Supporting Information

pH-induced Dy_4 and Dy_{10} cluster-based 1D chains with different magnetic relaxation features

Zhi-Lei Wu,[a,b] Jie Dong,[b] Wei-Yan Ni, [b] Bo-Wen Zhang, [b] Jian-Zhong Cui*[a] and Bin Zhao*[b]

[a] ***Department of Chemistry, Tianjin University, Tianjin, 300072, China.***

[b] ***Department of Chemistry, Key Laboratory of Advanced Energy Material Chemistry, MOE, TKL of Metal and Molecule Based Material Chemistry, and Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Nankai University, Tianjin 300071, China.***

The PXRD patterns of the compounds **1** and **2** are in conformity with the simulated from the single crystal data of **1** and **2**, respectively.

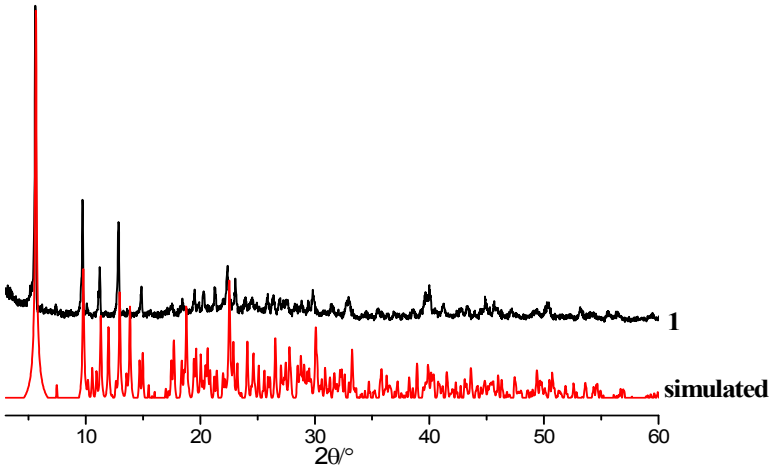


Fig.S1 Experimental and simulated PXRD patterns of compound **1**.

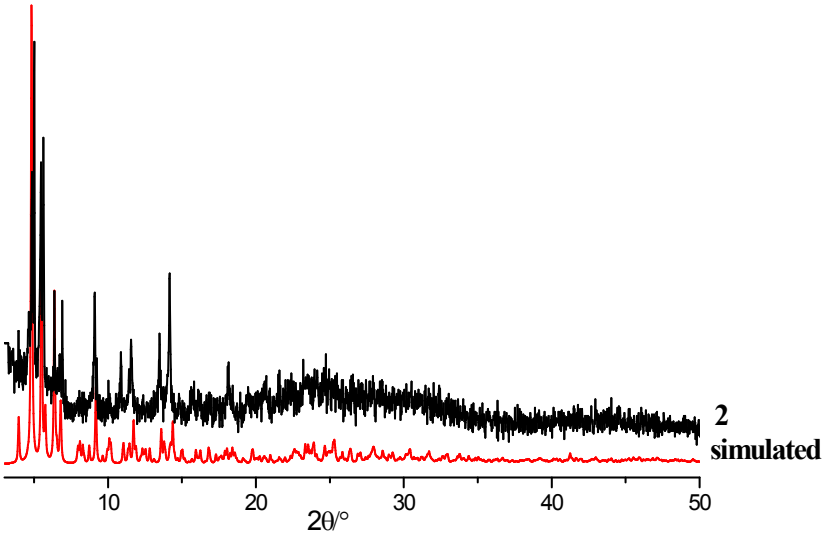


Fig.S2 Experimental and simulated PXRD patterns of **2**.

