Electronic Supplementary Information (ESI) for

Crystal structures and magnetic properties of two series of phenoxo-*O* bridged dinuclear Ln_2 (Ln = Gd, Tb, Dy) complexes

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Table S1 Basic crystallographic data for compounds **1a–c** and **2a–c**

	1a	**1b**	**1c**	**2a**	**2b**	**2c**
Formula	$C_{66}H_{76}Gd_2N_2O_{18}$	$C_{66}H_{76}Tb_2N_2O_{18}$	$C_{66}H_{76}Dy_2N_2O_{18}$	$C_{64}H_{58}Gd_2N_4O_{12}$	$C_{64}H_{58}Tb_2N_4O_{12}$	$C_{64}H_{58}Dy_2N_4O_{12}$
M (g·mol^{-1})	1499.79	1503.12	1510.28	1389.64	1392.98	1400.14
Crystal system	Triclinic	Triclinic	Triclinic	Monoclinic	Monoclinic	Monoclinic
Space group	$P\bar{1}$	$P\bar{1}$	$P\bar{1}$	$P2_1/c$	$P2_1/c$	$P2_1/c$
λ (Å)	0.71073	0.71073	0.71073	0.71073	0.71073	0.71073
a (Å)	10.9275(4)	10.8918(2)	10.8879(2)	11.2606(13)	11.2720(3)	11.2623(2)
b (Å)	12.2795(4)	12.2785(2)	12.2929(2)	15.9046(15)	15.8900(3)	15.7686(3)
c (Å)	13.7315(5)	13.6668(3)	13.6009(3)	15.5822(17)	15.5373(4)	15.5235(3)
α (°)	64.929(4)	65.133(2)	65.334(2)	90	90.00	90
β (°)	78.551(3)	78.645(2)	78.453(2)	96.903(5)	96.596(2)	96.256(2)
γ (°)	75.154(3)	75.204(2)	74.994(2)	90	90.00	90
V (Å^3)	1604.71(11)	1594.92(6)	1589.06(6)	2770.5(5)	2764.50(12)	2740.41(9)
Z	1	1	1	2	2	2
T(K)	130(2)	130(2)	130(2)	150(2)	150(2)	130(2)
ρ_{calcd} (g·cm^{-3})	1.552	1.565	1.578	1.666	1.673	1.697
μ (mm^{-1})	2.121	2.272	2.406	2.443	2.607	2.776
Data/restraints/ parameters	5631/0/402	5605/0/402	5579/0/401	5677/0/373	4868/0/373	4832/0/373
R_{int}	0.0238	0.0198	0.0171	0.0757	0.0332	0.0277
$R_1{}^a$ [I > 2σ(I)] /R_1 (all)	0.0205/ 0.0241	0.0177/ 0.0201	0.0166/ 0.0183	0.0338/ 0.0511	0.0274/ 0.0428	0.0212/ 0.0273
$wR_2{}^b$ [I > 2σ(I)] /wR_2 (all)	0.0475/ 0.0481	0.0439/ 0.0443	0.0418/ 0.0421	0.0592/ 0.0632	0.0627/ 0.0671	0.0514/ 0.0525
Goodness-of-fit	1.025	1.105	1.079	1.084	1.030	1.037

Table S2. Parameters of one-component Debye model for Dy^{III} complex **2c** derived according to eq.2 in the main text.

T/K	$\chi_S/(10^{-6}\ m^3mol^{-1})$	$\chi_T/(10^{-6}\ m^3mol^{-1})$	α	$\tau/(10^{-3}\ s)$
1.90	13.95	219.83	0.348	1.373
2.15	0.29	195.90	0.434	1.089
2.41	11.11	167.78	0.394	1.141
2.66	11.90	150.05	0.398	1.041
2.91	3.63	135.50	0.455	0.751
3.17	4.52	121.88	0.450	0.597
3.42	8.28	110.83	0.461	0.474
3.67	2.88	99.76	0.431	0.280
3.92	4.76	92.58	0.457	0.184