

Supplementary Information for

Lanthanide Discs Chill Well and Relax Slowly

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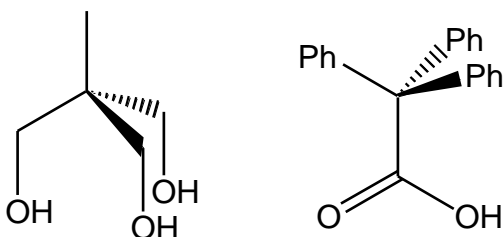


Fig S1. Schematic of organic ligands thmeH₃ (left) and tpaH (right).

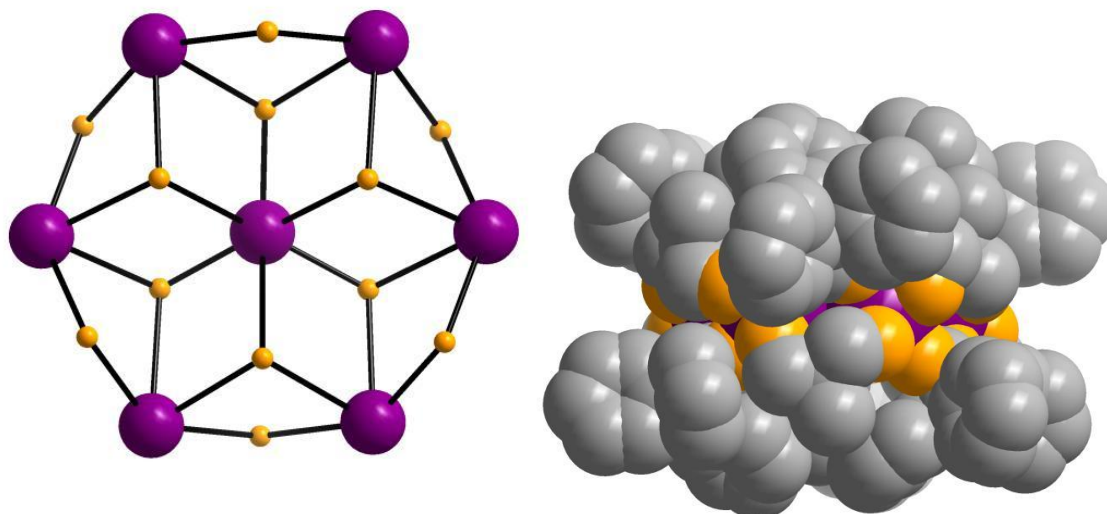


Fig. S2. Left: core of Ln₇ [Ln (purple), O (yellow), C (grey), H omitted]. Right: Space-filling diagram, viewed in the Ln₇ plane.

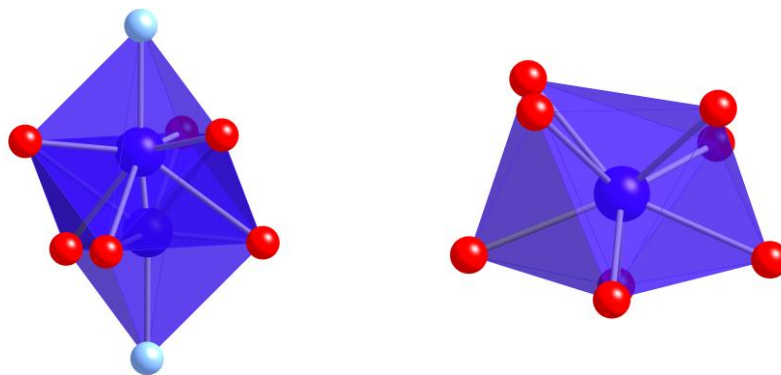


Fig S3. Views of the $\{\text{LnN}_2\text{O}_6\}$ (left) and $\{\text{LnO}_8\}$ (right) coordination polyhedra; the two disordered metal ion sites are shown in the former. The geometry at the central ion can be described as bi-capped compressed octahedral, with the caps on the trigonal compression axis (N-Dy-N). [An alternative description is as distorted cubic, with elongation along the N-Dy-N body diagonal.] The peripheral ions are lower symmetry, best described as bicapped trigonal prismatic.

