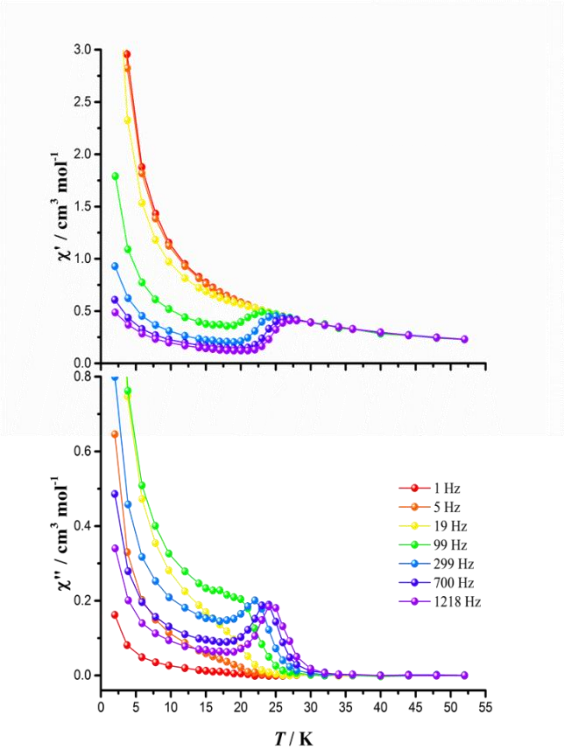

Figure S23. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **7**, in zero static field and an oscillating field of 3.5 Oe.

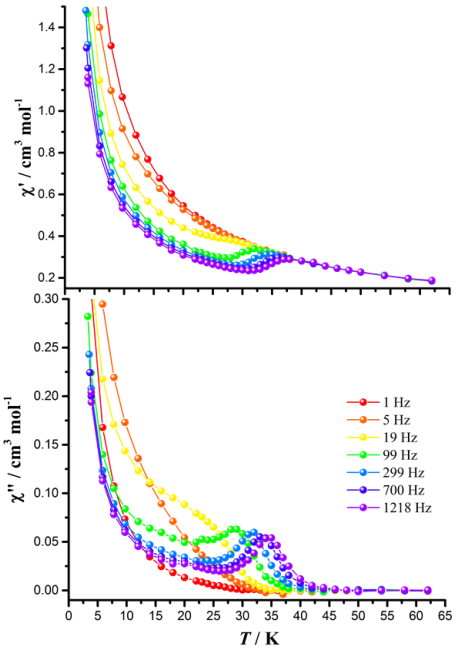

Figure S24. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **8**, in zero static field and an oscillating field of 3.5 Oe.

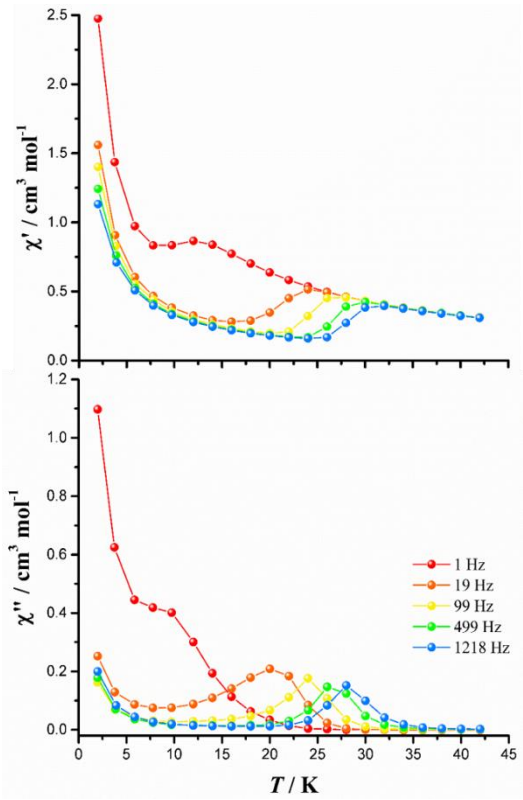

Figure S25. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **9**, in zero static field and an oscillating field of 3.5 Oe.

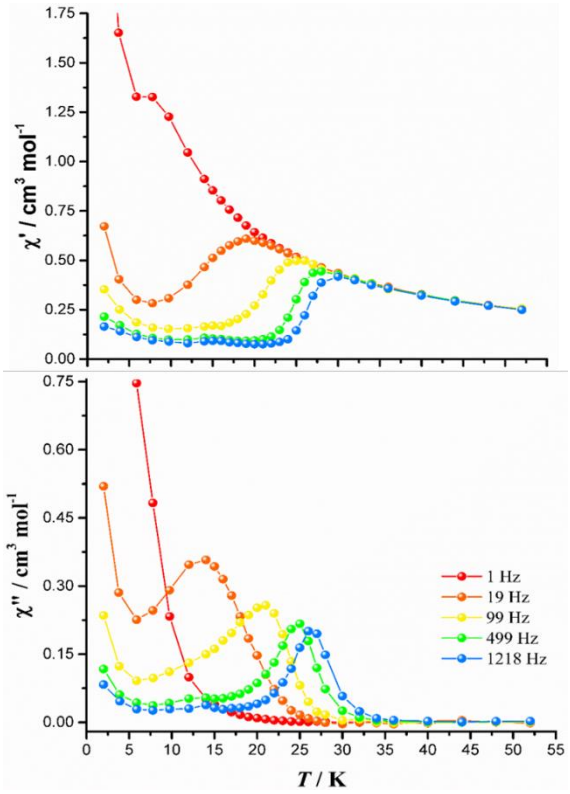

Figure S26. Variable-temperature in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **10**, in zero static field and an oscillating field of 3.5 Oe.

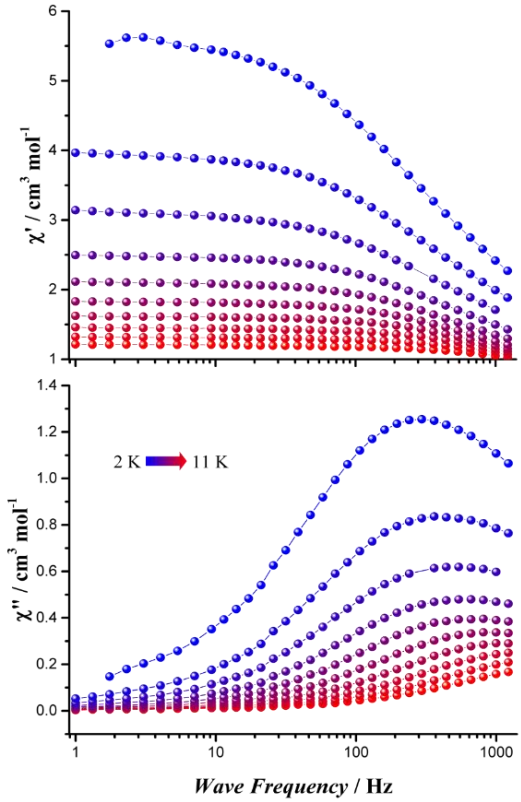

Figure S27. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **1**, in zero static field and an oscillating field of 3.5 Oe.

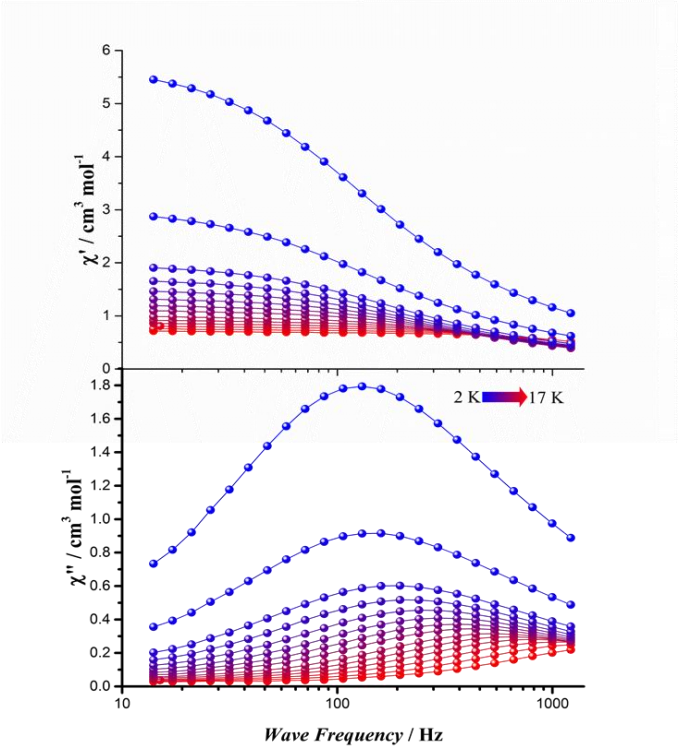

Figure S28. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **2**, in zero static field and an oscillating field of 3.5 Oe.

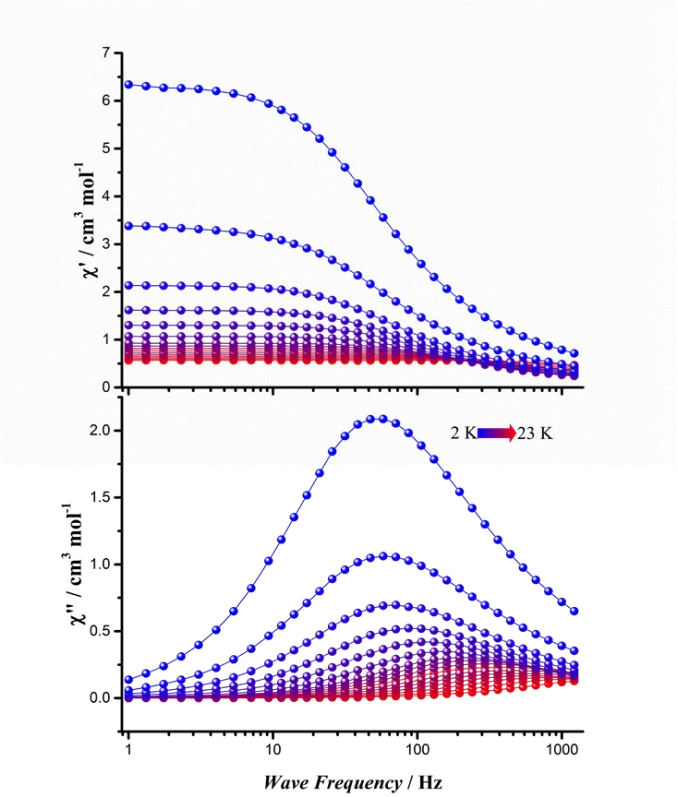

Figure S29. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **3**, in zero static field and an oscillating field of 3.5 Oe.

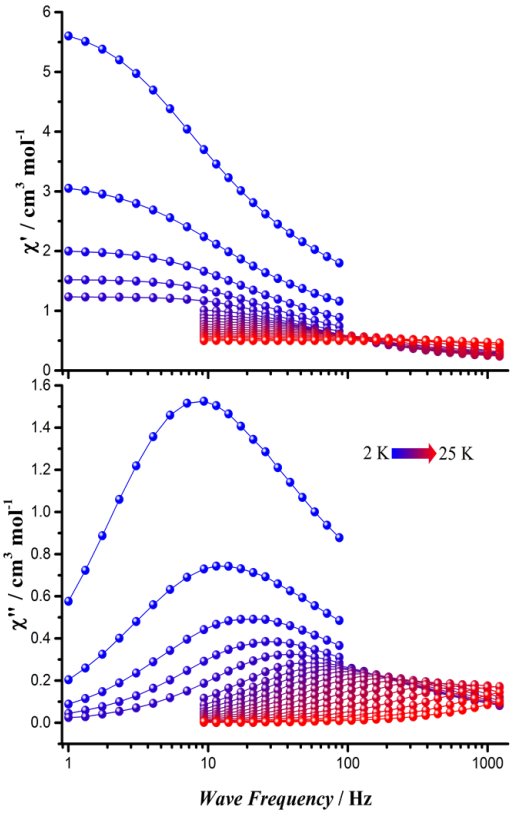

Figure S30. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **4**, in zero static field and an oscillating field of 3.5 Oe.

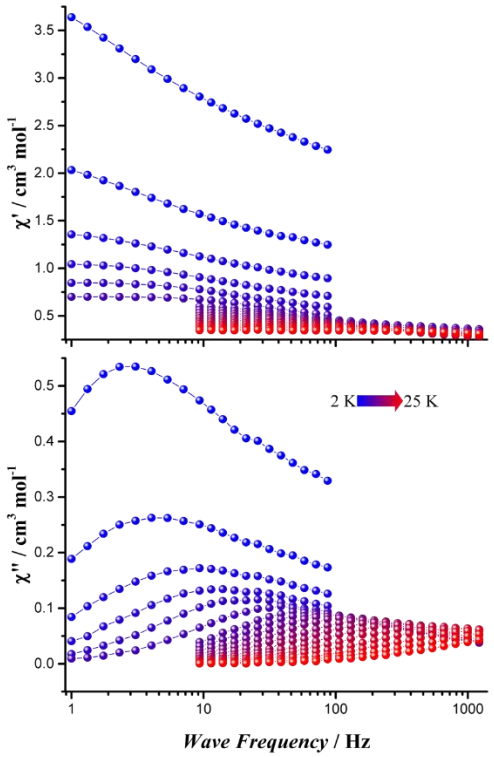

Figure S31. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **5**, in zero static field and an oscillating field of 3.5 Oe.

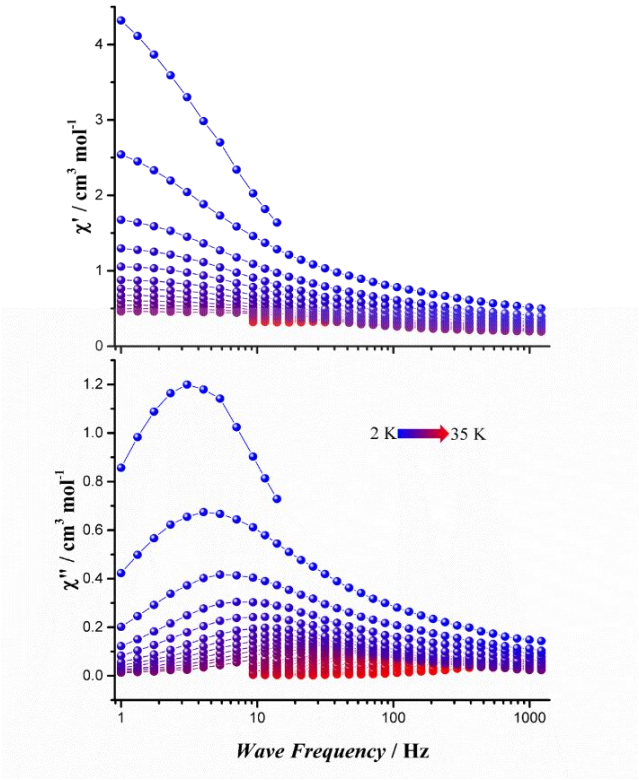

Figure S32. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **6**, in zero static field and an oscillating field of 3.5 Oe.

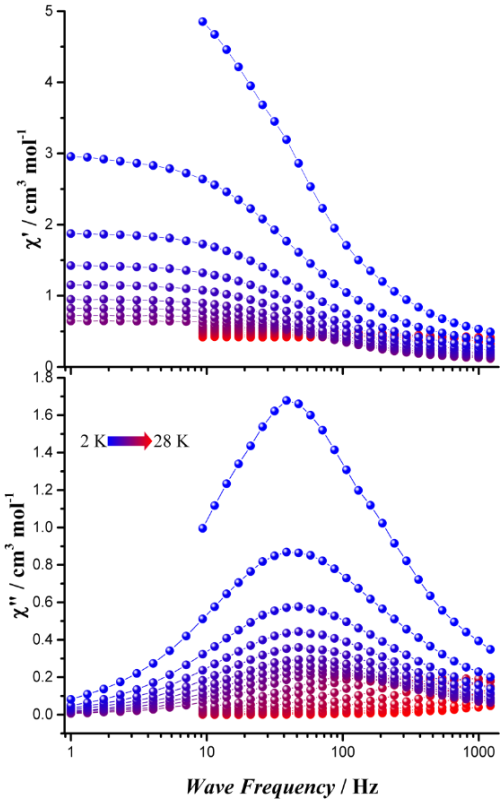

Figure S33. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **7**, in zero static field and an oscillating field of 3.5 Oe.

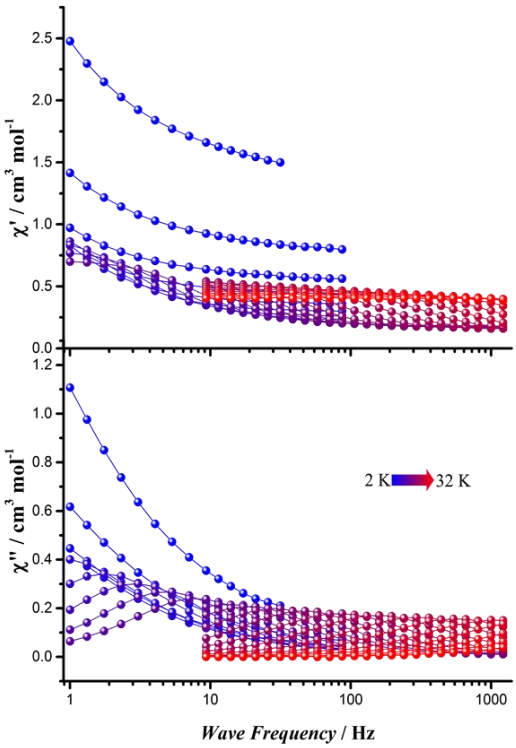

Figure S34. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **9**, in zero static field and an oscillating field of 3.5 Oe.

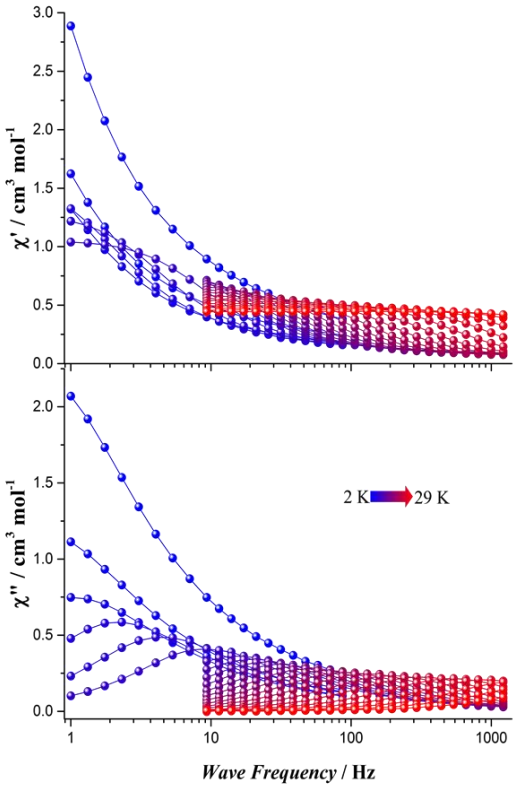

Figure S35. Variable frequency in-phase (top) and out-of-phase (bottom) magnetic susceptibility of **10**, in zero static field and an oscillating field of 3.5 Oe.