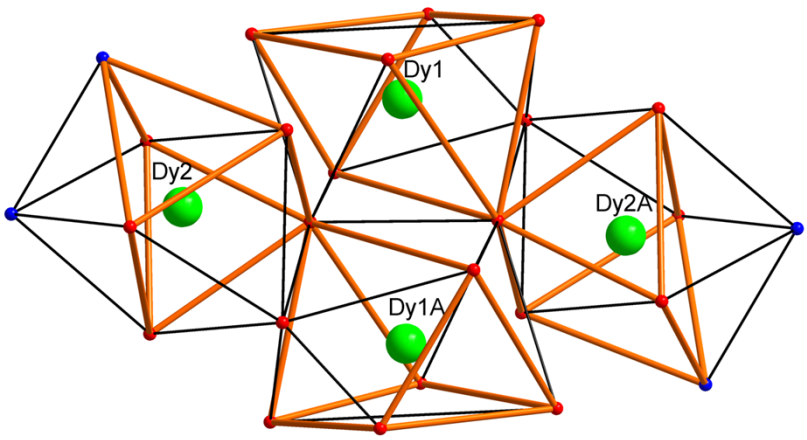


Fig.S3 Coordination polyhedra observed in the compound **1**: distorted bicapped trigonal prism environment for Dy (green). (Symmetry codes: A, -x, -y, 1-z). Green (Dy), Red (O), Blue (N).

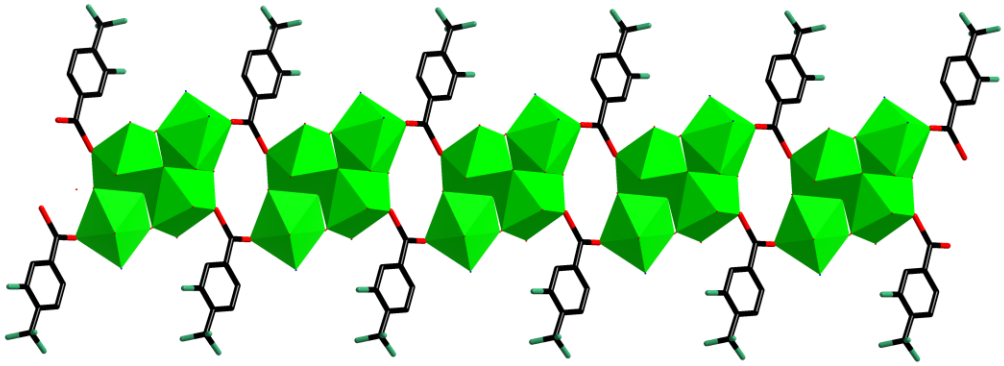


Fig.S4 1D chain structure in **1** consisted of [Dy_4] clusters and carboxylate groups

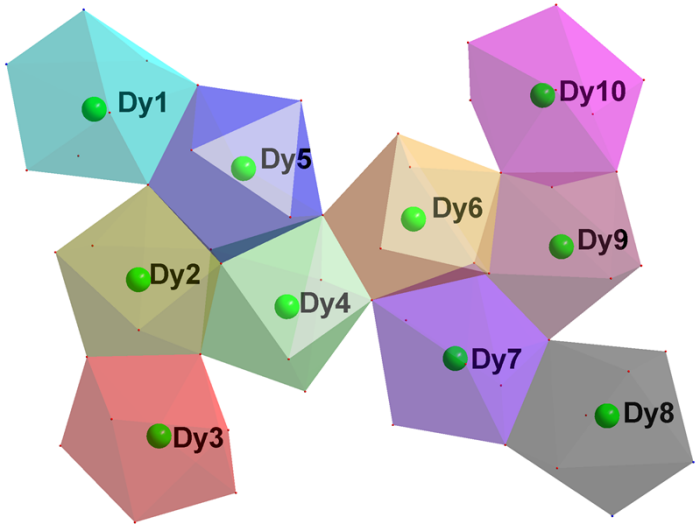


Fig.S5 Polyhedral view of the compound **2** (All the C, H, O, N, F atoms are omitted for charity).

