ELECTRONIC SUPPLEMENTARY INFORMATION

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A decanuclear [$Dy^{III}_6Zn^{II}_4$] cluster: a {Zn^{II}_4} rectangle surrounding an octahedral {Dy^{III}_6} single molecule magnet †

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Materials and physical measurements

All manipulations were performed under aerobic conditions, using materials as received. Elemental analyses (C, H, N) were performed by the University of Ioannina microanalysis service. Variable-temperature, solid-state direct current (dc) magnetic susceptibility data down to 2.0 K were collected on a Quantum Design MPMS-XL SQUID magnetometer equipped with a 5 T DC magnet at the University of Zaragoza. Diamagnetic corrections were applied to the observed paramagnetic susceptibilities using Pascal's constants. Powder XRD measurements were collected at room temperature on a freshly prepared sample of **1** on a PANalytical X'Pert Pro MPD diffractometer at the University of Crete.

Synthesis

$Zn(OAc)_2{\cdot}2H_2O$ (1 mmol, 0.220 g), $Dy(NO_3)_3{\cdot}5H_2O$ (1 mmol, 0.440 g) and H_3L (1 mmol, 0.297 g) were added in MeOH (15 ml) in presence of base NEt_3 (1 mmol, 0.140 ml) and the resulting mixture was transferred to a Teflon-line autoclave (23 ml) and kept at 95 ^{0}C for 12 hours. After slow cooling to room temperature at a rate of 20 $^0Ch^{-1}$ pale yellow crystals of $[Dy_6Zn_4O_2(L)_2(HL)_2(OAc)_8(CH_3O)_4(H_2O)_2]{\cdot}4MeOH$ (**1**·4MeOH) were obtained in good yield (~35%) and collected by filtration, washed with Et_2O and dried in air. Elemental Anal. calcd (found) for **1**·2MeOH: C 32.67 (32.54), H 3.52 (3.69), N 1.88 (1.77)%.

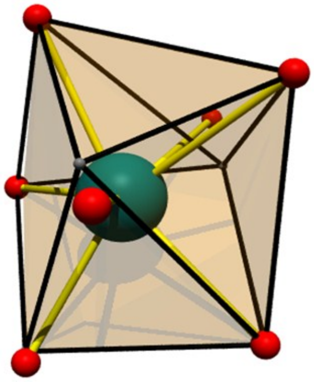

Figure S1. Capped trigonal prismatic geometry for Dy1 in complex **1** as calculated with SHAPE.

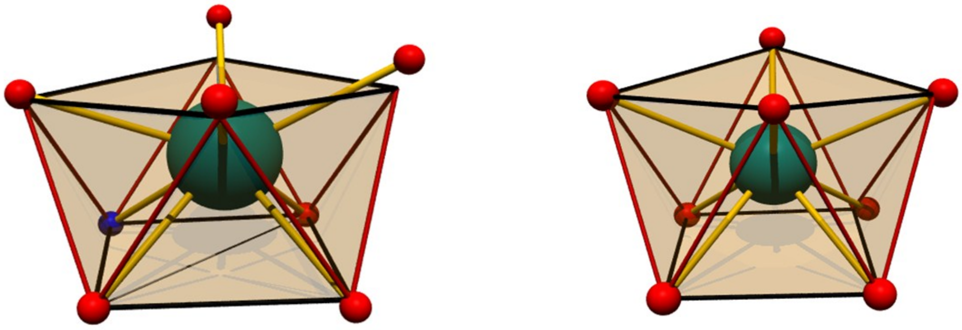

Figure S2. Square antiprismatic geometry for Dy2 (left) and Dy3 (right) in complex **1** as calculated with SHAPE.

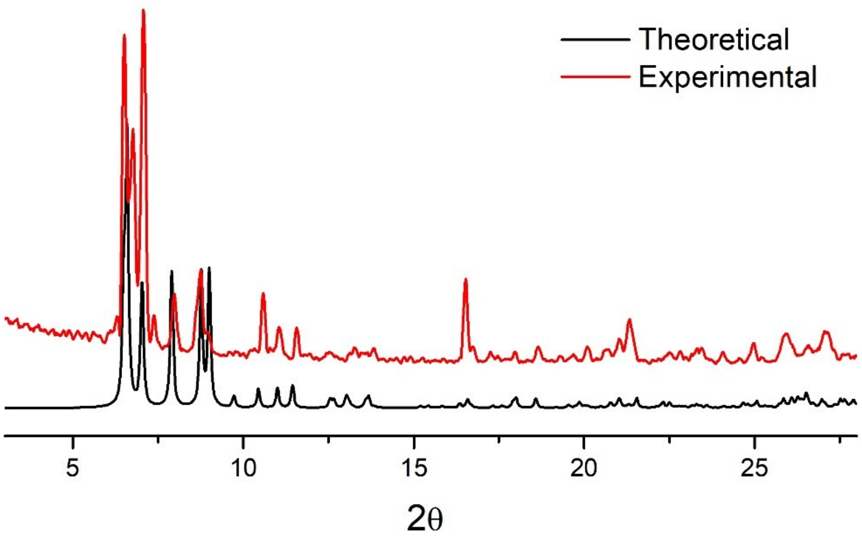

Figure S3. Powder XRD diagrams' comparison between **1** and its simulated pXRD diagram. The difference in the peaks' intensity is probably due to partial decomposition of the crystals caused by loosing of methanol of solvation.