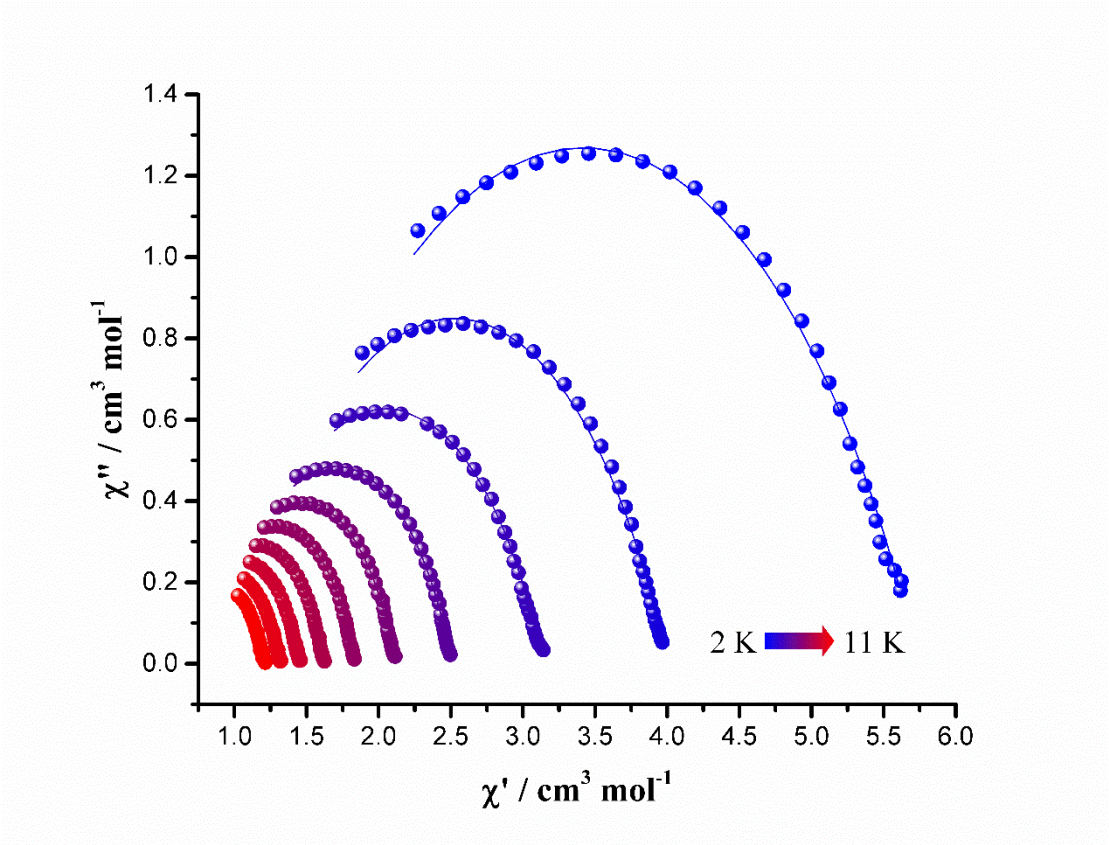

Figure S36. Cole–Cole plots for **1** collected from 2 K to 11 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

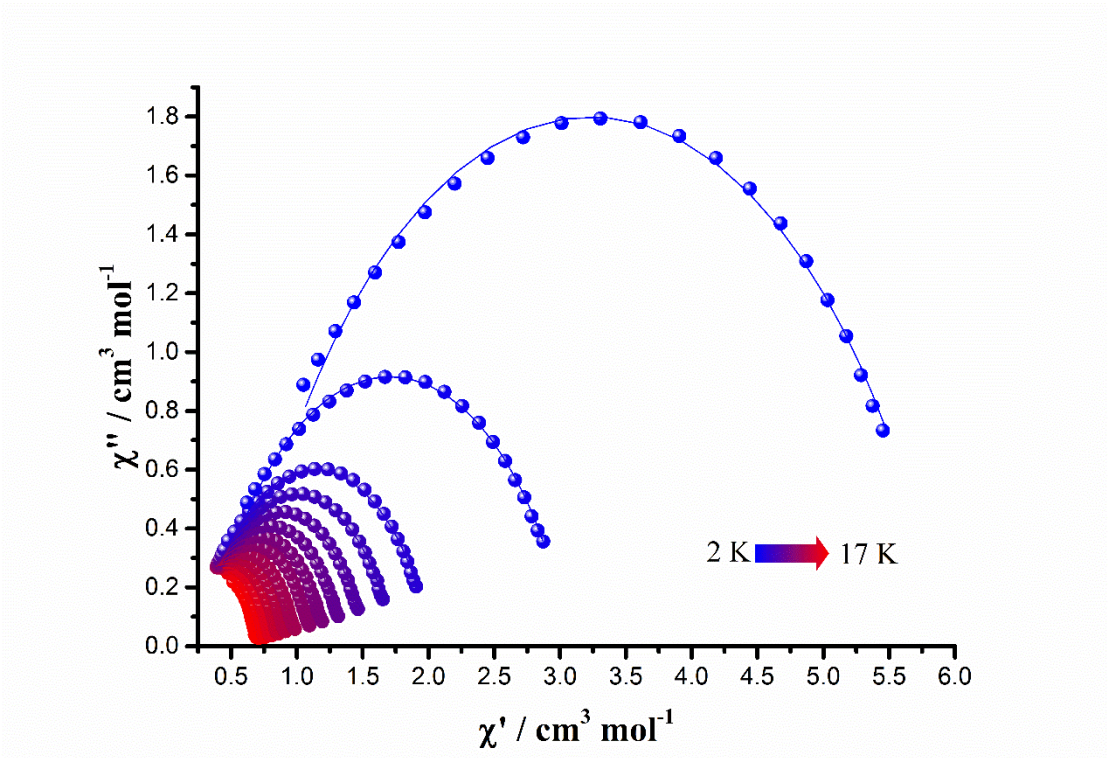

Figure S37. Cole–Cole plots for **2**collected from 2 K to 17 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

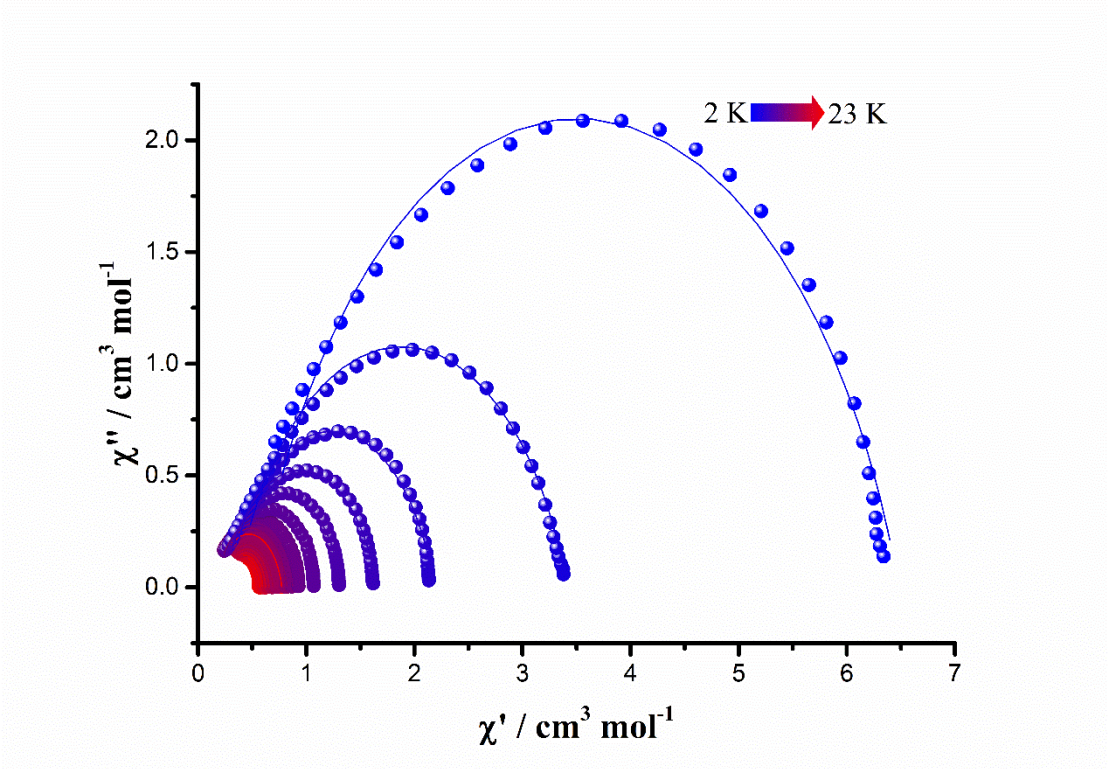

Figure S38. Cole–Cole plots for **3** collected from 2 K to 23 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

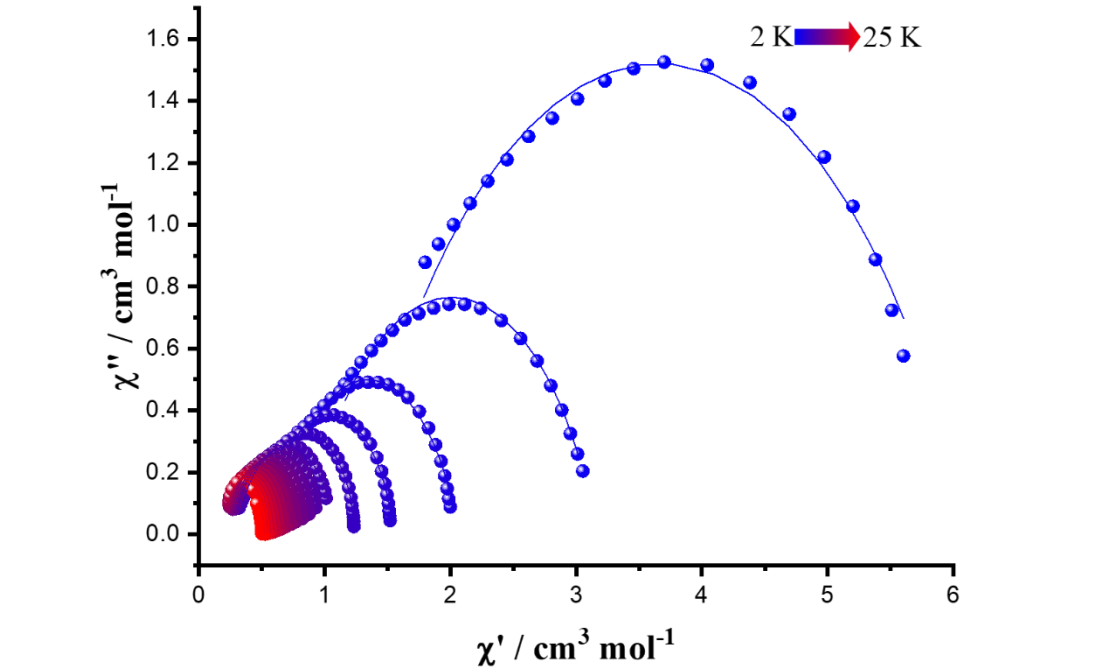

Figure S39. Cole–Cole plots for **4** collected from 2 K to 25 K. Lines represent fits with a generalized Debye model used to extract relaxation times..

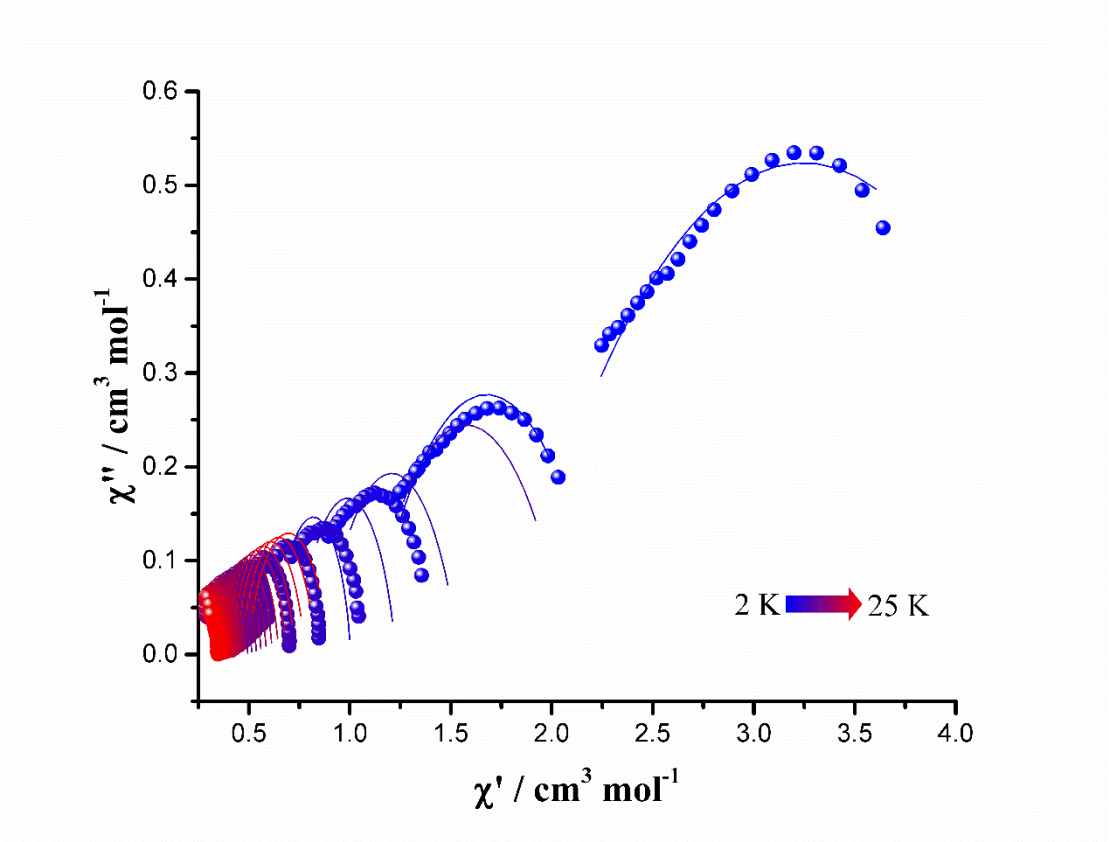

Figure S40. Cole–Cole plots for **5** collected from 2 K to 25 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

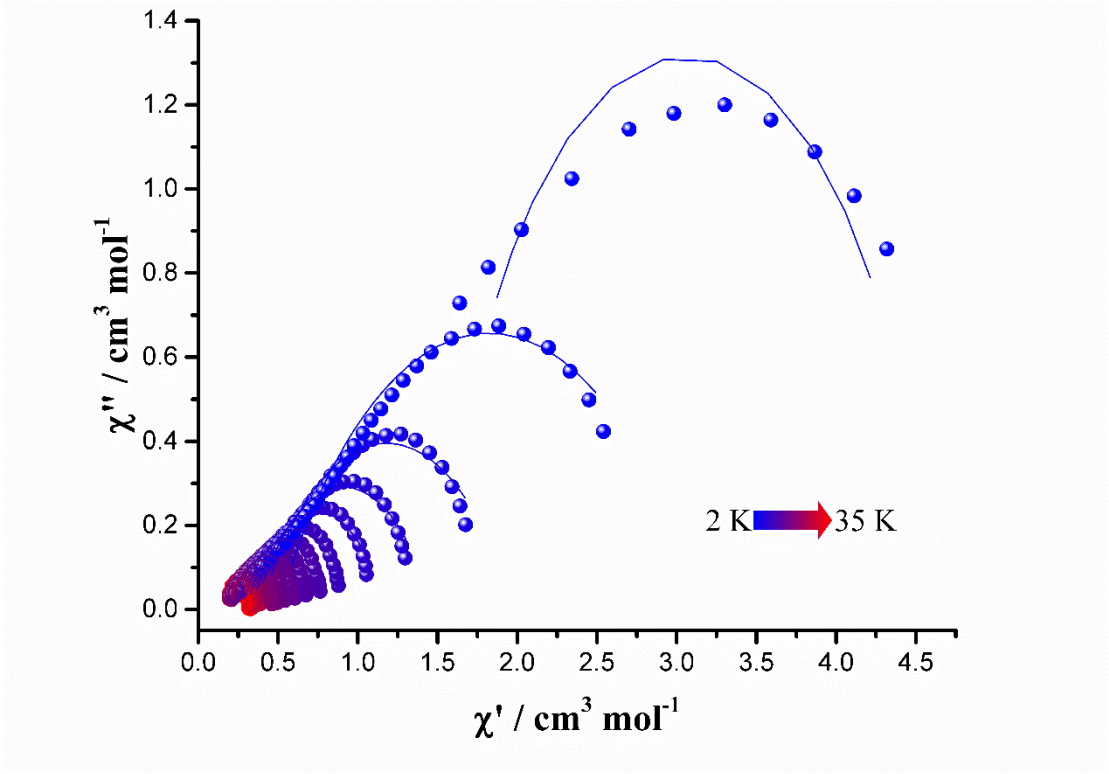

Figure S41. Cole–Cole plots for **6** collected from 2 K to 35 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

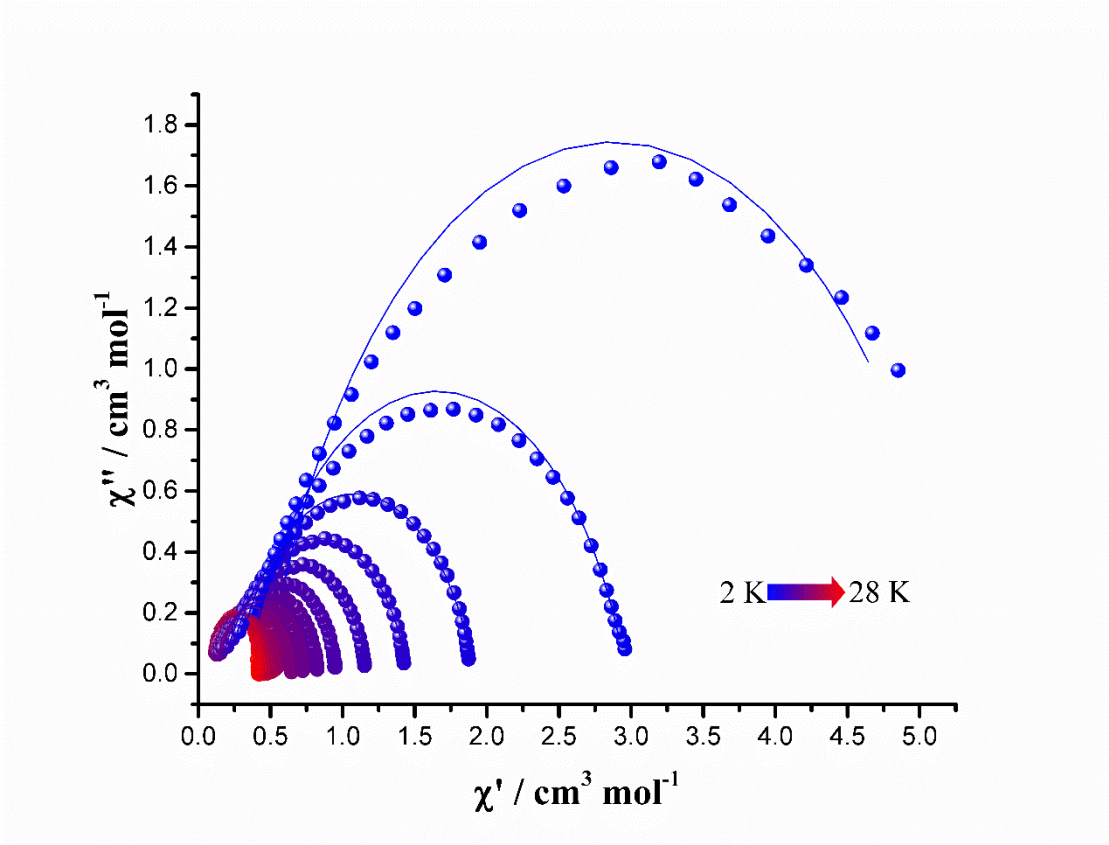

Figure S42. Cole–Cole plots for **7** collected from 2 K to 28 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