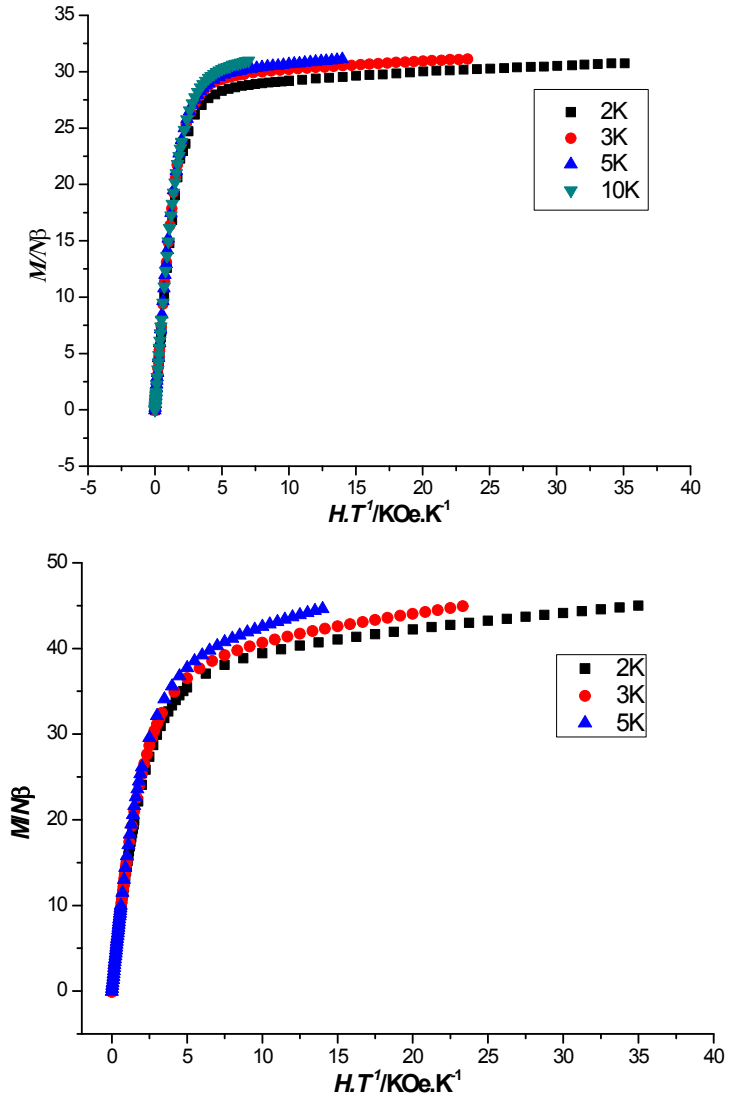
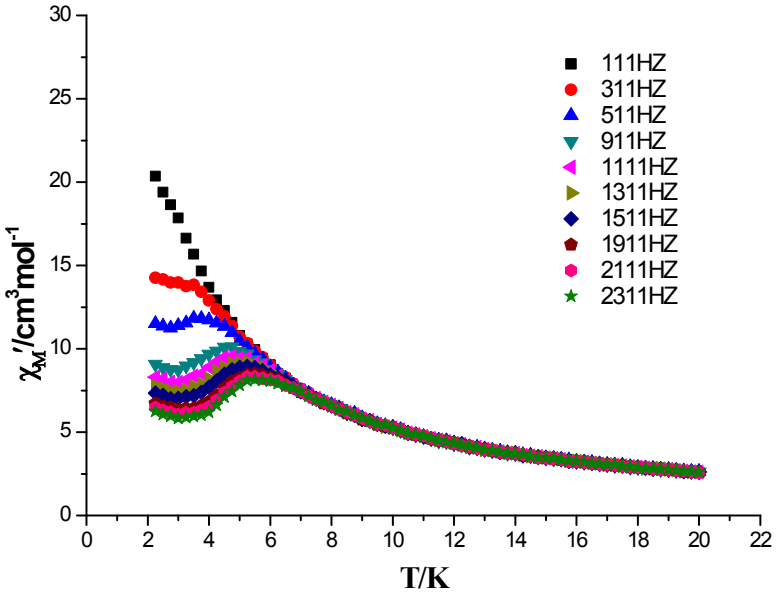


Fig.S6 *M vs. H/T* plots for **1** (top) and **2** (bottom) at different temperatures.