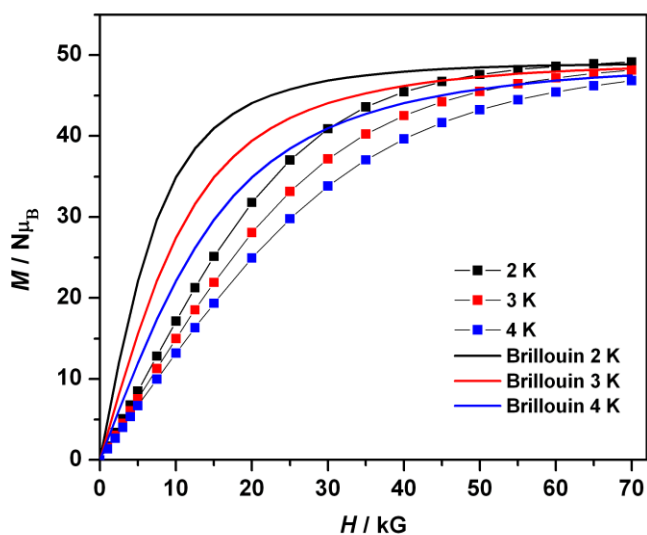


Fig. S4. Experimental $M(H)$ for **2** at 2, 3 and 4 K, with calculated Brillouin curves for seven uncoupled $s = 7/2$ ions ($g = 2.0$).

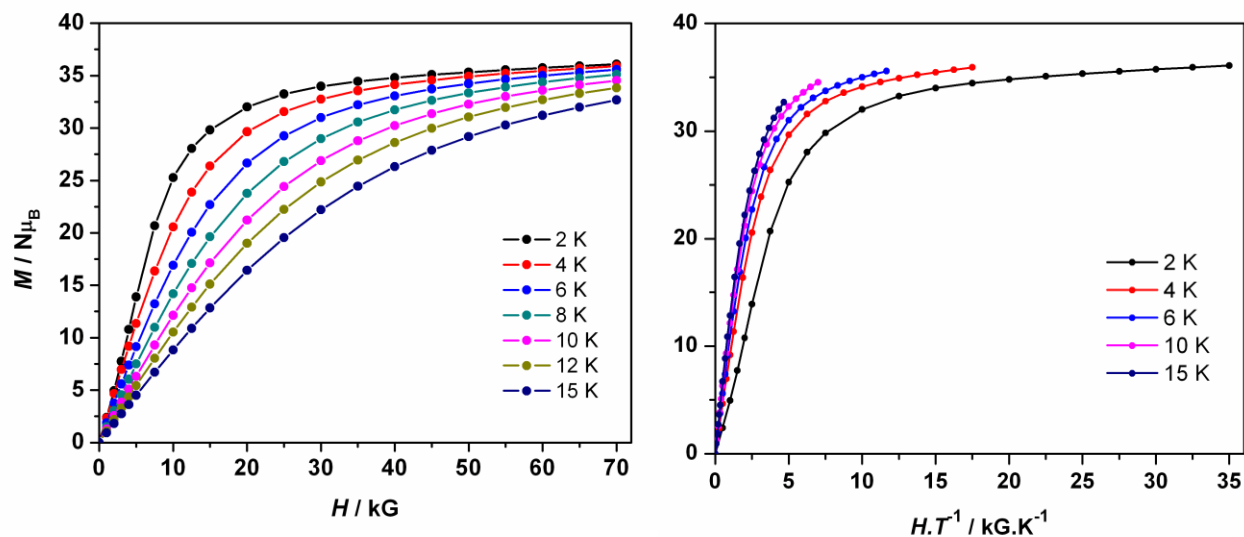


Fig. S5 Left: $M(H)$ for **1** at 2-15 K. Right: $M(H/T)$ for **1** at 2, 4, 6, 10 and 15 K