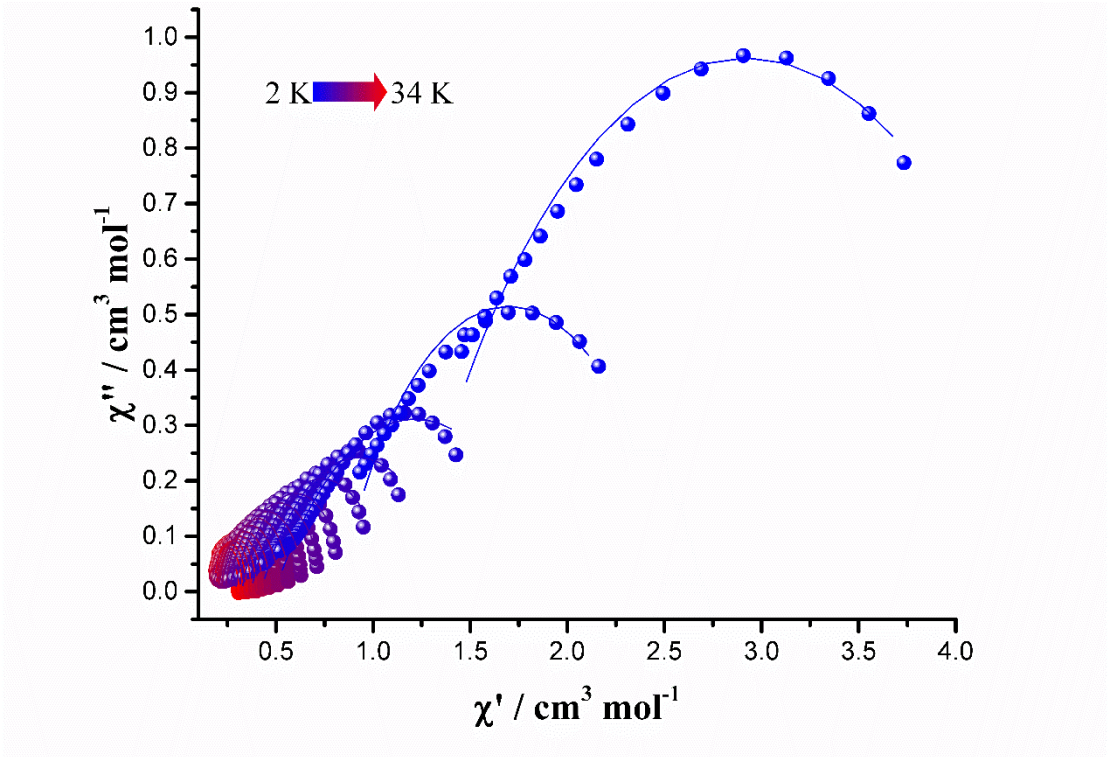

Figure S43. Cole–Cole plots for **8** collected from 2 K to 35 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

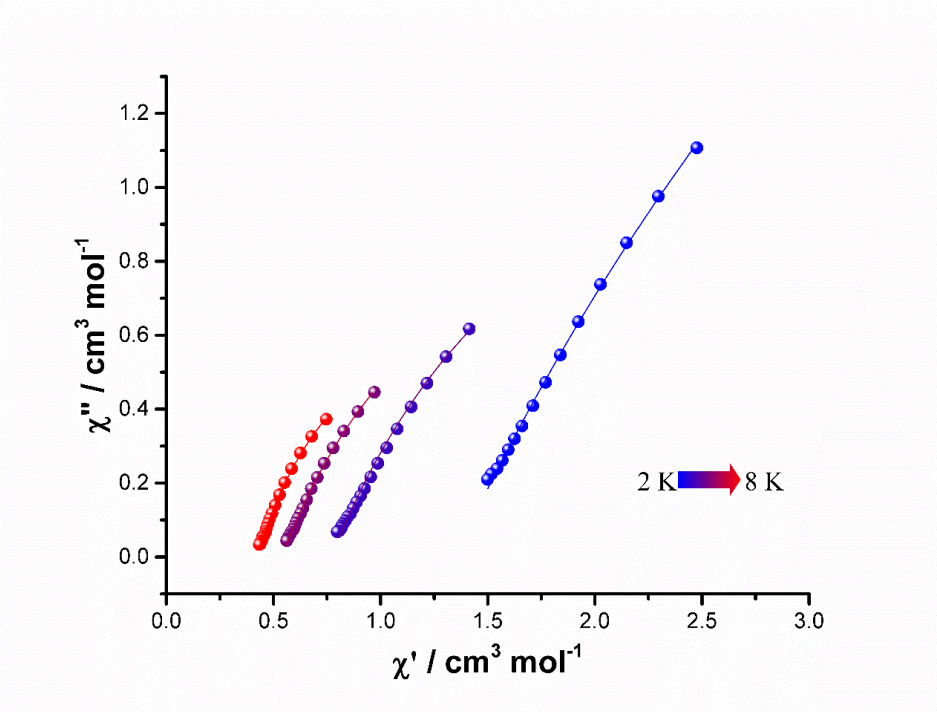

Figure S44. Cole–Cole plots for **9** collected from 2 K to 8 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

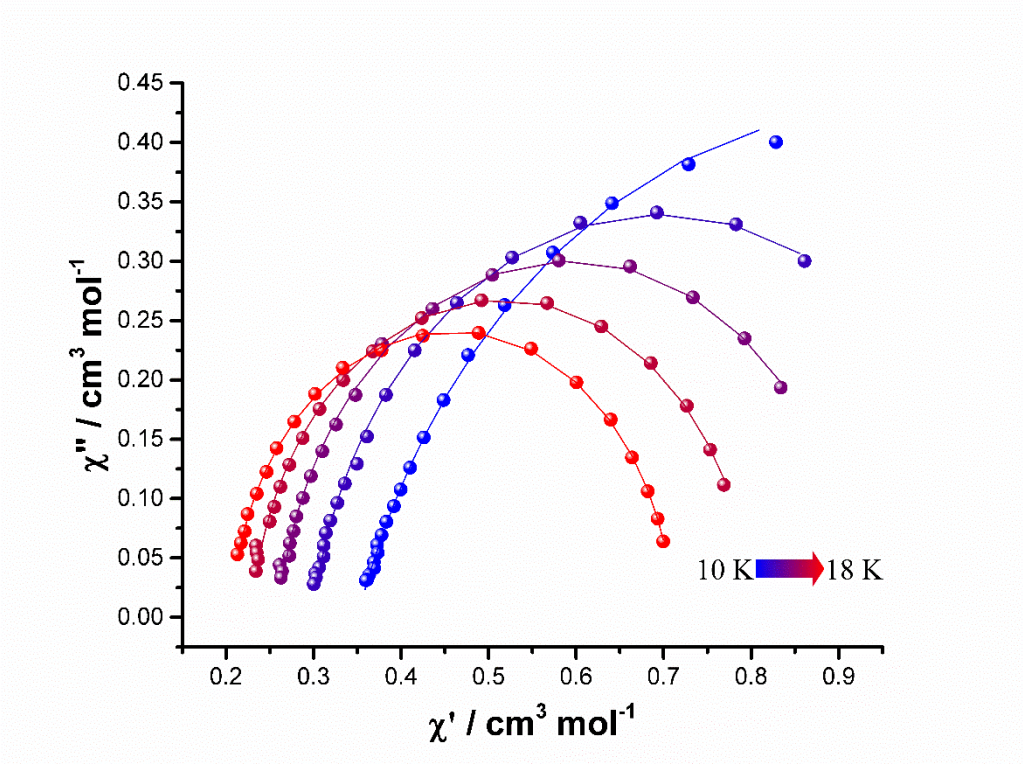

Figure S45. Cole–Cole plots for **9** collected from 10 K to 18 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

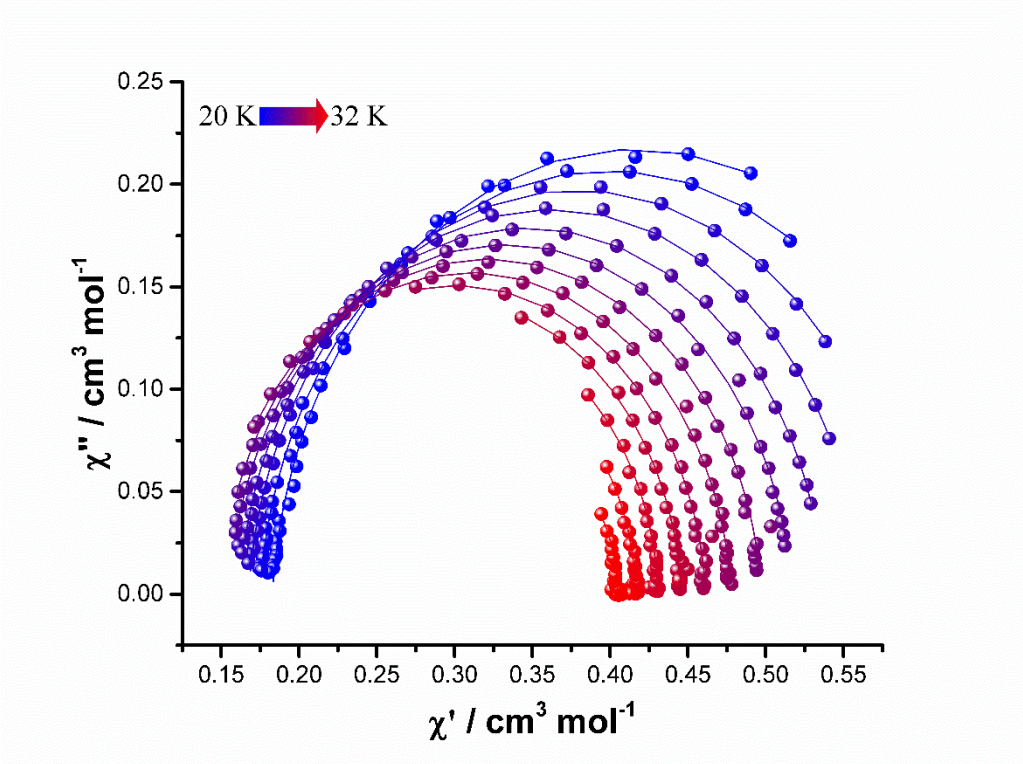

Figure S46. Cole–Cole plots for **9** collected from 20 K to 32 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

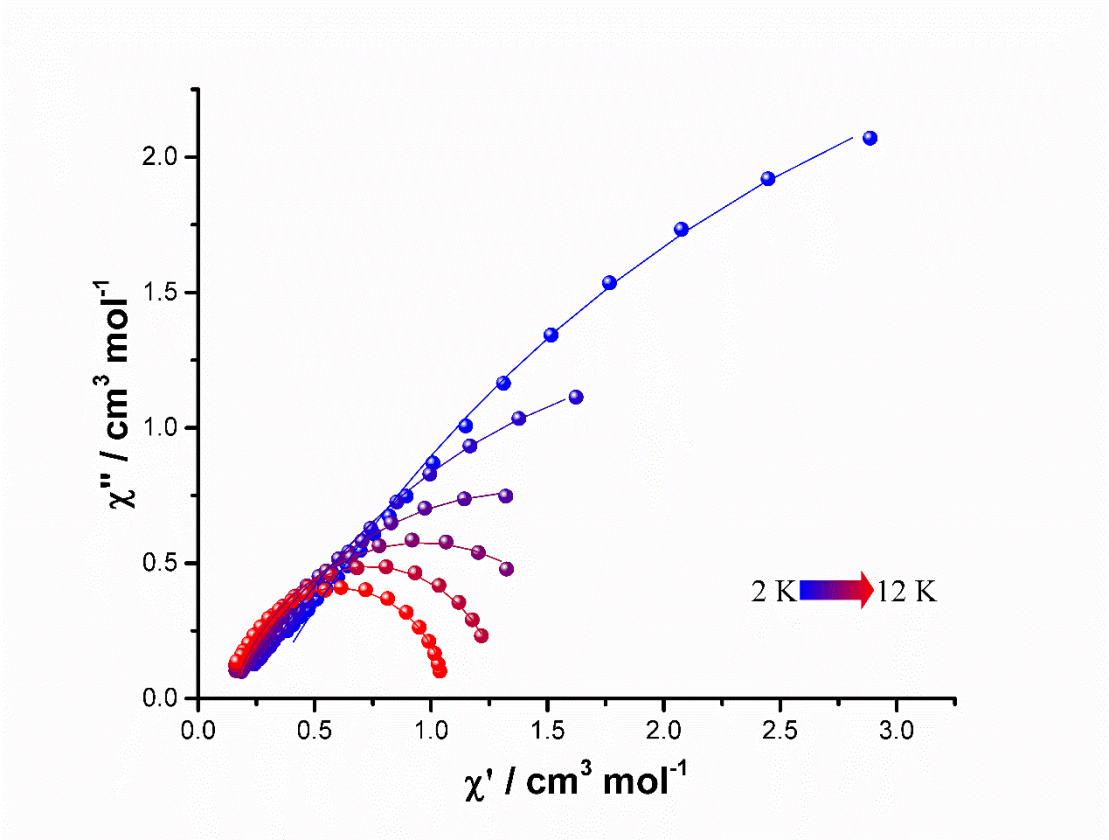

Figure S47. Cole–Cole plots for **10** collected from 2 K to 12 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

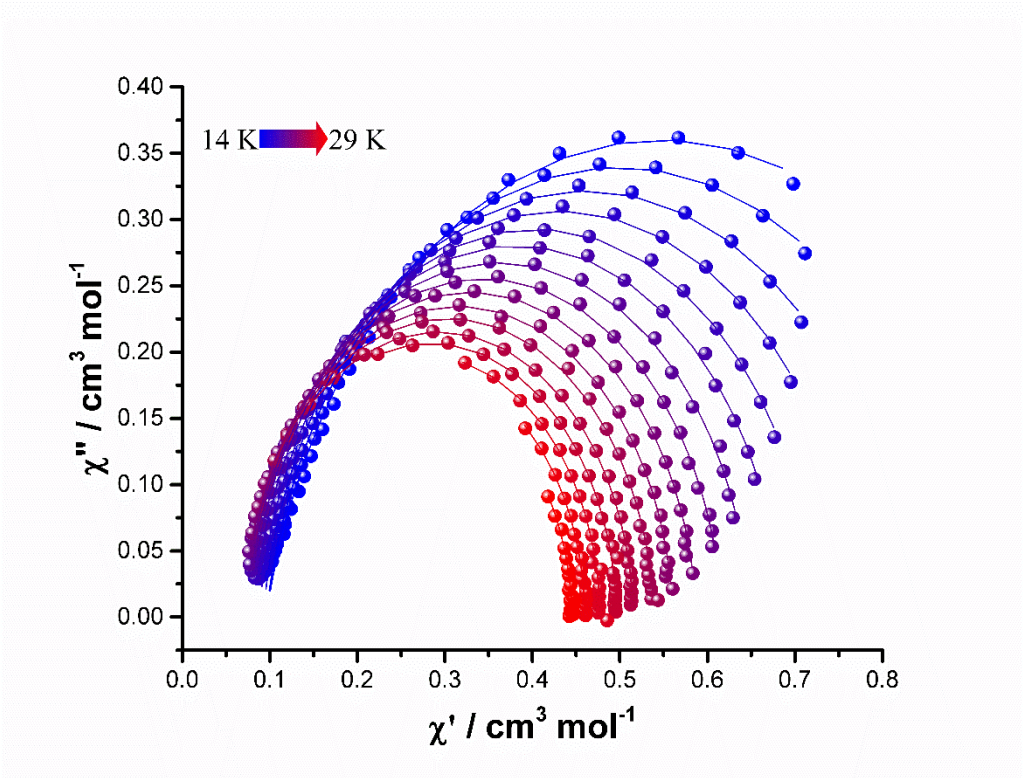

Figure S48. Cole–Cole plots for **10** collected from 14 K to 29 K. Lines represent fits with a generalized Debye model used to extract relaxation times.

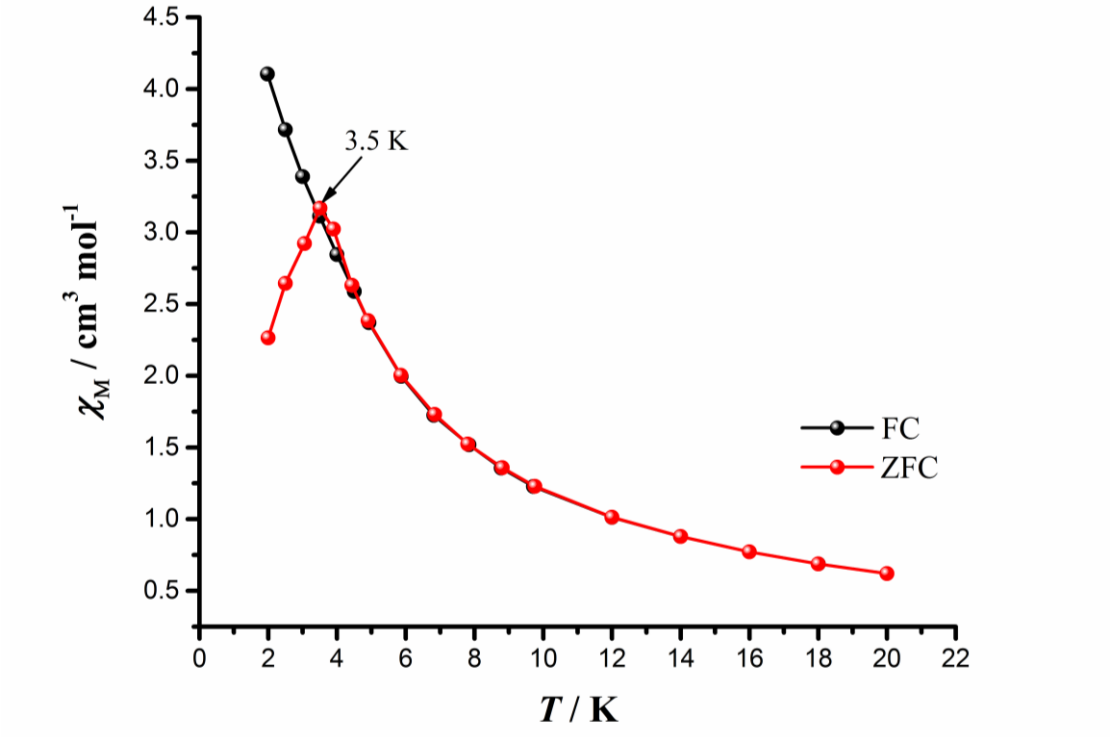

Figure S49. Plots of magnetic susceptibility vs temperature during FC (black) and ZFC (red) measurements for **9**.