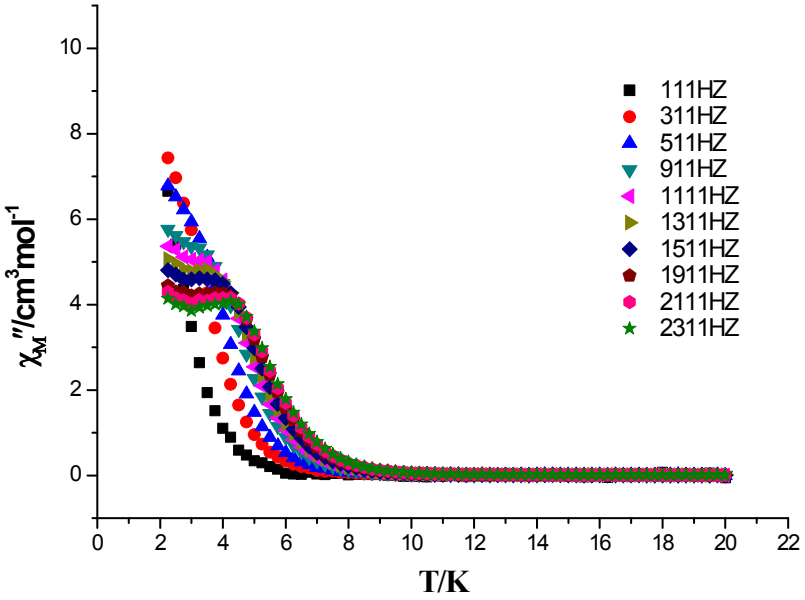


Fig. S7 Temperature dependence of the in-phase (top) and out-of-phase (bottom) signals of the ac susceptibility for **1** under a zero dc field (H_{ac}= 3Oe).

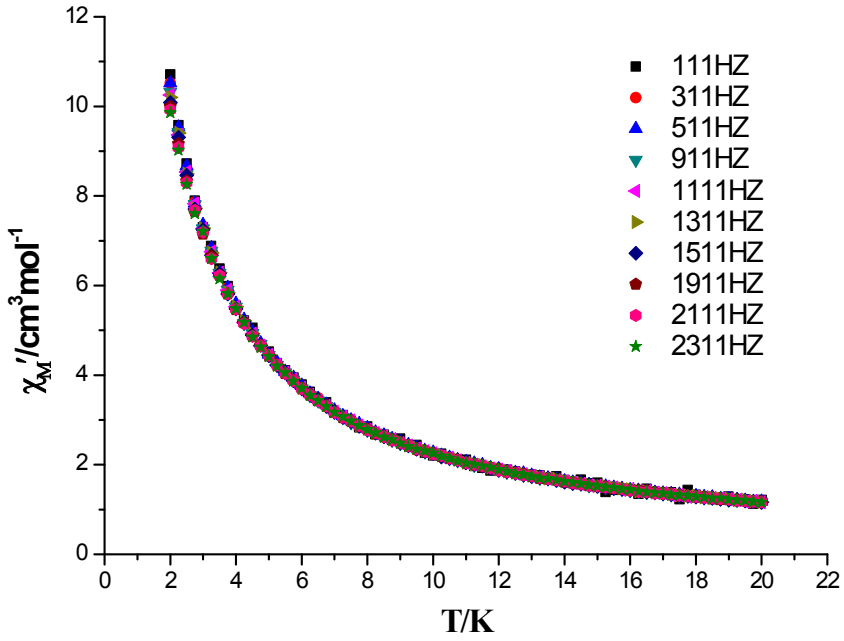


Fig. S8 Temperature dependence of the in-phase signals of the ac susceptibility for **2** under a zero dc field (H_{ac}=3Oe).