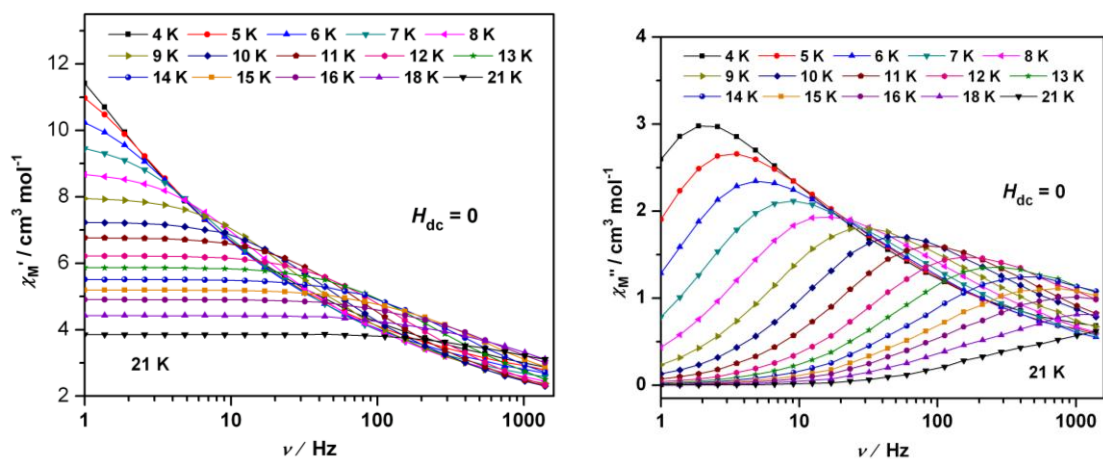


Fig S6. Frequency dependence (in zero-dc field) of the (left) in-phase (χ_M') and (right) out-of-phase (χ_M'') ac susceptibility of **1** at several temperatures between 4 and 21 K.

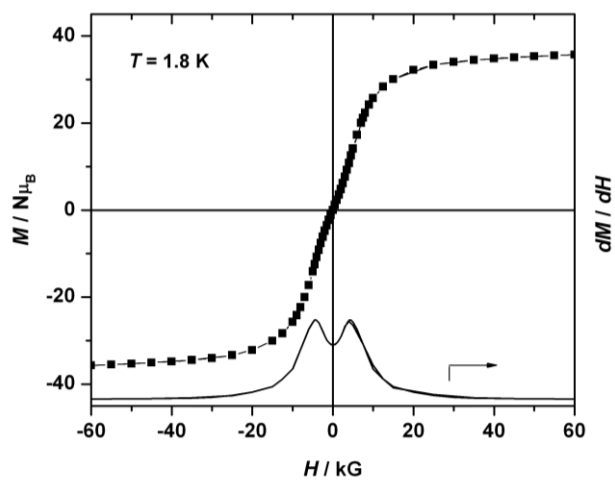


Fig S7. $M(H)$ for **1** at 1.8 K between -60 and 60 kG.

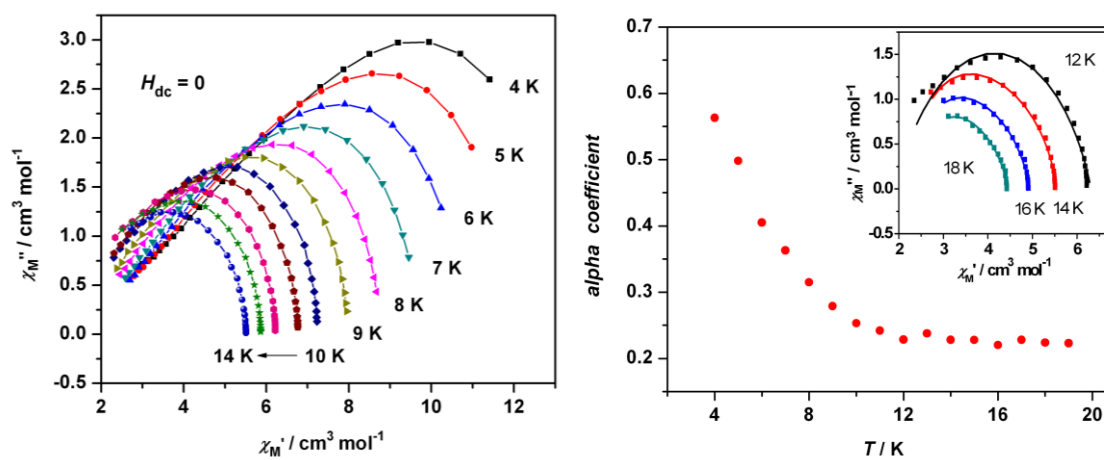


Fig S8. Left: Cole-Cole diagrams for **1** at different temperatures between 4 and 14 K. Right: temperature dependence of α parameter from fits to Cole-Cole plots (shown as solid lines in inset).