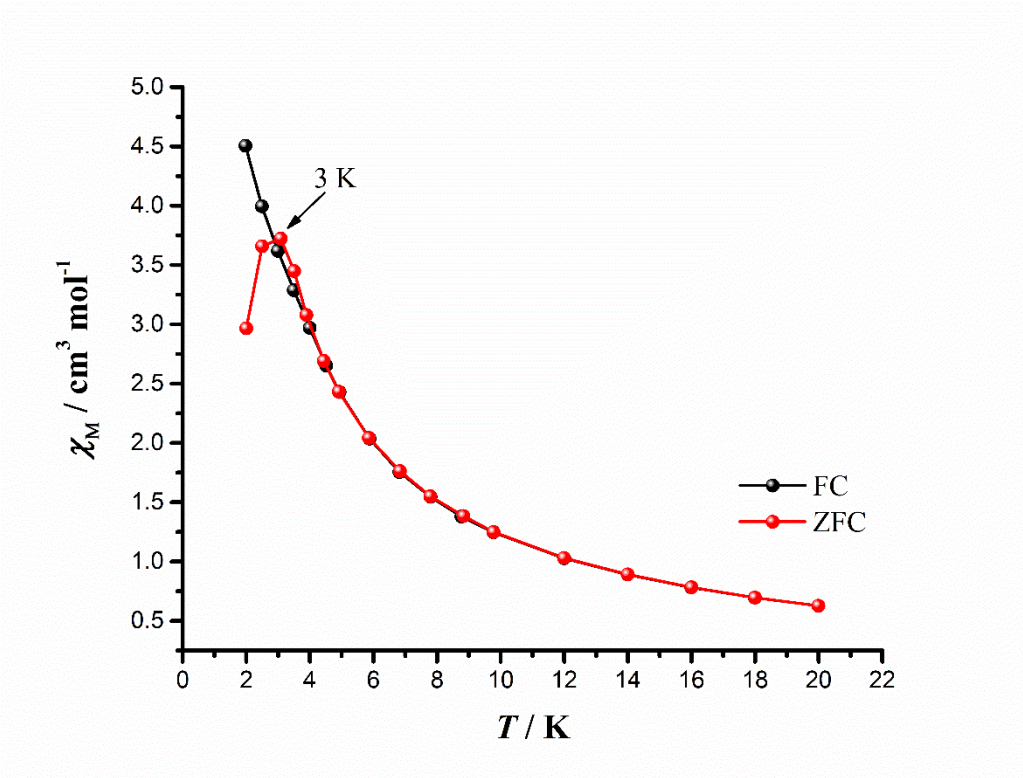

Figure S50. Plots of magnetic susceptibility vs temperature during FC (black) and ZFC (red) measurements for **10**.

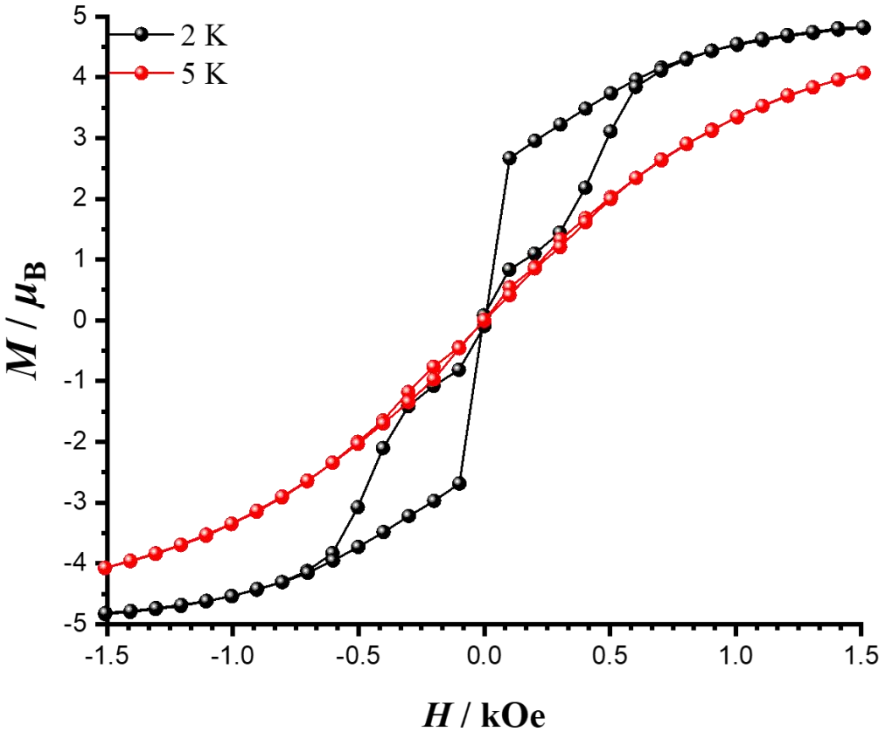

Figure S51. Magnetic hysteresis loops for **9** between 2 K and 5 K. The data was collected with the field sweeping rate of 12 Oe s^{-1}.

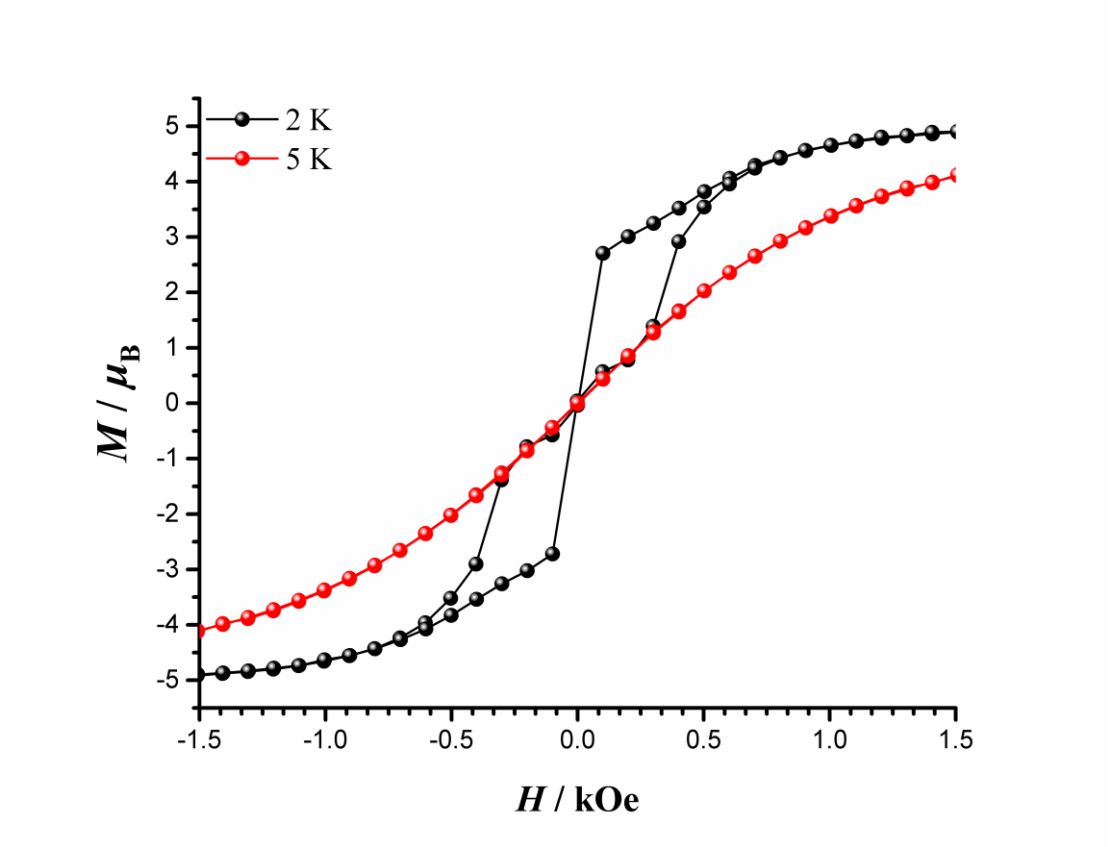

Figure S52. Magnetic hysteresis loops for **10** between 2 K and 5 K. The data was collected with the field sweeping rate of 12 Oe s^{-1}.

4. Electronic Structure Calculations

Table S14. SA-CASSCF/RASSI calculated electronic states for **1**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.02	0.05	19.44	--	10%|±15/2>+12%|±11/2>+18%|±9/2>+ 18%|±7/2>+15%|±5/2>+10%|±3/2>
74	106	0.23	0.37	18.53	59	85%|±15/2>
125	179	0.44	1.51	16.77	90	29%|±13/2>+36%|±11/2>+17%|±9/2>
158	227	3.07	4.81	10.33	79	32%|±13/2>+27%|±9/2>
193	277	2.70	3.58	8.94	22	14%|±13/2>+10%|±11/2>+21%|±7/2>
237	340	0.56	0.79	13.51	27	18%|±11/2>+10%|±9/2>+12%|∓3/2>+ 25%|∓5/2>
341	490	0.05	0.26	16.37	40	13%|±9/2>+23%|±3/2>+23%|±1/2>
373	536	0.05	0.30	17.18	41	14%|±5/2>+11%|±3/2>+37%|∓1/2>+ 13%|∓3/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

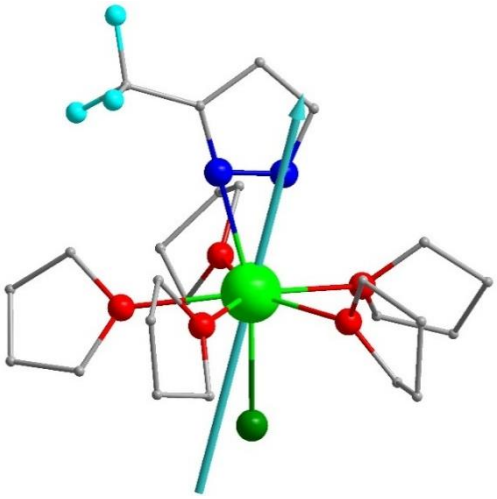

Fig. S53. The principal magnetic axis of the ground Kramer's doublet of **1**.

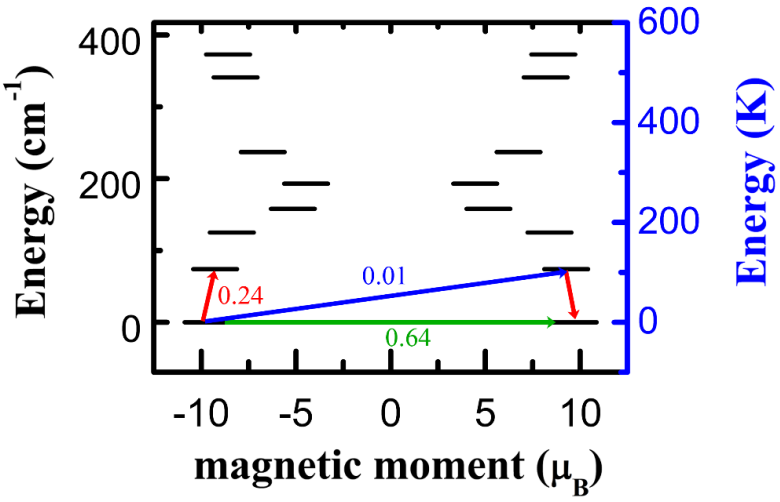

Fig. S54. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^6H_{15/2}$ term of Dy^{III} in **1**.

Table S15. SA-CASSCF/RASSI calculated electronic states for **2**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.87	--	89%|±15/2>+10%|±13/2>
150	215	1.90	4.36	13.69	57	19%|±13/2>+13%|±5/2>+39%|±3/2>+ 19%|±1/2>
160	230	4.04	5.30	9.96	89	36%|±13/2>+42%|±1/2>
183	263	0.40	3.02	8.23	83	23%|±13/2>+28%|±5/2>+13%|±3/2>+ 20%|±1/2>
209	300	0.38	4.38	7.22	85	32%|±7/2>+11%|±5/2>+30%|±3/2>
238	342	0.52	1.81	13.64	29	60%|±11/2>
248	356	1.25	3.55	10.99	51	14%|±11/2>+43%|±9/2>+19%|±5/2>
286	411	0.02	0.29	17.69	53	34%|±9/2>+45%|±7/2>+17%|±5/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

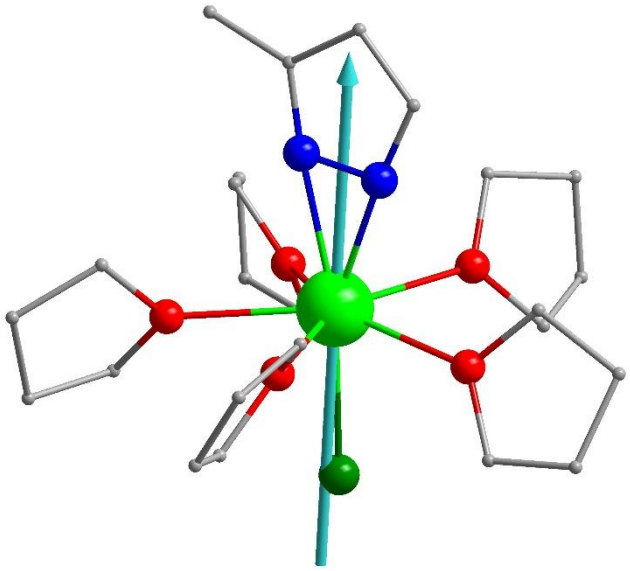

Fig. S55. The principal magnetic axis of the ground Kramer's doublet of **2**.

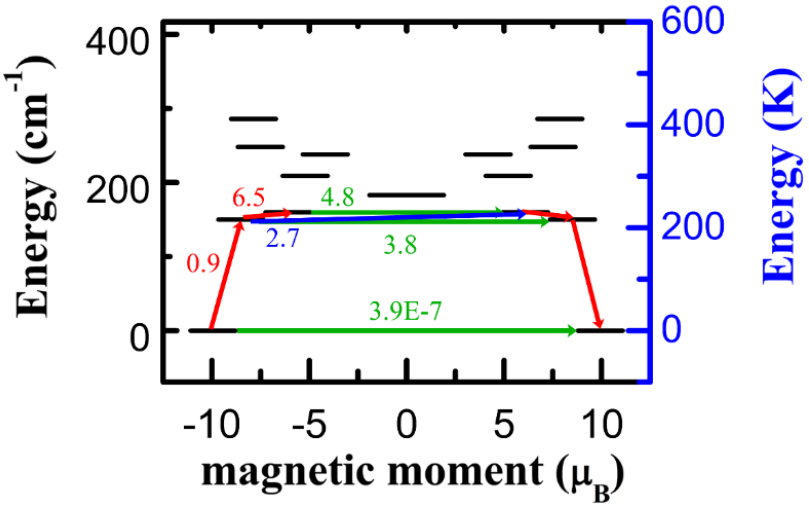

Fig. S56. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^6H_{15/2}$ term of Dy^{III} in **2**.

Table S16. SA-CASSCF/RASSI calculated electronic states for **3**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.88	--	92%|±15/2>
167	240	0.08	0.18	15.79	9.4	72%|±13/2>
186	267	2.19	8.21	10.99	87	30%|±3/2>+48%|±1/2>
210	302	0.11	4.39	6.33	79	11%|±7/2>+32%|±5/2>+10%|±3/2>+ 26%|±1/2>
237	340	0.69	5.15	8.25	89	26%|±7/2>+27%|±3/2>
256	368	0.43	1.91	12.80	64	71%|±11/2>
273	392	1.34	3.97	10.21	45	54%|±9/2>+24%|±5/2>
312	448	0.03	0.29	17.87	39	27%|±9/2>+47%|±7/2>+20%|±5/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

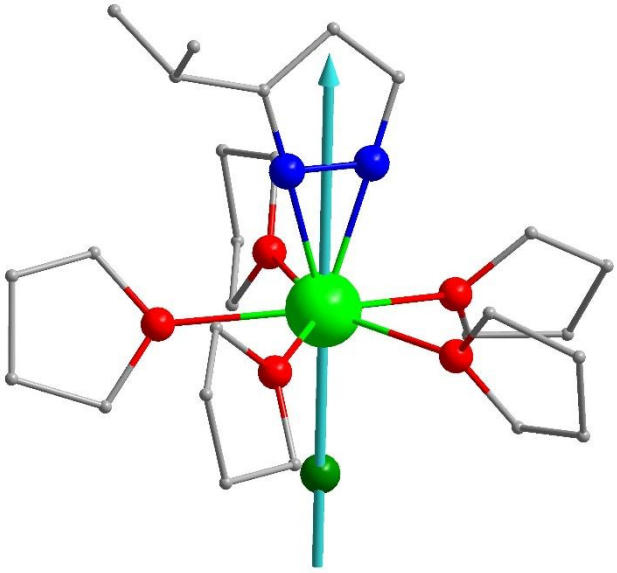

Fig. S57. The principal magnetic axis of the ground Kramer's doublet of **3**.

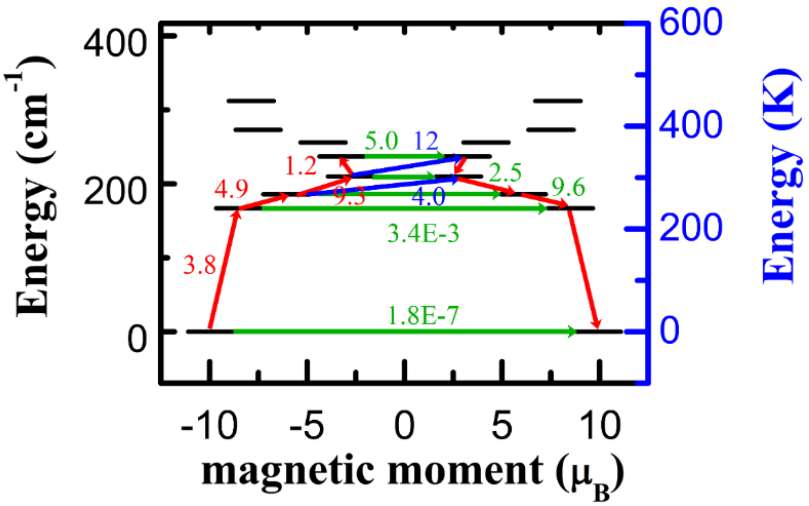

Fig. S58. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^6H_{15/2}$ term of Dy^{III} in **3**.

Table S17. SA-CASSCF/RASSI calculated electronic states for **4**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.88	-	91%|±15/2>
176	253	0.01	0.05	16.78	2.7	81%|±13/2>
216	310	1.64	7.25	12.54	74	27%|±3/2>+25%|±1/2>+18%|∓1/2>
238	342	0.11	4.40	7.68	89	21%|±5/2>+26%|±1/2>+10%|∓1/2>+ 12%|∓5/2>+10%|∓7/2>
262	376	1.25	5.39	11.07	37	24%|±11/2>+14%|±3/2>+12%|∓3/2>+ 10%|∓7/2>+11%|∓11/2>
275	395	0.88	2.77	10.13	52	47%|±11/2>+18%|±7/2>+11%|±1/2>
297	427	1.62	4.25	10.05	87	55%|±9/2>+23%|±5/2>+12%|±3/2>
338	486	0.07	0.32	18.01	80	24%|±9/2>+48%|±7/2>+21%|±5/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

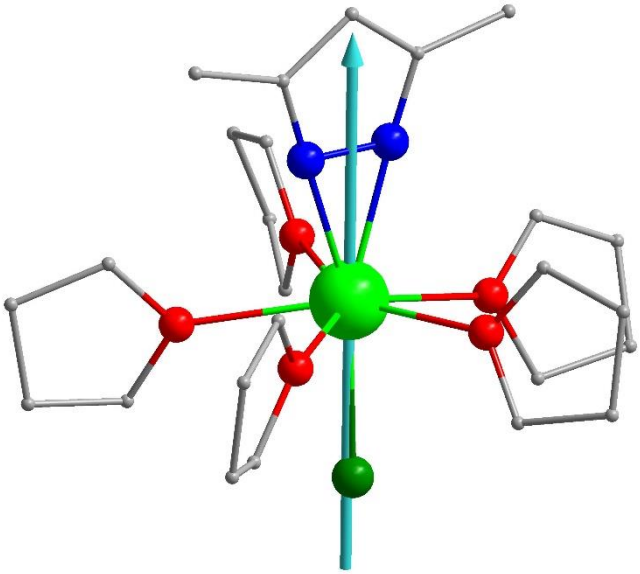

Fig. S59. The principal magnetic axis of the ground Kramer's doublet of **4**.