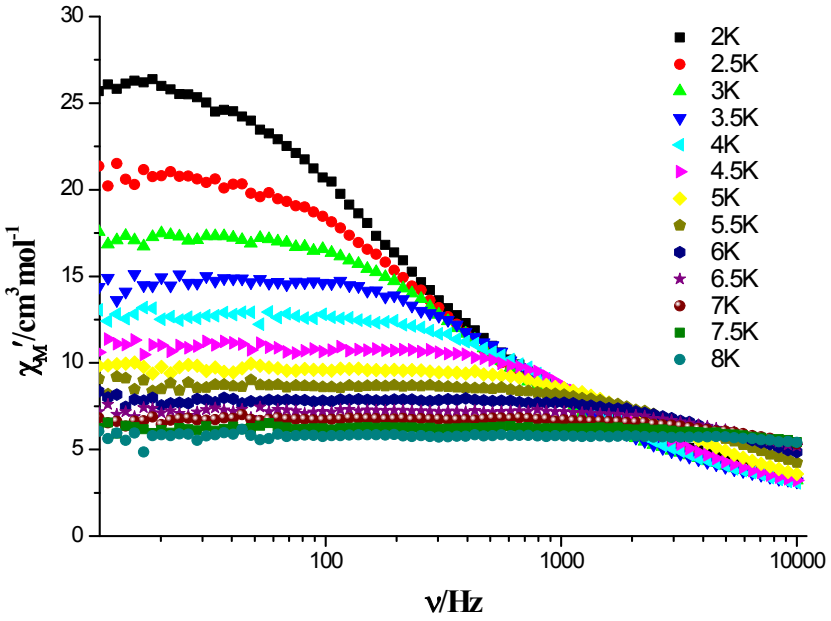
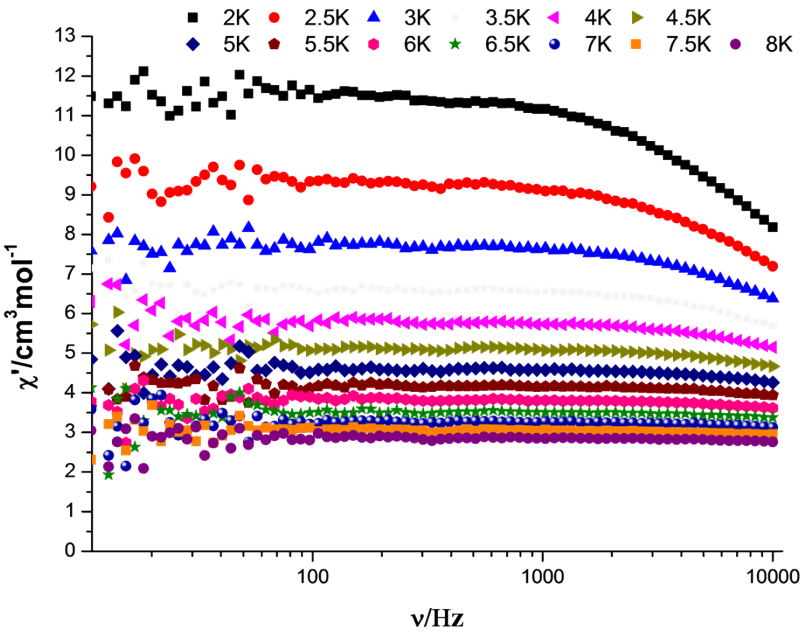


Fig.S9 Frequency dependence of in-phase signals of the ac susceptibility for **1** under a zero dc field (H_{ac}= 3Oe).



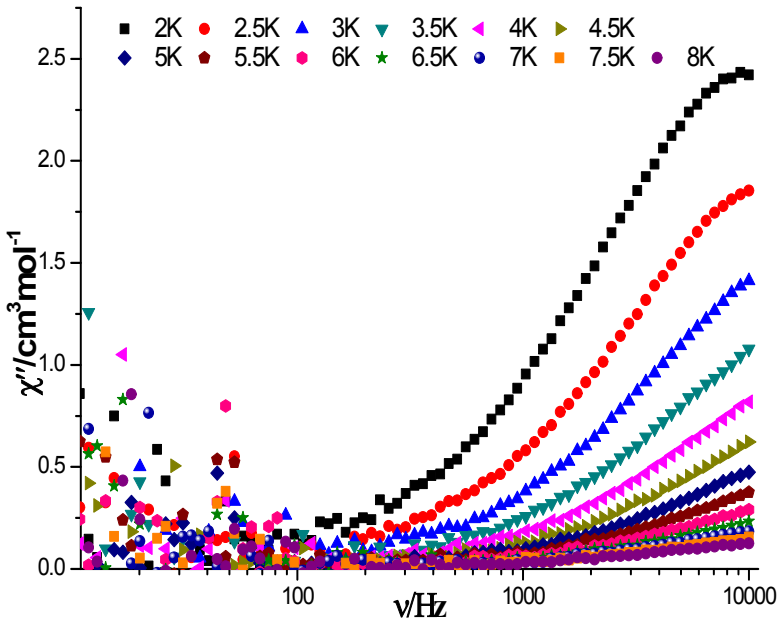


Fig.S10 Frequency dependence of the in-phase (top) and out-of-phase (bottom) signals of the ac susceptibility for **2** under a zero dc field (H_{ac}=3Oe).