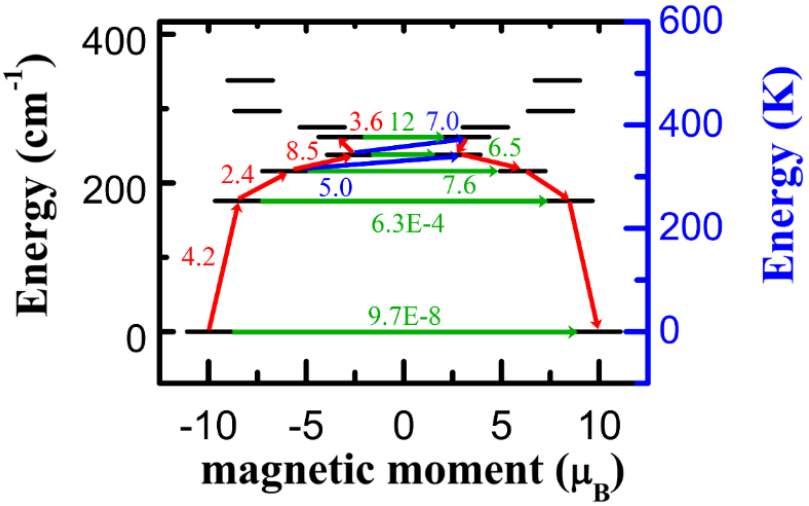

Fig. S60. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^6H_{15/2}$ term of Dy^{III} in **4**.

Table S18. SA-CASSCF/RASSI calculated electronic states for **5**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.87	--	89%|±15/2>+10%|±13/2>
165	237	0.18	0.29	15.34	15	68%|±13/2>+11%|±3/2>
180	258	2.60	8.34	10.32	89	27%|±3/2>+49%|±1/2>
205	294	0.16	4.27	6.33	34	10%|±7/2>+32%|±5/2>+11%|±3/2>+ 28%|±1/2>
232	333	0.61	5.01	7.94	68	10%|±9/2>+29%|±7/2>+29%|±3/2>
253	363	0.35	1.87	13.12	79	72%|±11/2>
268	385	1.29	3.92	10.29	55	53%|±9/2>+23%|±5/2>+10%|±3/2>
307	441	0.01	0.29	17.84	62	28%|±9/2>+47%|±7/2>+20%|±5/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

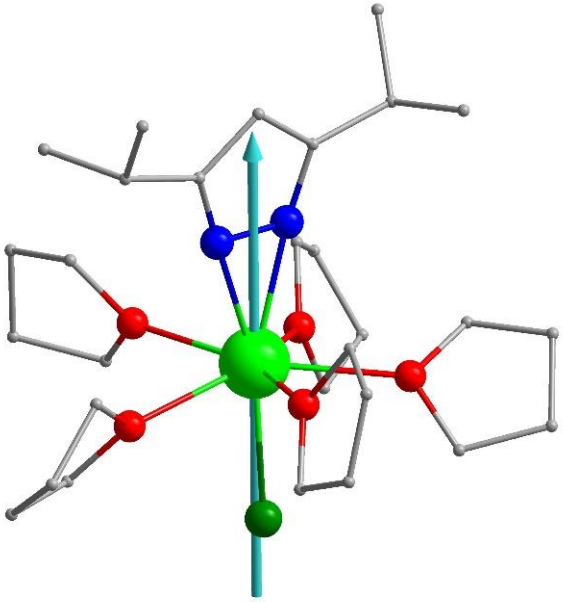

Fig. S61. The principal magnetic axis of the ground Kramer's doublet of **5**.

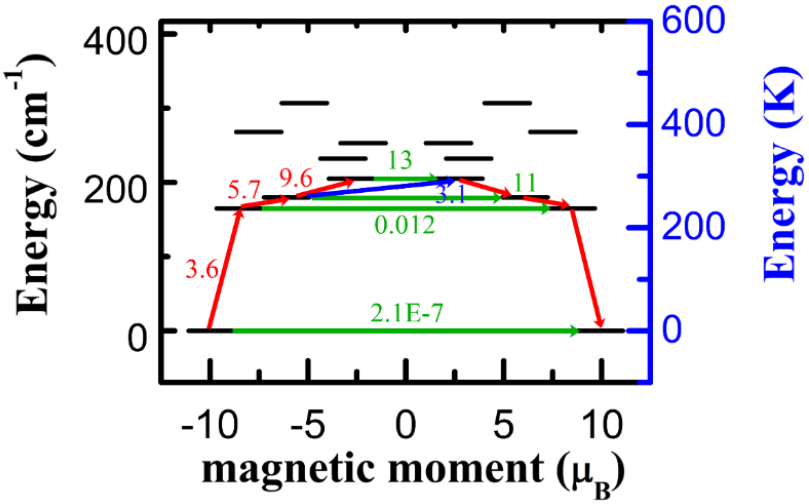

Fig. S62. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^6H_{15/2}$ term of Dy^{III} in **5**.

Table S19. SA-CASSCF/RASSI calculated electronic states for **6**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.91	--	93%|±15/2>
204	293	0.00	0.01	17.29	1.3	88%|±13/2>
307	441	1.58	2.09	14.02	27	70%|±11/2>+11%|±1/2>
334	480	0.12	0.90	16.47	81	13%|±11/2>+16%|±7/2>+29%|±5/2>+ 25%|±3/2>
342	491	2.12	6.11	9.71	87	20%|±9/2>+13%|±7/2>+11%|±3/2>+ 26%|±1/2>+11%|∓1/2>
365	524	0.99	5.86	9.01	57	18%|±9/2>+10%|±7/2>+13%|±3/2>+ 12%|±1/2>+19%|∓1/2>+11%|∓9/2>
388	557	1.98	4.99	10.39	34	31%|±9/2>+13%|±7/2>+10%|±5/2>+ 24%|±3/2>
431	619	0.22	0.56	18.24	83	41%|±7/2>+37%|±5/2>+11%|±3/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

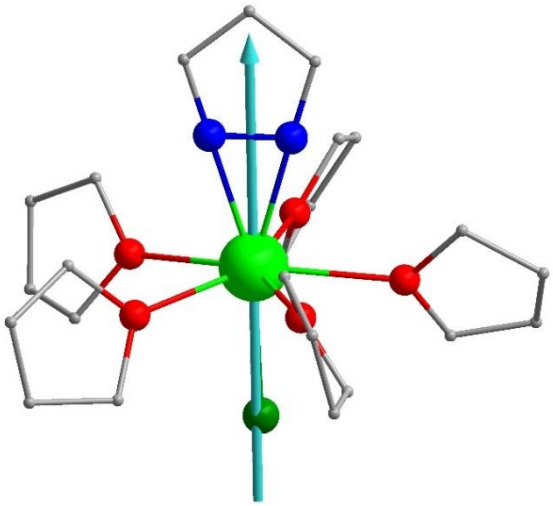

Fig. S63. The principal magnetic axis of the ground Kramer's doublet of **6**.

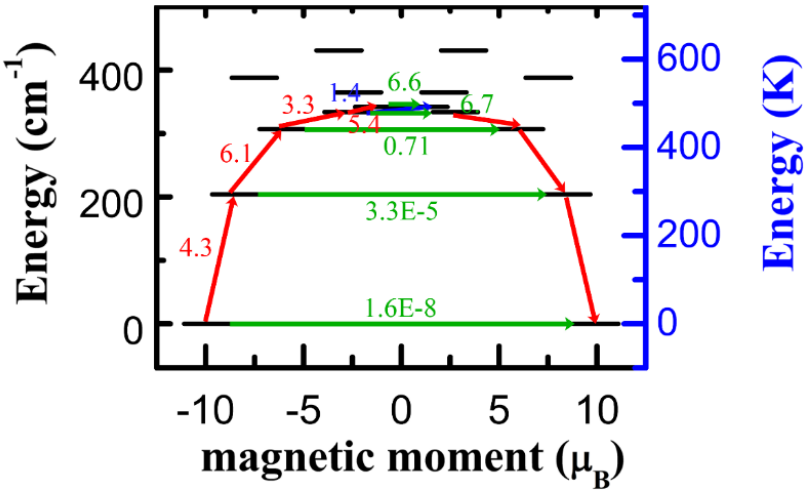

Fig. S64. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^6H_{15/2}$ term of Dy^{III} in **6**.

Table S20. SA-CASSCF/RASSI calculated electronic states for **7**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.79	--	94.0%|±15/2>
222	319	2.56	5.96	9.83		10%|±13/2>+15%|±9/2>+27%|±7/2>+ 34%|±5/2>
236	339	0.72	5.11	8.40		33%|±7/2>+126%|∓3/2>
263	378	0.55	4.40	10.47		10%|±13/2>+15%|±11/2>+39%|±9/2>
269	386	0.92	2.49	11.26		21%|±5/2>+23%|±1/2>+10%|∓1/2>+ 11%|∓3/2>
294	422	1.15	4.36	7.55		14%|±13/2>+26%|∓1/2>+18%|∓3/2>
306	440	1.02	6.56	10.44		48%|±13/2>+15%|±7/2>+11%|∓1/2>
334	480	0.64	1.03	16.28		39%|±11/2>+11%|±9/2>+23%|∓11/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

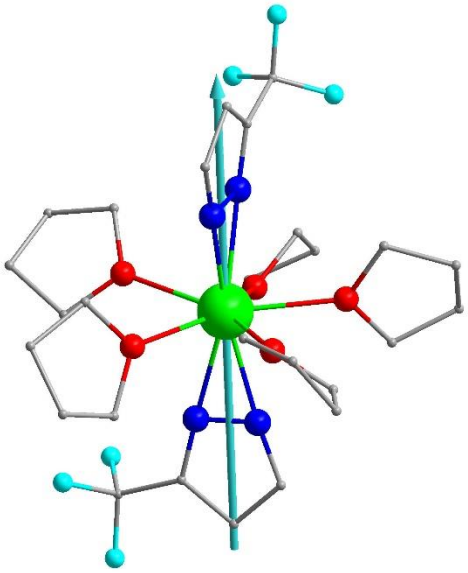

Fig. S65. The principal magnetic axis of the ground Kramer's doublet of **7**.

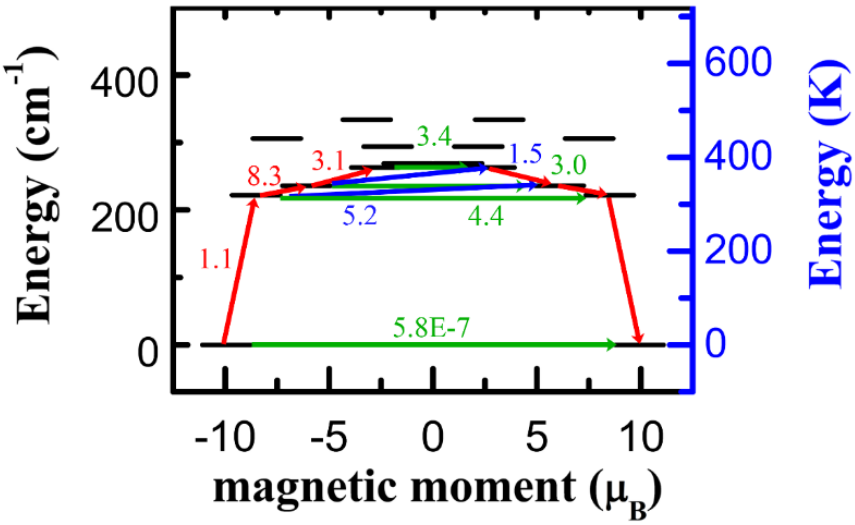

Fig. S66. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^6H_{15/2}$ term of Dy^{III} in **7**.

Table S21. SA-CASSCF/RASSI calculated electronic states for **8**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.82	--	95.9%|±15/2>
289	416	0.20	0.99	13.61	11	49%|±13/2>+24%|±9/2>+10%|±7/2>+ 12%|±5/2>
318	457	1.55	2.95	9.13	12	27%|±11/2>+32%|±7/2>+10%|±5/2>+ 17%|±3/2>
350	503	3.50	5.81	8.26	15	33%|±13/2>+21%|±5/2>+15%|±1/2>
388	558	2.77	4.34	10.76	80	15%|±11/2>+12%|±9/2>+15%|±1/2>+ 11%|∓11/2>
436	627	0.88	1.48	13.48	71	21%|±11/2>+22%|∓9/2>
464	667	1.28	1.49	17.38	64	17%|±9/2>+14%|±7/2>+16%|±5/2>+ 10%|∓3/2>+14%|∓7/2>
550	791	0.06	0.09	19.59	89	22%|±3/2>+42%|∓1/2>+10%|∓4/2>+ 15%|∓5/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

Table S22. SA-CASSCF/RASSI calculated electronic states for **9**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.81	--	95.3%|±15/2>
269	386	0.77	3.28	12.39	17	30%|±13/2>+23%|±9/2>+22%|±7/2>+ 17%|±5/2>
288	414	0.51	3.09	10.06	23	18%|±11/2>+26%|±7/2>+11%|±5/2>+ 12%|±3/2>
317	455	3.95	5.96	10.10	20	38%|±13/2>+14%|±5/2>+15%|±3/2>+ 15%|±1/2>
336	483	2.17	4.03	9.82	87	10%|±13/2>+10%|±11/2>+15%|±9/2>+ 15%|±1/2>+11%|∓11/2>
365	524	0.24	2.16	13.56	76	10%|±7/2>+10%|±5/2>+12%|±3/2>+ 12%|±1/2>+12%|∓3/2>+11%|∓5/2>
383	550	0.18	1.09	17.15	37	41%|±11/2>+31%|±9/2>+13%|±7/2>
429	616	0.29	0.44	19.05	89	10%|±5/2>+37%|±1/2>+24%|∓3/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

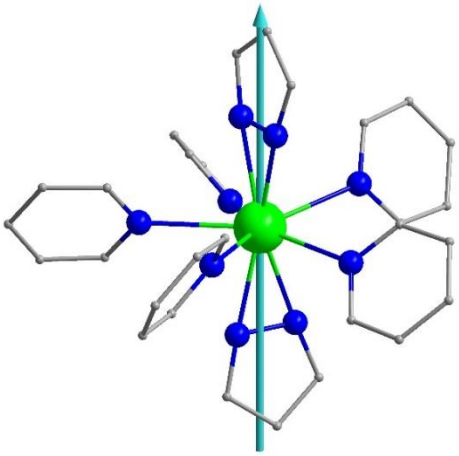

Fig. S67. The principal magnetic axis of the ground Kramer's doublet of **9**.

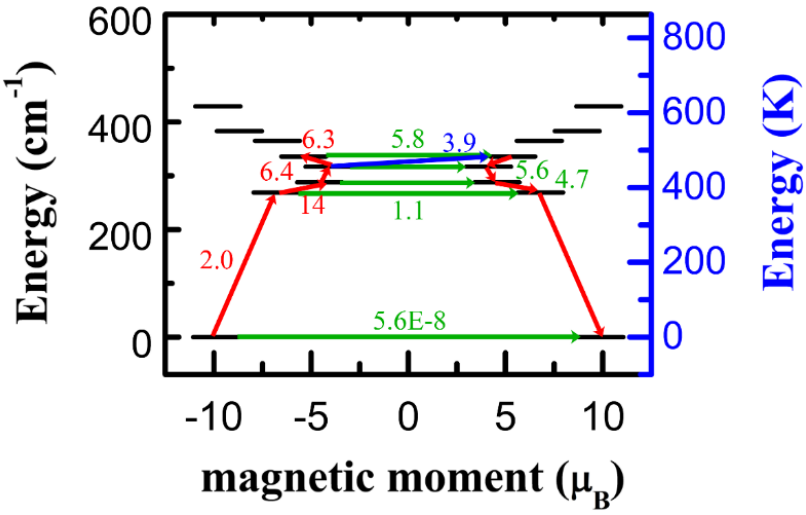

Fig. S68. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^{6}H_{15/2}$ term of Dy^{III} in **9**.

Table S23. SA-CASSCF/RASSI calculated electronic states for **10**.

Energy (cm^{-1})	Energy (K)	g_x	g_y	g_z	g_z Angle (°)	Wavefunction
0	0	0.00	0.00	19.78	--	95.08%|±15/2>
244	350	0.14	2.03	13.02	14	17%|±13/2>+24%|±9/2>+18%|±7/2>+ 26%|±5/2>
257	369	0.94	2.99	12.14	37	13%|±11/2>+32%|±7/2>+12%|±5/2>+ 23%|±3/2>
294	422	4.73	5.95	9.88	29	29%|±13/2>+12%|±5/2>+10%|±3/2>+ 16%|±1/2>+10%|∓1/2>
321	461	0.41	2.89	10.57	89	25%|±13/2>+10%|±9/2>+15%|∓11/2>
353	507	0.00	2.67	13.58	62	13%|±13/2>+10%|±9/2>+12%|±7/2>+ 10%|±3/2>+10%|∓1/2>+10%|∓3/2>+ 13%|∓5/2>
375	539	0.62	1.30	17.49	33	41%|±11/2>+30%|±9/2>+15%|±7/2>
422	606	0.09	0.26	19.34	89	14%|±5/2>+11%|±3/2>+34%|±1/2>+ 19%|∓3/2>

[a] Only components with > 10% contribution are given, rounded to the nearest percent.

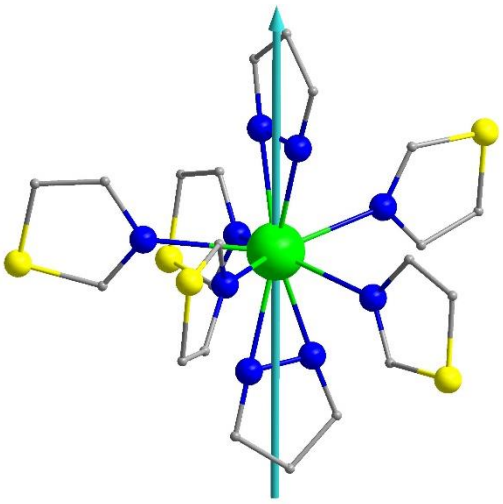

Fig. S69. The principal magnetic axis of the ground Kramer's doublet of **10**.

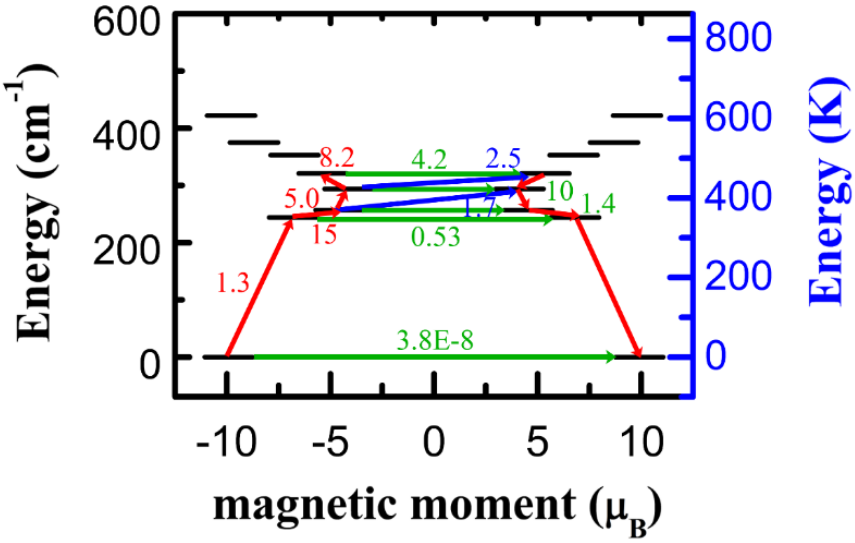

Fig. S70. *Ab initio* calculated electronic states of the J = 15/2 manifold of the $^{6}H_{15/2}$ term of Dy^{III} in **10**.

Table S24. *Ab initio* calculated crystal field parameters for **1**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	-0.20140937737544E+00
B_2^{-1}	-0.61916186433164E+00
B_2^0	-0.10609521340021E+01
B_2^1	0.16557453195910E+00
B_2^2	0.81228443784434E+00
B_4^{-4}	0.15523232904314E-01
B_4^{-3}	0.87746144073827E-01
B_4^{-2}	-0.74578023994291E-02
B_4^{-1}	0.11335859513893E-01
B_4^0	0.82985231115575E-03
B_4^1	-0.79311026458078E-03
B_4^2	0.37914444739304E-02
B_4^3	0.36367146818877E-01
B_4^4	-0.33456744272099E-01
B_6^{-6}	-0.34150914385560E-04
B_6^{-5}	-0.61852158116271E-03
B_6^{-4}	-0.17229173037412E-04
B_6^{-3}	-0.24685414761921E-03
B_6^{-2}	0.74915855744264E-05
B_6^{-1}	-0.15840496633539E-03
B_6^0	-0.19856465035579E-04
B_6^1	0.26660775045830E-04
B_6^2	-0.75707217400793E-04
B_6^3	0.60511422422283E-05
B_6^4	0.21229398181935E-04
B_6^5	-0.28114727718702E-03
B_6^6	-0.40281052968550E-04

Table S25. *Ab initio* calculated crystal field parameters for **2**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	-0.10860332915291E-01
B_2^{-1}	-0.99897685672628E-02
B_2^0	-0.08032547373796E+01
B_2^1	0.14059707576645E-01
B_2^2	0.02563937821253E+00
B_4^{-4}	-0.75767680942513E-03
B_4^{-3}	0.33998996798161E-03
B_4^{-2}	0.71820624211116E-03
B_4^{-1}	-0.20196641613823E-02
B_4^0	-0.52166117974776E-02
B_4^1	0.23942957512731E-01
B_4^2	-0.29284840309877E-02
B_4^3	-0.68631514856063E-02
B_4^4	-0.16757145033051E-04
B_6^{-6}	-0.19326559548162E-04
B_6^{-5}	-0.10049018826113E-03
B_6^{-4}	-0.14989893161006E-04
B_6^{-3}	-0.11084759181051E-04
B_6^{-2}	0.59348731392622E-06
B_6^{-1}	0.24231886021961E-04
B_6^0	0.49354474895370E-05
B_6^1	0.54944436541463E-05
B_6^2	-0.20968469259837E-04
B_6^3	-0.52516476740811E-04
B_6^4	-0.19593313305189E-04
B_6^5	-0.41803030599367E-03
B_6^6	0.22012053393123E-04

Table S26. *Ab initio* calculated crystal field parameters for **3**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	-0.11369458741384E-01
B_2^{-1}	-0.87174978174339E-02
B_2^0	-0.10133158746343E+01
B_2^1	0.13157437436196E-01
B_2^2	0.03183515446464E+00
B_4^{-4}	0.74818173660896E-03
B_4^{-3}	-0.86497421923558E-03
B_4^{-2}	0.98662644529249E-03
B_4^{-1}	0.94532047486863E-02
B_4^0	-0.82013919621240E-02
B_4^1	0.73978608837350E-01
B_4^2	0.53212674944661E-02
B_4^3	-0.47630530588794E-02
B_4^4	0.25826202861499E-04
B_6^{-6}	-0.22580370684154E-04
B_6^{-5}	-0.94250138790811E-03
B_6^{-4}	0.78129738294519E-04
B_6^{-3}	0.14825558990706E-04
B_6^{-2}	-0.61218214759137E-06
B_6^{-1}	-0.11976969386451E-04
B_6^0	0.80579312553163E-05
B_6^1	-0.55148044296074E-05
B_6^2	0.72154521676711E-04
B_6^3	-0.46227108370512E-04
B_6^4	0.68347040044609E-04
B_6^5	-0.30196860083379E-03
B_6^6	0.50897968043573E-04

Table S27. *Ab initio* calculated crystal field parameters for **4**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	-0.10698745319994E-01
B_2^{-1}	-0.85112974543661E-02
B_2^0	-0.12112084733694E+01
B_2^1	0.36128661418333E-02
B_2^2	0.67999153302516E-02
B_4^{-4}	-0.38490800859872E-03
B_4^{-3}	0.89496555516961E-03
B_4^{-2}	0.61550725151318E-03
B_4^{-1}	0.37523002075031E-02
B_4^0	-0.52324518279638E-02
B_4^1	-0.24868354778737E-01
B_4^2	0.89714629545341E-02
B_4^3	0.10644589245785E-02
B_4^4	-0.90547674652188E-04
B_6^{-6}	-0.61244255676865E-04
B_6^{-5}	0.28882169802673E-03
B_6^{-4}	0.21146837463602E-04
B_6^{-3}	-0.79887017202563E-04
B_6^{-2}	0.88563783406279E-06
B_6^{-1}	0.15620307328645E-04
B_6^0	0.33859019149095E-05
B_6^1	-0.51598162143491E-05
B_6^2	-0.12306321309879E-04
B_6^3	-0.47474471537862E-04
B_6^4	0.85201917651574E-04
B_6^5	0.96338287123944E-03
B_6^6	-0.59569772412069E-04

Table S28. *Ab initio* calculated crystal field parameters for **5**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	0.43123904732056E-01
B_2^{-1}	0.64292725215200E-02
B_2^0	-0.97325473737961E+00
B_2^1	0.22048912236933E-02
B_2^2	0.48191147015895E-02
B_4^{-4}	-0.66018648722674E-03
B_4^{-3}	-0.34010105447378E-03
B_4^{-2}	0.35835115937516E-03
B_4^{-1}	0.66797851207665E-02
B_4^0	-0.11076042703353E-02
B_4^1	0.74415713269263E-01
B_4^2	-0.89273732679430E-02
B_4^3	0.11773899551481E-02
B_4^4	0.36009414554573E-04
B_6^{-6}	-0.25177716470789E-04
B_6^{-5}	-0.37177104232832E-03
B_6^{-4}	0.22612946406007E-04
B_6^{-3}	0.30073322984390E-04
B_6^{-2}	-0.11380763503257E-06
B_6^{-1}	0.77983165588229E-04
B_6^0	0.62956051444634E-05
B_6^1	0.64114560005254E-05
B_6^2	-0.66323934148531E-04
B_6^3	-0.52964645335450E-04
B_6^4	-0.57662061119917E-04
B_6^5	0.29691632152535E-03
B_6^6	0.67717296406626E-04

Table S29. *Ab initio* calculated crystal field parameters for **6**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	0.83550540653522E-01
B_2^{-1}	0.38963494747877E-02
B_2^0	-0.19132547373796E+01
B_2^1	0.69292452903464E-02
B_2^2	-0.32308932170272E-02
B_4^{-4}	-0.42937284822110E-03
B_4^{-3}	-0.51140891187824E-03
B_4^{-2}	0.43662222949788E-03
B_4^{-1}	0.89254466267302E-02
B_4^0	-0.66879837347660E-02
B_4^1	0.39707790210377E-01
B_4^2	0.93518337707500E-02
B_4^3	0.82973712200764E-02
B_4^4	0.90335459930356E-04
B_6^{-6}	-0.79019231118727E-04
B_6^{-5}	-0.22863104410935E-03
B_6^{-4}	0.29402656024322E-04
B_6^{-3}	0.94305928214452E-04
B_6^{-2}	0.31141180822160E-06
B_6^{-1}	0.59765556047204E-04
B_6^0	0.87675837483256E-05
B_6^1	-0.33037880263291E-05
B_6^2	0.65223663470242E-04
B_6^3	0.45628794333897E-04
B_6^4	-0.90050886354874E-04
B_6^5	-0.68943507275543E-03
B_6^6	-0.92566073921043E-04

Table S30. *Ab initio* calculated crystal field parameters for **7**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	0.91816361632663E-01
B_2^{-1}	0.52904619676992E+00
B_2^0	-0.90825960233342E+00
B_2^1	0.64711256481241E+00
B_2^2	-0.11071205153130E+00
B_4^{-4}	-0.82095586159266E-02
B_4^{-3}	-0.60090272463858E-02
B_4^{-2}	0.43665379260201E-03
B_4^{-1}	0.17403876788448E-02
B_4^0	-0.54933839165605E-01
B_4^1	0.31014772690832E-03
B_4^2	0.73781905414070E-02
B_4^3	0.48679023799486E-02
B_4^4	0.38650872369762E-02
B_6^{-6}	-0.88108505436684E-04
B_6^{-5}	-0.13055284549482E-03
B_6^{-4}	0.87858934479299E-05
B_6^{-3}	0.33847712255083E-04
B_6^{-2}	0.69753214376978E-04
B_6^{-1}	-0.96518202056176E-04
B_6^0	0.99705524400341E-04
B_6^1	-0.10723511779215E-03
B_6^2	-0.28545141124632E-03
B_6^3	0.20032011275180E-03
B_6^4	0.93712748198303E-03
B_6^5	-0.49439743622206E-02
B_6^6	-0.72812648618127E-03

Table S31. *Ab initio* calculated crystal field parameters for **8**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	0.67574222100026E-01
B_2^{-1}	0.14084193910491E+00
B_2^0	-0.19711658539994E+01
B_2^1	0.28668035397265E+00
B_2^2	-0.20672867544930E+00
B_4^{-4}	0.35964733179041E-02
B_4^{-3}	-0.42031104953003E-02
B_4^{-2}	-0.76485659809604E-03
B_4^{-1}	-0.35760701978053E-02
B_4^0	-0.17508113435075E-01
B_4^1	-0.84703416376927E-03
B_4^2	0.13458278902698E-02
B_4^3	0.33423579793977E-02
B_4^4	-0.24066544186009E-02
B_6^{-6}	0.97016951959562E-04
B_6^{-5}	-0.43248697502466E-03
B_6^{-4}	0.51350185974349E-05
B_6^{-3}	-0.27547414475068E-04
B_6^{-2}	0.30824358422438E-04
B_6^{-1}	-0.29889169434938E-04
B_6^0	0.13715302895895E-04
B_6^1	0.13959846200552E-03
B_6^2	-0.14823738771059E-03
B_6^3	-0.16748494689012E-03
B_6^4	0.10945315196673E-03
B_6^5	0.10862440370663E-02
B_6^6	-0.32590987903891E-03

Table S32. *Ab initio* calculated crystal field parameters for **9**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	0.67409740197472E-01
B_2^{-1}	0.22738838547375E+00
B_2^0	-0.12767977138378E+01
B_2^1	0.54356795276980E+00
B_2^2	-0.17673397874136E+00
B_4^{-4}	0.31248745094053E-02
B_4^{-3}	-0.46262678150087E-02
B_4^{-2}	0.93047320409677E-03
B_4^{-1}	0.54012417199555E-02
B_4^0	-0.30834275174420E-01
B_4^1	0.27708761969115E-03
B_4^2	0.23622245900333E-02
B_4^3	-0.62835830918047E-03
B_4^4	-0.19209607099183E-02
B_6^{-6}	0.70733292063232E-04
B_6^{-5}	-0.99814373974222E-03
B_6^{-4}	-0.23481970350258E-05
B_6^{-3}	0.74742546011693E-04
B_6^{-2}	0.63024612562730E-05
B_6^{-1}	0.44997550921980E-04
B_6^0	0.91070069035049E-04
B_6^1	-0.35548536467831E-03
B_6^2	-0.51184212844818E-03
B_6^3	0.98273063015657E-03
B_6^4	0.45775563009083E-03
B_6^5	-0.42364663749467E-02
B_6^6	-0.53442855374887E-04

Table S33. *Ab initio* calculated crystal field parameters for **10**.

Crystal Field Parameter	Value / cm^{-1}
B_2^{-2}	0.39690229285042E-01
B_2^{-1}	0.82542205161880E+00
B_2^0	-0.13722929773922E+01
B_2^1	0.31506565457675E+00
B_2^2	-0.13648198627866E+00
B_4^{-4}	-0.35058235595934E-02
B_4^{-3}	0.23459281439427E-02
B_4^{-2}	0.56534160336013E-03
B_4^{-1}	-0.85213507832958E-02
B_4^0	-0.91750391214154E-01
B_4^1	0.12749822034966E-03
B_4^2	0.18645733422600E-02
B_4^3	0.89145776347722E-03
B_4^4	-0.84709495969582E-02
B_6^{-6}	-0.10684864206705E-04
B_6^{-5}	-0.76893372812773E-04
B_6^{-4}	0.56204247181303E-05
B_6^{-3}	0.81018849266692E-04
B_6^{-2}	-0.46500307535752E-05
B_6^{-1}	0.20815828186460E-04
B_6^0	0.72812648618127E-04
B_6^1	0.63872314055915E-03
B_6^2	0.13697665331420E-03
B_6^3	-0.89084464360493E-03
B_6^4	0.15288004996255E-02
B_6^5	0.56218227001372E-03
B_6^6	-0.28229475675616E-04

Table S34. Average transition magnetic moment elements between the states of **1**, given in μ_B^2.

	$\|+\frac{15}{2}\rangle$	$\|-\frac{15}{2}\rangle$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\|+\frac{15}{2}\rangle$	--	6.4E-01	2.4E-01	1.0E-02	5.4E-02	1.7E-01	1.0E-02	2.2E-01	2.1E-01	3.4E-01	1.5E+00	1.6E-01	2.2E-02	6.3E-01	3.4E-02	2.6E-01
$\|-\frac{15}{2}\rangle$	6.4E-01	--	1.0E-02	2.4E+00	1.7E-01	5.4E-02	2.2E-01	1.0E-02	3.4E-01	2.1E-01	1.6E-01	1.5E+00	6.3E-01	2.2E-02	2.6E-01	3.4E-02
|+a>	2.4E-01	1.0E-02	--	5.2E-02	2.2E-01	2.9E+00	6.0E-02	1.4E+00	3.3E-01	7.7E-01	5.5E-01	4.6E-02	3.7E-03	1.1E-01	8.7E-03	7.8E-02
|-a>	1.0E-02	2.4E+00	5.2E-02	--	2.9E+00	2.2E-01	1.4E+00	6.0E-02	7.7E-01	3.3E-01	4.6E-02	5.5E-01	1.1E-01	3.7E-03	7.8E-02	8.7E-03
|+b>	5.4E-02	1.7E-01	2.2E-01	2.9E+00	--	1.9E+00	7.5E+00	1.2E+00	5.0E-01	8.2E-01	9.4E-02	3.8E-01	4.7E-02	2.2E-02	3.4E-02	8.1E-02
|-b>	1.7E-01	5.4E-02	2.9E+00	2.2E-01	1.9E+00	--	1.2E+00	7.5E+00	8.2E-01	5.0E-01	3.8E-01	9.4E-02	2.2E-02	4.7E-02	8.1E-02	3.4E-02
|+c>	1.0E-02	2.2E-01	6.0E-02	1.4E+00	7.5E+00	1.2E+00	--	4.0E+00	1.0E+01	2.9E+00	7.0E-01	1.2E+00	9.3E-02	1.2E-01	1.7E-02	9.3E-02
|-c>	2.2E-01	1.0E-02	1.4E+00	6.0E-02	1.2E+00	7.5E+00	4.0E+00	--	2.9E+00	1.0E+01	1.2E+00	7.0E-01	1.2E-01	9.3E-02	9.3E-02	1.7E-02
|+d>	2.1E-01	3.4E-01	3.3E-01	7.7E-01	5.0E-01	8.2E-01	1.0E+01	2.9E+00	--	6.6E+00	4.0E+00	6.5E+00	6.0E-01	5.8E-01	9.6E-01	6.3E-01
|-d>	3.4E-01	2.1E-01	7.7E-01	3.3E-01	8.2E-01	5.0E-01	2.9E+00	1.0E+01	6.6E+00	--	6.5E+00	4.0E+00	5.8E-01	6.0E-01	6.3E-01	9.6E-01
|+e>	1.5E+00	1.6E-01	5.5E-01	4.6E-02	9.4E-02	3.8E-01	7.0E-01	1.2E+00	4.0E+00	6.5E+00	--	5.8E+00	6.3E-01	4.2E+00	8.3E-01	1.8E+00
|-e>	1.6E-01	1.5E+00	4.6E-02	5.5E-01	3.8E-01	9.4E-02	1.2E+00	7.0E-01	6.5E+00	4.0E+00	5.8E+00	--	4.2E+00	6.3E-01	1.8E+00	8.3E-01
|+f>	2.2E-02	6.3E-01	3.7E-03	1.1E-01	4.7E-02	2.2E-02	9.3E-02	1.2E-01	6.0E-01	5.8E-01	6.3E-01	4.2E+00	--	2.4E+00	4.9E+00	1.5E+00
|-f>	6.3E-01	2.2E-02	1.1E-01	3.7E-03	2.2E-02	4.7E-02	1.2E-01	9.3E-02	5.8E-01	6.0E-01	4.2E+00	6.3E-01	2.4E+00	--	1.5E+00	4.9E+00
|+g>	3.4E-02	2.6E-01	8.7E-03	7.8E-02	3.4E-02	8.1E-02	1.7E-02	9.3E-02	9.6E-01	6.3E-01	8.3E-01	1.8E+00	4.9E+00	1.5E+00	--	1.1E+01
|-g>	2.6E-01	3.4E-02	7.8E-02	8.7E-03	8.1E-02	3.4E-02	9.3E-02	1.7E-02	6.3E-01	9.6E-01	1.8E+00	8.3E-01	1.5E+00	4.9E+00	1.1E+01	--

Table S35. Average transition magnetic moment elements between the states of **2**, given in μ_B^2.

	$\left\|+\frac{15}{2}\right>$	$\left\|-\frac{15}{2}\right>$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\left\|+\frac{15}{2}\right>$	--	3.9E-07	9.1E-01	7.8E-04	6.4E-02	2.4E+00	9.1E-04	1.0E+00	2.4E-02	2.2E-03	6.9E-02	9.4E-03	1.8E-03	2.5E-02	2.7E-02	4.2E-05
$\left\|-\frac{15}{2}\right>$	3.9E-07	--	7.8E-04	9.1E-01	2.4E+00	6.4E-02	1.0E+00	9.1E-04	2.2E-03	2.4E-02	9.4E-03	6.9E-02	2.5E-02	1.8E-03	4.2E-05	2.7E-02
|+a>	9.1E-01	7.8E-04	--	3.8E+00	2.7E+00	6.5E+00	9.2E-01	7.4E+00	5.3E-01	1.2E-01	4.2E-01	1.3E-01	3.2E-03	4.3E-01	7.3E-02	7.3E-02
|-a>	7.8E-04	9.1E-01	3.8E+00	--	6.5E+00	2.7E+00	7.4E+00	9.2E-01	1.2E-01	5.3E-01	1.3E-01	4.2E-01	4.3E-01	3.2E-03	7.3E-02	7.3E-02
|+b>	6.4E-02	2.4E+00	2.7E+00	6.5E+00	--	4.8E+00	4.0E+00	1.7E+00	4.0E-01	4.2E+00	7.8E-02	1.9E+00	1.2E+00	1.5E-01	4.8E-02	4.2E-01
|-b>	2.4E+00	6.4E-02	6.5E+00	2.7E+00	4.8E+00	--	1.7E+00	4.0E+00	4.2E+00	4.0E-01	1.9E+00	7.8E-02	1.5E-01	1.2E+00	4.2E-01	4.8E-02
|+c>	9.1E-04	1.0E+00	9.2E-01	7.4E+00	4.0E+00	1.7E+00	--	8.0E-01	4.7E-01	1.1E+01	3.3E-01	2.2E+00	1.7E+00	1.6E-01	2.4E-02	2.9E-01
|-c>	1.0E+00	9.1E-04	7.4E+00	9.2E-01	1.7E+00	4.0E+00	8.0E-01	--	1.1E+01	4.7E-01	2.2E+00	3.3E-01	1.6E-01	1.7E+00	2.9E-01	2.4E-02
|+d>	2.4E-02	2.2E-03	5.3E-01	1.2E-01	4.0E-01	4.2E+00	4.7E-01	1.1E+01	--	2.9E+00	4.7E+00	2.0E+00	4.8E-01	7.0E+00	6.6E-01	1.5E-02
|-d>	2.2E-03	2.4E-02	1.2E-01	5.3E-01	4.2E+00	4.0E-01	1.1E+01	4.7E-01	2.9E+00	--	2.0E+00	4.7E+00	7.0E+00	4.8E-01	1.5E-02	6.6E-01
|+e>	6.9E-02	9.4E-03	4.2E-01	1.3E-01	7.8E-02	1.9E+00	3.3E-01	2.2E+00	4.7E+00	2.0E+00	--	7.4E+00	2.0E+00	5.7E+00	1.8E+00	6.7E-01
|-e>	9.4E-03	6.9E-02	1.3E-01	4.2E-01	1.9E+00	7.8E-02	2.2E+00	3.3E-01	2.0E+00	4.7E+00	7.4E+00	--	5.7E+00	2.0E+00	6.7E-01	1.8E+00
|+f>	1.8E-03	2.5E-02	3.2E-03	4.3E-01	1.2E+00	1.5E-01	1.7E+00	1.6E-01	4.8E-01	7.0E+00	2.0E+00	5.7E+00	--	1.4E+00	1.8E-01	7.4E+00
|-f>	2.5E-02	1.8E-03	4.3E-01	3.2E-03	1.5E-01	1.2E+00	1.6E-01	1.7E+00	7.0E+00	4.8E-01	5.7E+00	2.0E+00	1.4E+00	--	7.4E+00	1.8E-01
|+g>	2.7E-02	4.2E-05	7.3E-02	7.3E-02	4.8E-02	4.2E-01	2.4E-02	2.9E-01	6.6E-01	1.5E-02	1.8E+00	6.7E-01	1.8E-01	7.4E+00	--	6.1E-02
|-g>	4.2E-05	2.7E-02	7.3E-02	7.3E-02	4.2E-01	4.8E-02	2.9E-01	2.4E-02	1.5E-02	6.6E-01	6.7E-01	1.8E+00	7.4E+00	1.8E-01	6.1E-02	--

Table S36. Average transition magnetic moment elements between the states of **3**, given in μ_B^2.

	$\lvert+\frac{15}{2}\rangle$	$\lvert-\frac{15}{2}\rangle$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\lvert+\frac{15}{2}\rangle$	--	1.8E-07	3.8E+00	3.2E-05	1.3E-03	3.4E-01	5.2E-03	2.1E-01	3.4E-03	2.1E-02	8.5E-02	8.1E-04	1.4E-02	1.1E-03	2.0E-02	4.6E-05
$\lvert-\frac{15}{2}\rangle$	1.8E-07	--	3.2E-05	3.8E+00	3.4E-01	1.3E-03	2.1E-01	5.2E-03	2.1E-02	3.4E-03	8.1E-04	8.5E-02	1.1E-03	1.4E-02	4.6E-05	2.0E-02
|+a>	3.8E+00	3.2E-05	--	3.4E-03	1.1E-01	4.9E+00	1.1E-01	1.9E+00	2.1E-01	1.1E+00	3.3E+00	4.1E-02	1.1E+00	2.6E-02	3.6E-01	9.3E-03
|-a>	3.2E-05	3.8E+00	3.4E-03	--	4.9E+00	1.1E-01	1.9E+00	1.1E-01	1.1E+00	2.1E-01	4.1E-02	3.3E+00	2.6E-02	1.1E+00	9.3E-03	3.6E-01
|+b>	1.3E-03	3.4E-01	1.1E-01	4.9E+00	--	9.6E+00	9.3E+00	4.0E+00	6.4E-01	3.6E-01	1.7E-01	1.4E+00	4.6E-02	2.1E-01	1.1E-01	1.2E-01
|-b>	3.4E-01	1.3E-03	4.9E+00	1.1E-01	9.6E+00	--	4.0E+00	9.3E+00	3.6E-01	6.4E-01	1.4E+00	1.7E-01	2.1E-01	4.6E-02	1.2E-01	1.1E-01
|+c>	5.2E-03	2.1E-01	1.1E-01	1.9E+00	9.3E+00	4.0E+00	--	2.5E+00	1.2E+01	1.2E+00	1.4E-01	2.6E+00	3.6E-01	4.5E-01	3.3E-02	8.1E-02
|-c>	2.1E-01	5.2E-03	1.9E+00	1.1E-01	4.0E+00	9.3E+00	2.5E+00	--	1.2E+00	1.2E+01	2.6E+00	1.4E-01	4.5E-01	3.6E-01	8.1E-02	3.3E-02
|+d>	3.4E-03	2.1E-02	2.1E-01	1.1E+00	6.4E-01	3.6E-01	1.2E+01	1.2E+00	--	5.0E+00	1.5E+00	3.0E+00	9.2E-01	7.7E+00	7.5E-02	6.6E-01
|-d>	2.1E-02	3.4E-03	1.1E+00	2.1E-01	3.6E-01	6.4E-01	1.2E+00	1.2E+01	5.0E+00	--	3.0E+00	1.5E+00	7.7E+00	9.2E-01	6.6E-01	7.5E-02
|+e>	8.5E-02	8.1E-04	3.3E+00	4.1E-02	1.7E-01	1.4E+00	1.4E-01	2.6E+00	1.5E+00	3.0E+00	--	1.1E+00	8.4E+00	1.0E+00	1.9E+00	3.0E-01
|-e>	8.1E-04	8.5E-02	4.1E-02	3.3E+00	1.4E+00	1.7E-01	2.6E+00	1.4E-01	3.0E+00	1.5E+00	1.1E+00	--	1.0E+00	8.4E+00	3.0E-01	1.9E+00
|+f>	1.4E-02	1.1E-03	1.1E+00	2.6E-02	4.6E-02	2.1E-01	3.6E-01	4.5E-01	9.2E-01	7.7E+00	8.4E+00	1.0E+00	--	1.7E+00	7.3E+00	2.1E-01
|-f>	1.1E-03	1.4E-02	2.6E-02	1.1E+00	2.1E-01	4.6E-02	4.5E-01	3.6E-01	7.7E+00	9.2E-01	1.0E+00	8.4E+00	1.7E+00	--	2.1E-01	7.3E+00
|+g>	2.0E-02	4.6E-05	3.6E-01	9.3E-03	1.1E-01	1.2E-01	3.3E-02	8.1E-02	7.5E-02	6.6E-01	1.9E+00	3.0E-01	7.3E+00	2.1E-01	--	2.6E-01
|-g>	4.6E-05	2.0E-02	9.3E-03	3.6E-01	1.2E-01	1.1E-01	8.1E-02	3.3E-02	6.6E-01	7.5E-02	3.0E-01	1.9E+00	2.1E-01	7.3E+00	2.6E-01	--

Table S37. Average transition magnetic moment elements between the states of **4**, given in μ_B^2.

	$\left\|+\frac{15}{2}\right>$	$\left\|-\frac{15}{2}\right>$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\left\|+\frac{15}{2}\right>$	--	9.7E-08	2.2E-05	4.2E+00	2.2E-02	1.0E-01	3.2E-02	3.4E-02	2.1E-02	1.6E-02	1.0E-03	6.7E-02	4.6E-04	9.9E-03	4.2E-05	1.6E-02
$\left\|-\frac{15}{2}\right>$	9.7E-08	--	4.2E+00	2.2E-05	1.0E-01	2.2E-02	3.4E-02	3.2E-02	1.6E-02	2.1E-02	6.7E-02	1.0E-03	9.9E-03	4.6E-04	1.6E-02	4.2E-05
|+a>	2.2E-05	4.2E+00	--	6.3E-04	2.4E+00	5.6E-01	4.2E-01	3.9E-01	6.8E-01	1.4E+00	3.0E+00	6.7E-02	8.0E-01	1.1E-02	2.9E-01	2.9E-03
|-a>	4.2E+00	2.2E-05	6.3E-04	--	5.6E-01	2.4E+00	3.9E-01	4.2E-01	1.4E+00	6.8E-01	6.7E-02	3.0E+00	1.1E-02	8.0E-01	2.9E-03	2.9E-01
|+b>	2.2E-02	1.0E-01	2.4E+00	5.6E-01	--	7.6E+00	8.5E+00	5.0E+00	4.9E-01	8.0E-01	1.1E+00	5.9E-01	1.5E-01	4.6E-02	1.3E-01	8.4E-02
|-b>	1.0E-01	2.2E-02	5.6E-01	2.4E+00	7.6E+00	--	5.0E+00	8.5E+00	8.0E-01	4.9E-01	5.9E-01	1.1E+00	4.6E-02	1.5E-01	8.4E-02	1.3E-01
|+c>	3.2E-02	3.4E-02	4.2E-01	3.9E-01	8.5E+00	5.0E+00	--	6.5E+00	3.6E+00	7.0E+00	2.2E+00	3.1E+00	6.8E-01	1.3E-01	6.1E-02	2.6E-02
|-c>	3.4E-02	3.2E-02	3.9E-01	4.2E-01	5.0E+00	8.5E+00	6.5E+00	--	7.0E+00	3.6E+00	3.1E+00	2.2E+00	1.3E-01	6.8E-01	2.6E-02	6.1E-02
|+d>	2.1E-02	1.6E-02	6.8E-01	1.4E+00	4.9E-01	8.0E-01	3.6E+00	7.0E+00	--	1.2E+01	5.5E-01	3.5E+00	4.0E+00	2.2E+00	3.2E-01	4.5E-01
|-d>	1.6E-02	2.1E-02	1.4E+00	6.8E-01	8.0E-01	4.9E-01	7.0E+00	3.6E+00	1.2E+01	--	3.5E+00	5.5E-01	2.2E+00	4.0E+00	4.5E-01	3.2E-01
|+e>	1.0E-03	6.7E-02	3.0E+00	6.7E-02	1.1E+00	5.9E-01	2.2E+00	3.1E+00	5.5E-01	3.5E+00	--	7.9E-01	1.1E+01	1.1E+00	1.7E+00	3.0E-01
|-e>	6.7E-02	1.0E-03	6.7E-02	3.0E+00	5.9E-01	1.1E+00	3.1E+00	2.2E+00	3.5E+00	5.5E-01	7.9E-01	--	1.1E+00	1.1E+01	3.0E-01	1.7E+00
|+f>	4.6E-04	9.9E-03	8.0E-01	1.1E-02	1.5E-01	4.6E-02	6.8E-01	1.3E-01	4.0E+00	2.2E+00	1.1E+01	1.1E+00	--	2.7E+00	7.0E+00	4.3E-01
|-f>	9.9E-03	4.6E-04	1.1E-02	8.0E-01	4.6E-02	1.5E-01	1.3E-01	6.8E-01	2.2E+00	4.0E+00	1.1E+00	1.1E+01	2.7E+00	--	4.3E-01	7.0E+00
|+g>	4.2E-05	1.6E-02	2.9E-01	2.9E-03	1.3E-01	8.4E-02	6.1E-02	2.6E-02	3.2E-01	4.5E-01	1.7E+00	3.0E-01	7.0E+00	4.3E-01	--	3.0E-01
|-g>	1.6E-02	4.2E-05	2.9E-03	2.9E-01	8.4E-02	1.3E-01	2.6E-02	6.1E-02	4.5E-01	3.2E-01	3.0E-01	1.7E+00	4.3E-01	7.0E+00	3.0E-01	--

Table S38. Average transition magnetic moment elements between the states of **5**, given in μ_B^2.

	$\|+\frac{15}{2}\rangle$	$\|-\frac{15}{2}\rangle$	$\|+\frac{13}{2}\rangle$	$\|-\frac{13}{2}\rangle$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>
$\|+\frac{15}{2}\rangle$	--	2.1E-07	9.0E-05	3.6E+00	1.5E-03	4.8E-01	1.4E-03	2.8E-01	2.2E-02	2.3E-03	8.4E-02	1.6E-03	1.6E-02	1.0E-03	2.2E-02	1.1E-05
$\|-\frac{15}{2}\rangle$	2.1E-07	--	3.6E+00	9.0E-05	4.8E-01	1.5E-03	2.8E-01	1.4E-03	2.3E-03	2.2E-02	1.6E-03	8.4E-02	1.0E-03	1.6E-02	1.1E-05	2.2E-02
$\|+\frac{13}{2}\rangle$	9.0E-05	3.6E+00	--	1.2E-02	5.7E+00	3.4E-01	2.4E+00	1.3E-01	1.4E-01	1.2E+00	6.9E-02	3.0E+00	2.1E-02	1.1E+00	1.2E-02	3.6E-01
$\|-\frac{13}{2}\rangle$	3.6E+00	9.0E-05	1.2E-02	--	3.4E-01	5.7E+00	1.3E-01	2.4E+00	1.2E+00	1.4E-01	3.0E+00	6.9E-02	1.1E+00	2.1E-02	3.6E-01	1.2E-02
|+a>	1.5E-03	4.8E-01	5.7E+00	3.4E-01	--	1.1E+01	9.6E+00	3.1E+00	3.4E-01	7.8E-01	1.3E-01	1.5E+00	4.3E-02	2.8E-01	9.5E-02	1.5E-01
|-a>	4.8E-01	1.5E-03	3.4E-01	5.7E+00	1.1E+01	--	3.1E+00	9.6E+00	7.8E-01	3.4E-01	1.5E+00	1.3E-01	2.8E-01	4.3E-02	1.5E-01	9.5E-02
|+b>	1.4E-03	2.8E-01	2.4E+00	1.3E-01	9.6E+00	3.1E+00	--	1.3E+01	8.0E-01	1.3E+00	2.1E-01	2.4E+00	3.2E-01	5.6E-01	3.0E-02	1.0E-01
|-b>	2.8E-01	1.4E-03	1.3E-01	2.4E+00	3.1E+00	9.6E+00	1.3E+01	--	1.3E+00	8.0E-01	2.4E+00	2.1E-01	5.6E-01	3.2E-01	1.0E-01	3.0E-02
|+c>	2.2E-02	2.3E-03	1.4E-01	1.2E+00	3.4E-01	7.8E-01	8.0E-01	1.3E+00	--	4.0E+00	3.4E+00	1.3E+00	8.1E+00	7.0E-01	6.8E-01	4.4E-02
|-c>	2.3E-03	2.2E-02	1.2E+00	1.4E-01	7.8E-01	3.4E-01	1.3E+00	8.0E-01	4.0E+00	--	1.3E+00	3.4E+00	7.0E-01	8.1E+00	4.4E-02	6.8E-01
|+d>	8.4E-02	1.6E-03	6.9E-02	3.0E+00	1.3E-01	1.5E+00	2.1E-01	2.4E+00	3.4E+00	1.3E+00	--	1.8E+00	8.0E+00	9.4E-01	1.9E+00	3.2E-01
|-d>	1.6E-03	8.4E-02	3.0E+00	6.9E-02	1.5E+00	1.3E-01	2.4E+00	2.1E-01	1.3E+00	3.4E+00	1.8E+00	--	9.4E-01	8.0E+00	3.2E-01	1.9E+00
|+e>	1.6E-02	1.0E-03	2.1E-02	1.1E+00	4.3E-02	2.8E-01	3.2E-01	5.6E-01	8.1E+00	7.0E-01	8.0E+00	9.4E-01	--	1.8E+00	7.3E+00	2.2E-01
|-e>	1.0E-03	1.6E-02	1.1E+00	2.1E-02	2.8E-01	4.3E-02	5.6E-01	3.2E-01	7.0E-01	8.1E+00	9.4E-01	8.0E+00	1.8E+00	--	2.2E-01	7.3E+00
|+f>	2.2E-02	1.1E-05	1.2E-02	3.6E-01	9.5E-02	1.5E-01	3.0E-02	1.0E-01	6.8E-01	4.4E-02	1.9E+00	3.2E-01	7.3E+00	2.2E-01	--	4.8E-02
|-f>	1.1E-05	2.2E-02	3.6E-01	1.2E-02	1.5E-01	9.5E-02	1.0E-01	3.0E-02	4.4E-02	6.8E-01	3.2E-01	1.9E+00	2.2E-01	7.3E+00	4.8E-02	--

Table S39. Average transition magnetic moment elements between the states of **6**, given in μ_B^2.

	$\|+\frac{15}{2}\rangle$	$\|-\frac{15}{2}\rangle$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\|+\frac{15}{2}\rangle$	--	1.6E-08	4.3E+00	1.5E-06	1.1E-01	1.2E-03	3.9E-03	6.3E-04	7.5E-03	5.8E-03	7.7E-03	8.3E-03	2.4E-03	2.4E-04	7.2E-03	2.3E-05
$\|-\frac{15}{2}\rangle$	1.6E-08	--	1.5E-06	4.3E+00	1.2E-03	1.1E-01	6.3E-04	3.9E-03	5.8E-03	7.5E-03	8.3E-03	7.7E-03	2.4E-04	2.4E-03	2.3E-05	7.2E-03
|+a>	4.3E+00	1.5E-06	--	3.3E-05	6.1E+00	7.5E-02	8.1E-01	2.2E-02	4.5E-01	2.5E-01	2.6E-01	2.0E-01	2.3E-01	9.5E-03	9.1E-02	4.1E-04
|-a>	1.5E-06	4.3E+00	3.3E-05	--	7.5E-02	6.1E+00	2.2E-02	8.1E-01	2.5E-01	4.5E-01	2.0E-01	2.6E-01	9.5E-03	2.3E-01	4.1E-04	9.1E-02
|+b>	1.1E-01	1.2E-03	6.1E+00	7.5E-02	--	7.1E-01	3.3E+00	4.9E-01	3.9E+00	2.5E+00	2.2E+00	3.6E-01	1.1E+00	1.3E-01	3.8E-01	6.9E-02
|-b>	1.2E-03	1.1E-01	7.5E-02	6.1E+00	7.1E-01	--	4.9E-01	3.3E+00	2.5E+00	3.9E+00	3.6E-01	2.2E+00	1.3E-01	1.1E+00	6.9E-02	3.8E-01
|+c>	3.9E-03	6.3E-04	8.1E-01	2.2E-02	3.3E+00	4.9E-01	--	6.7E+00	5.4E+00	1.4E+00	7.2E-01	1.5E+00	8.1E-01	3.0E-01	1.3E-01	1.6E-01
|-c>	6.3E-04	3.9E-03	2.2E-02	8.1E-01	4.9E-01	3.3E+00	6.7E+00	--	1.4E+00	5.4E+00	1.5E+00	7.2E-01	3.0E-01	8.1E-01	1.6E-01	1.3E-01
|+d>	7.5E-03	5.8E-03	4.5E-01	2.5E-01	3.9E+00	2.5E+00	5.4E+00	1.4E+00	--	6.6E+00	2.2E+00	1.7E+00	1.3E+00	1.9E+00	2.3E-01	1.9E-01
|-d>	5.8E-03	7.5E-03	2.5E-01	4.5E-01	2.5E+00	3.9E+00	1.4E+00	5.4E+00	6.6E+00	--	1.7E+00	2.2E+00	1.9E+00	1.3E+00	1.9E-01	2.3E-01
|+e>	7.7E-03	8.3E-03	2.6E-01	2.0E-01	2.2E+00	3.6E-01	7.2E-01	1.5E+00	2.2E+00	1.7E+00	--	9.1E+00	8.5E+00	4.3E+00	3.6E-01	7.0E-01
|-e>	8.3E-03	7.7E-03	2.0E-01	2.6E-01	3.6E-01	2.2E+00	1.5E+00	7.2E-01	1.7E+00	2.2E+00	9.1E+00	--	4.3E+00	8.5E+00	7.0E-01	3.6E-01
|+f>	2.4E-03	2.4E-04	2.3E-01	9.5E-03	1.1E+00	1.3E-01	8.1E-01	3.0E-01	1.3E+00	1.9E+00	8.5E+00	4.3E+00	--	5.3E+00	6.5E+00	1.2E+00
|-f>	2.4E-04	2.4E-03	9.5E-03	2.3E-01	1.3E-01	1.1E+00	3.0E-01	8.1E-01	1.9E+00	1.3E+00	4.3E+00	8.5E+00	5.3E+00	--	1.2E+00	6.5E+00
|+g>	7.2E-03	2.3E-05	9.1E-02	4.1E-04	3.8E-01	6.9E-02	1.3E-01	1.6E-01	2.3E-01	1.9E-01	3.6E-01	7.0E-01	6.5E+00	1.2E+00	--	3.3E-01
|-g>	2.3E-05	7.2E-03	4.1E-04	9.1E-02	6.9E-02	3.8E-01	1.6E-01	1.3E-01	1.9E-01	2.3E-01	7.0E-01	3.6E-01	1.2E+00	6.5E+00	3.3E-01	--

Table S40. Average transition magnetic moment elements between the states of **7**, given in μ_B^2.

	$\|+\frac{15}{2}\rangle$	$\|-\frac{15}{2}\rangle$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\|+\frac{15}{2}\rangle$	--	5.8E-07	7.4E-03	1.1E+00	3.0E-02	1.3E-01	2.1E-02	4.2E-01	7.7E-02	7.7E-02	1.6E-01	3.7E-01	1.6E+00	4.7E-02	4.8E-01	3.0E-01
$\|-\frac{15}{2}\rangle$	5.8E-07	--	1.1E+00	7.4E-03	1.3E-01	3.0E-02	4.2E-01	2.1E-02	7.7E-02	7.7E-02	3.7E-01	1.6E-01	4.7E-02	1.6E+00	3.0E-01	4.8E-01
|+a>	7.4E-03	1.1E+00	--	4.4E+00	8.3E+00	5.2E+00	6.1E+00	7.4E-01	1.6E+00	9.8E-01	9.7E-02	9.6E-01	8.8E-02	8.3E-01	1.2E-01	1.7E-01
|-a>	1.1E+00	7.4E-03	4.4E+00	--	5.2E+00	8.3E+00	7.4E-01	6.1E+00	9.8E-01	1.6E+00	9.6E-01	9.7E-02	8.3E-01	8.8E-02	1.7E-01	1.2E-01
|+b>	3.0E-02	1.3E-01	8.3E+00	5.2E+00	--	3.0E+00	3.1E+00	1.5E+00	5.7E+00	3.0E+00	5.7E-01	3.6E-01	5.7E-01	6.9E-01	1.0E-01	4.5E-01
|-b>	1.3E-01	3.0E-02	5.2E+00	8.3E+00	3.0E+00	--	1.5E+00	3.1E+00	3.0E+00	5.7E+00	3.6E-01	5.7E-01	6.9E-01	5.7E-01	4.5E-01	1.0E-01
|+c>	2.1E-02	4.2E-01	6.1E+00	7.4E-01	3.1E+00	1.5E+00	--	3.4E+00	2.0E+00	9.1E-01	5.5E+00	2.9E+00	2.2E-01	8.5E-01	1.3E+00	1.4E+00
|-c>	4.2E-01	2.1E-02	7.4E-01	6.1E+00	1.5E+00	3.1E+00	3.4E+00	--	9.1E-01	2.0E+00	2.9E+00	5.5E+00	8.5E-01	2.2E-01	1.4E+00	1.3E+00
|+d>	7.7E-02	7.7E-02	1.6E+00	9.8E-01	5.7E+00	3.0E+00	2.0E+00	9.1E-01	--	4.8E+00	5.3E+00	2.1E+00	1.2E+00	2.6E+00	3.6E-01	7.0E-01
|-d>	7.7E-02	7.7E-02	9.8E-01	1.6E+00	3.0E+00	5.7E+00	9.1E-01	2.0E+00	4.8E+00	--	2.1E+00	5.3E+00	2.6E+00	1.2E+00	7.0E-01	3.6E-01
|+e>	1.6E-01	3.7E-01	9.7E-02	9.6E-01	5.7E-01	3.6E-01	5.5E+00	2.9E+00	5.3E+00	2.1E+00	--	3.8E+00	3.2E+00	6.5E+00	2.9E+00	6.1E-01
|-e>	3.7E-01	1.6E-01	9.6E-01	9.7E-02	3.6E-01	5.7E-01	2.9E+00	5.5E+00	2.1E+00	5.3E+00	3.8E+00	--	6.5E+00	3.2E+00	6.1E-01	2.9E+00
|+f>	1.6E+00	4.7E-02	8.8E-02	8.3E-01	5.7E-01	6.9E-01	2.2E-01	8.5E-01	1.2E+00	2.6E+00	3.2E+00	6.5E+00	--	4.8E+00	6.1E+00	6.0E-01
|-f>	4.7E-02	1.6E+00	8.3E-01	8.8E-02	6.9E-01	5.7E-01	8.5E-01	2.2E-01	2.6E+00	1.2E+00	6.5E+00	3.2E+00	4.8E+00	--	6.0E-01	6.1E+00
|+g>	4.8E-01	3.0E-01	1.2E-01	1.7E-01	1.0E-01	4.5E-01	1.3E+00	1.4E+00	3.6E-01	7.0E-01	2.9E+00	6.1E-01	6.1E+00	6.0E-01	--	2.1E+01
|-g>	3.0E-01	4.8E-01	1.7E-01	1.2E-01	4.5E-01	1.0E-01	1.4E+00	1.3E+00	7.0E-01	3.6E-01	6.1E-01	2.9E+00	6.0E-01	6.1E+00	2.1E+01	--

Table S41. Average transition magnetic moment elements between the states of **8**, given in μ_B^2.

	$\|+\frac{15}{2}\rangle$	$\|-\frac{15}{2}\rangle$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\|+\frac{15}{2}\rangle$	--	5.3E-09	4.3E-03	2.7E+00	2.4E-02	3.3E-02	1.1E+00	5.9E-02	2.4E-01	9.9E-02	2.0E-01	1.0E-01	5.1E-02	1.2E-02	1.3E-03	2.0E-03
$\|-\frac{15}{2}\rangle$	5.3E-09	--	2.7E+00	4.3E-03	3.3E-02	2.4E-02	5.9E-02	1.1E+00	9.9E-02	2.4E-01	1.0E-01	2.0E-01	1.2E-02	5.1E-02	2.0E-03	1.3E-03
|+a>	4.3E-03	2.7E+00	--	2.2E-01	1.5E+01	5.9E-01	4.3E-01	1.5E+00	4.3E-01	3.6E-01	7.5E-02	4.1E-01	3.6E-02	4.5E-01	2.8E-03	1.0E-02
|-a>	2.7E+00	4.3E-03	2.2E-01	--	5.9E-01	1.5E+01	1.5E+00	4.3E-01	3.6E-01	4.3E-01	4.1E-01	7.5E-02	4.5E-01	3.6E-02	1.0E-02	2.8E-03
|+b>	2.4E-02	3.3E-02	1.5E+01	5.9E-01	--	1.3E+00	6.2E-01	1.1E+01	3.1E-01	1.2E+00	4.1E-01	3.0E-01	2.1E-01	7.2E-02	6.3E-02	3.0E-02
|-b>	3.3E-02	2.4E-02	5.9E-01	1.5E+01	1.3E+00	--	1.1E+01	6.2E-01	1.2E+00	3.1E-01	3.0E-01	4.1E-01	7.2E-02	2.1E-01	3.0E-02	6.3E-02
|+c>	1.1E+00	5.9E-02	4.3E-01	1.5E+00	6.2E-01	1.1E+01	--	4.9E+00	4.5E+00	7.9E+00	5.2E-01	2.1E-01	1.1E-01	7.8E-02	7.2E-02	3.8E-02
|-c>	5.9E-02	1.1E+00	1.5E+00	4.3E-01	1.1E+01	6.2E-01	4.9E+00	--	7.9E+00	4.5E+00	2.1E-01	5.2E-01	7.8E-02	1.1E-01	3.8E-02	7.2E-02
|+d>	2.4E-01	9.9E-02	4.3E-01	3.6E-01	3.1E-01	1.2E+00	4.5E+00	7.9E+00	--	4.8E+00	3.8E-01	5.8E-01	4.4E-01	1.9E-01	1.6E-02	1.4E-02
|-d>	9.9E-02	2.4E-01	3.6E-01	4.3E-01	1.2E+00	3.1E-01	7.9E+00	4.5E+00	4.8E+00	--	5.8E-01	3.8E-01	1.9E-01	4.4E-01	1.4E-02	1.6E-02
|+e>	2.0E-01	1.0E-01	7.5E-02	4.1E-01	4.1E-01	3.0E-01	5.2E-01	2.1E-01	3.8E-01	5.8E-01	--	1.6E+01	3.5E+00	3.7E+00	1.0E+00	5.7E-01
|-e>	1.0E-01	2.0E-01	4.1E-01	7.5E-02	3.0E-01	4.1E-01	2.1E-01	5.2E-01	5.8E-01	3.8E-01	1.6E+01	--	3.7E+00	3.5E+00	5.7E-01	1.0E+00
|+f>	5.1E-02	1.2E-02	3.6E-02	4.5E-01	2.1E-01	7.2E-02	1.1E-01	7.8E-02	4.4E-01	1.9E-01	3.5E+00	3.7E+00	--	1.6E+01	9.1E-01	2.5E+00
|-f>	1.2E-02	5.1E-02	4.5E-01	3.6E-02	7.2E-02	2.1E-01	7.8E-02	1.1E-01	1.9E-01	4.4E-01	3.7E+00	3.5E+00	1.6E+01	--	2.5E+00	9.1E-01
|+g>	1.3E-03	2.0E-03	2.8E-03	1.0E-02	6.3E-02	3.0E-02	7.2E-02	3.8E-02	1.6E-02	1.4E-02	1.0E+00	5.7E-01	9.1E-01	2.5E+00	--	1.9E+01
|-g>	2.0E-03	1.3E-03	1.0E-02	2.8E-03	3.0E-02	6.3E-02	3.8E-02	7.2E-02	1.4E-02	1.6E-02	5.7E-01	1.0E+00	2.5E+00	9.1E-01	1.9E+01	--

Table S42. Average transition magnetic moment elements between the states of **9**, given in μ_B^2.

	$\|+\frac{15}{2}\rangle$	$\|-\frac{15}{2}\rangle$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\|+\frac{15}{2}\rangle$	--	5.6E-08	7.1E-03	2.0E+00	3.5E-02	4.5E-02	3.6E-02	1.3E+00	3.0E-01	1.9E-01	9.9E-02	2.6E-01	3.7E-01	1.1E-02	1.8E-02	9.6E-03
$\|-\frac{15}{2}\rangle$	5.6E-08	--	2.0E+00	7.1E-03	4.5E-02	3.5E-02	1.3E+00	3.6E-02	1.9E-01	3.0E-01	2.6E-01	9.9E-02	1.1E-02	3.7E-01	9.6E-03	1.8E-02
|+a>	7.1E-03	2.0E+00	--	1.1E+00	2.0E+00	1.4E+01	1.4E+00	7.0E-01	1.3E+00	1.6E+00	1.2E-01	4.2E-01	4.1E-02	7.7E-01	3.7E-03	4.4E-02
|-a>	2.0E+00	7.1E-03	1.1E+00	--	1.4E+01	2.0E+00	7.0E-01	1.4E+00	1.6E+00	1.3E+00	4.2E-01	1.2E-01	7.7E-01	4.1E-02	4.4E-02	3.7E-03
|+b>	3.5E-02	4.5E-02	2.0E+00	1.4E+01	--	4.7E+00	2.1E+00	6.4E+00	9.0E-01	6.8E-01	2.5E-01	1.3E+00	5.5E-01	3.9E-01	1.3E-01	1.3E-01
|-b>	4.5E-02	3.5E-02	1.4E+01	2.0E+00	4.7E+00	--	6.4E+00	2.1E+00	6.8E-01	9.0E-01	1.3E+00	2.5E-01	3.9E-01	5.5E-01	1.3E-01	1.3E-01
|+c>	3.6E-02	1.3E+00	1.4E+00	7.0E-01	2.1E+00	6.4E+00	--	5.6E+00	3.9E+00	6.3E+00	4.9E-01	7.5E-01	3.6E-02	1.3E+00	1.3E-01	1.7E-01
|-c>	1.3E+00	3.6E-02	7.0E-01	1.4E+00	6.4E+00	2.1E+00	5.6E+00	--	6.3E+00	3.9E+00	7.5E-01	4.9E-01	1.3E+00	3.6E-02	1.7E-01	1.3E-01
|+d>	3.0E-01	1.9E-01	1.3E+00	1.6E+00	9.0E-01	6.8E-01	3.9E+00	6.3E+00	--	5.8E+00	3.1E+00	5.6E+00	9.9E-01	2.9E+00	4.0E-02	9.4E-02
|-d>	1.9E-01	3.0E-01	1.6E+00	1.3E+00	6.8E-01	9.0E-01	6.3E+00	3.9E+00	5.8E+00	--	5.6E+00	3.1E+00	2.9E+00	9.9E-01	9.4E-02	4.0E-02
|+e>	9.9E-02	2.6E-01	1.2E-01	4.2E-01	2.5E-01	1.3E+00	4.9E-01	7.5E-01	3.1E+00	5.6E+00	--	1.1E+01	1.9E+00	2.5E+00	3.7E+00	1.6E+00
|-e>	2.6E-01	9.9E-02	4.2E-01	1.2E-01	1.3E+00	2.5E-01	7.5E-01	4.9E-01	5.6E+00	3.1E+00	1.1E+01	--	2.5E+00	1.9E+00	1.6E+00	3.7E+00
|+f>	3.7E-01	1.1E-02	4.1E-02	7.7E-01	5.5E-01	3.9E-01	3.6E-02	1.3E+00	9.9E-01	2.9E+00	1.9E+00	2.5E+00	--	6.6E+00	7.5E-01	6.8E-01
|-f>	1.1E-02	3.7E-01	7.7E-01	4.1E-02	3.9E-01	5.5E-01	1.3E+00	3.6E-02	2.9E+00	9.9E-01	2.5E+00	1.9E+00	6.6E+00	--	6.8E-01	7.5E-01
|+g>	1.8E-02	9.6E-03	3.7E-03	4.4E-02	1.3E-01	1.3E-01	1.3E-01	1.7E-01	4.0E-02	9.4E-02	3.7E+00	1.6E+00	7.5E-01	6.8E-01	--	3.0E+01
|-g>	9.6E-03	1.8E-02	4.4E-02	3.7E-03	1.3E-01	1.3E-01	1.7E-01	1.3E-01	9.4E-02	4.0E-02	1.6E+00	3.7E+00	6.8E-01	7.5E-01	3.0E+01	--

Table S43. Average transition magnetic moment elements between the states of **10**, given in μ_B^2.

	$\|+\frac{15}{2}\rangle$	$\|-\frac{15}{2}\rangle$	|+a>	|-a>	|+b>	|-b>	|+c>	|-c>	|+d>	|-d>	|+e>	|-e>	|+f>	|-f>	|+g>	|-g>
$\|+\frac{15}{2}\rangle$	--	3.8E-08	1.3E+00	1.0E-03	5.9E-02	8.5E-03	1.1E+00	2.2E-01	7.3E-01	2.6E-01	1.3E-01	4.1E-01	4.1E-01	1.2E-02	1.4E-02	1.3E-02
$\|-\frac{15}{2}\rangle$	3.8E-08	--	1.0E-03	1.3E+00	8.5E-03	5.9E-02	2.2E-01	1.1E+00	2.6E-01	7.3E-01	4.1E-01	1.3E-01	1.2E-02	4.1E-01	1.3E-02	1.4E-02
|+a>	1.3E+00	1.0E-03	--	5.3E-01	1.5E+01	5.6E-01	1.7E+00	1.8E+00	6.6E-01	1.3E+00	3.9E-01	1.1E-01	4.7E-01	3.6E-02	2.8E-02	9.1E-03
|-a>	1.0E-03	1.3E+00	5.3E-01	--	5.6E-01	1.5E+01	1.8E+00	1.7E+00	1.3E+00	6.6E-01	1.1E-01	3.9E-01	3.6E-02	4.7E-01	9.1E-03	2.8E-02
|+b>	5.9E-02	8.5E-03	1.5E+01	5.6E-01	--	1.4E+00	5.0E+00	1.7E+00	2.7E-01	6.6E-01	2.4E-01	4.7E-01	5.1E-01	6.5E-02	7.5E-02	1.4E-01
|-b>	8.5E-03	5.9E-02	5.6E-01	1.5E+01	1.4E+00	--	1.7E+00	5.0E+00	6.6E-01	2.7E-01	4.7E-01	2.4E-01	6.5E-02	5.1E-01	1.4E-01	7.5E-02
|+c>	1.1E+00	2.2E-01	1.7E+00	1.8E+00	5.0E+00	1.7E+00	--	1.0E+01	8.2E+00	2.5E+00	5.5E-01	5.5E-01	7.4E-01	3.3E-01	1.6E-01	1.4E-01
|-c>	2.2E-01	1.1E+00	1.8E+00	1.7E+00	1.7E+00	5.0E+00	1.0E+01	--	2.5E+00	8.2E+00	5.5E-01	5.5E-01	3.3E-01	7.4E-01	1.4E-01	1.6E-01
|+d>	7.3E-01	2.6E-01	6.6E-01	1.3E+00	2.7E-01	6.6E-01	8.2E+00	2.5E+00	--	4.2E+00	2.2E+00	7.4E+00	5.4E-01	2.9E+00	4.0E-02	6.0E-02
|-d>	2.6E-01	7.3E-01	1.3E+00	6.6E-01	6.6E-01	2.7E-01	2.5E+00	8.2E+00	4.2E+00	--	7.4E+00	2.2E+00	2.9E+00	5.4E-01	6.0E-02	4.0E-02
|+e>	1.3E-01	4.1E-01	3.9E-01	1.1E-01	2.4E-01	4.7E-01	5.5E-01	5.5E-01	2.2E+00	7.4E+00	--	7.4E+00	2.3E+00	2.5E+00	1.8E+00	2.8E+00
|-e>	4.1E-01	1.3E-01	1.1E-01	3.9E-01	4.7E-01	2.4E-01	5.5E-01	5.5E-01	7.4E+00	2.2E+00	7.4E+00	--	2.5E+00	2.3E+00	2.8E+00	1.8E+00
|+f>	4.1E-01	1.2E-02	4.7E-01	3.6E-02	5.1E-01	6.5E-02	7.4E-01	3.3E-01	5.4E-01	2.9E+00	2.3E+00	2.5E+00	--	6.0E+00	5.0E-01	8.4E-01
|-f>	1.2E-02	4.1E-01	3.6E-02	4.7E-01	6.5E-02	5.1E-01	3.3E-01	7.4E-01	2.9E+00	5.4E-01	2.5E+00	2.3E+00	6.0E+00	--	8.4E-01	5.0E-01
|+g>	1.4E-02	1.3E-02	2.8E-02	9.1E-03	7.5E-02	1.4E-01	1.6E-01	1.4E-01	4.0E-02	6.0E-02	1.8E+00	2.8E+00	5.0E-01	8.4E-01	--	2.5E+01
|-g>	1.3E-02	1.4E-02	9.1E-03	2.8E-02	1.4E-01	7.5E-02	1.4E-01	1.6E-01	6.0E-02	4.0E-02	2.8E+00	1.8E+00	8.4E-01	5.0E-01	2.5E+01	--