

## Supplementary Information

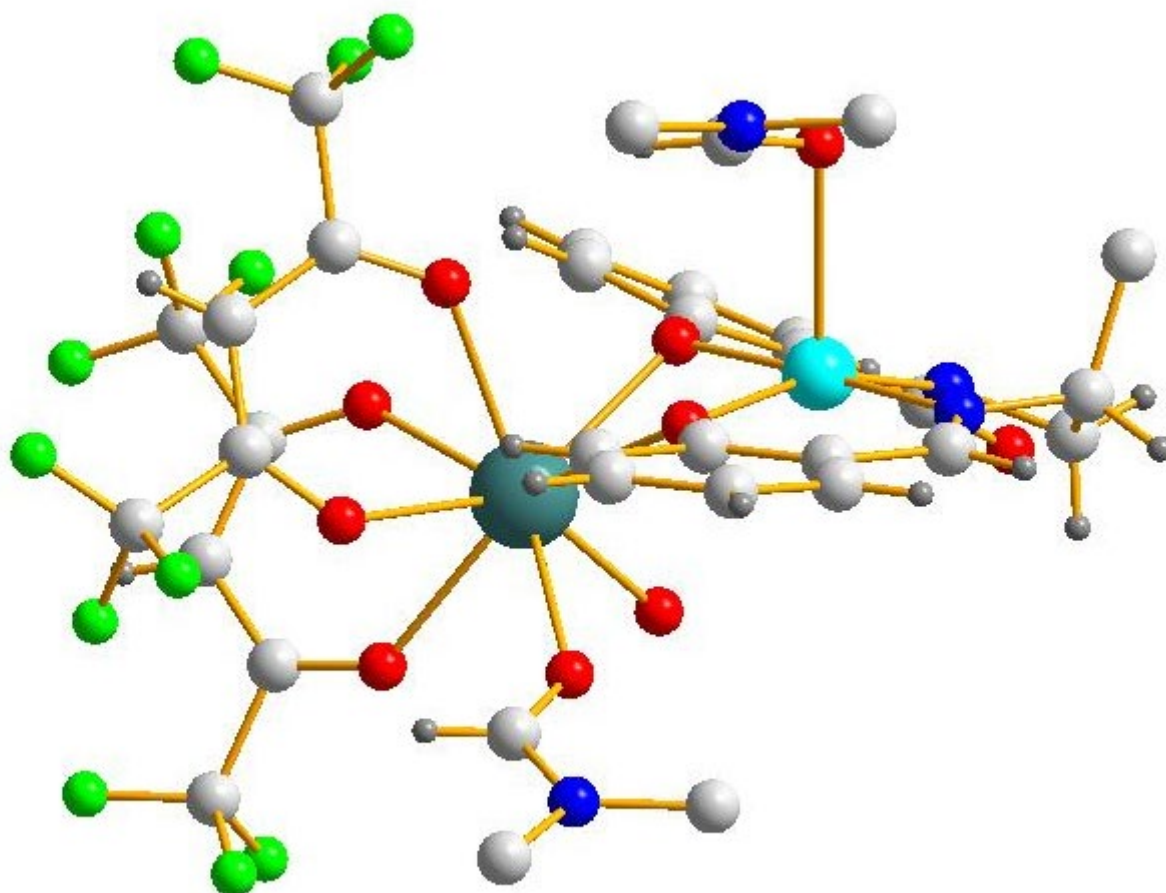


Figure S1. Diamond view of the asymmetric unit of complex 7.

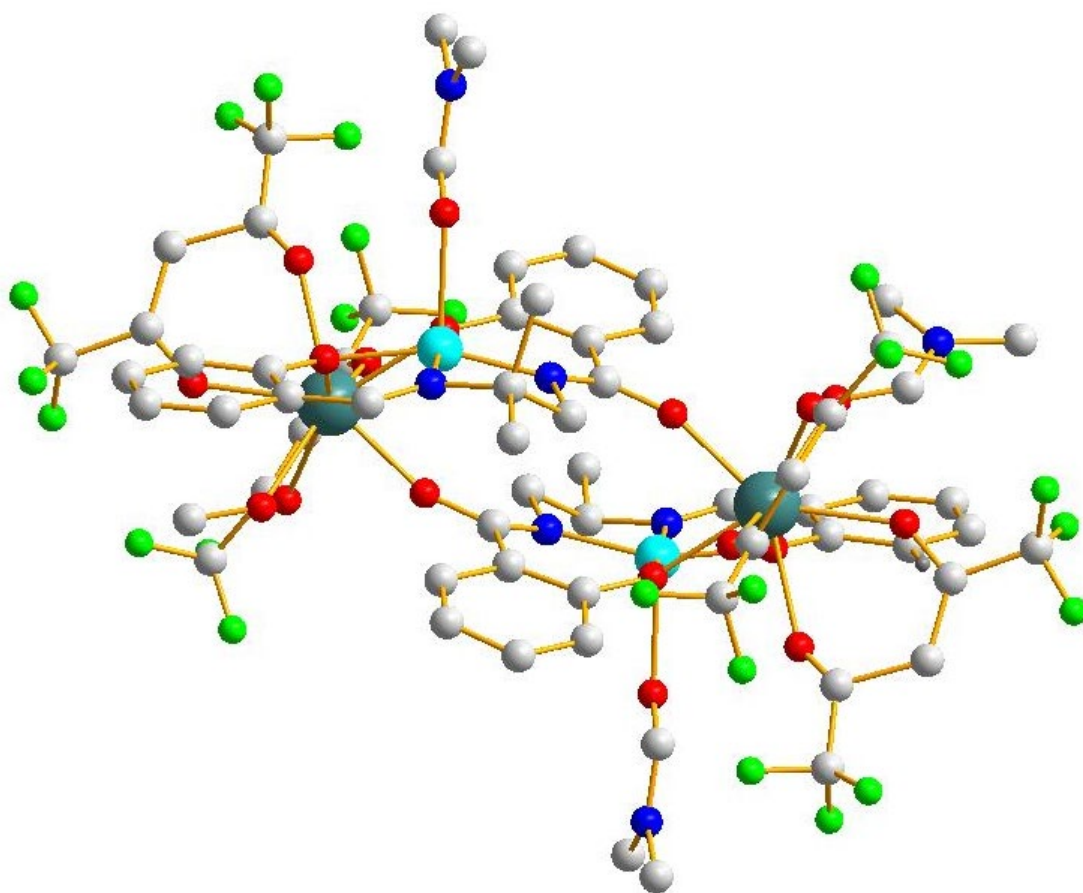


Figure S2. Diamond view of the tetranuclear complex **5**. H atoms are omitted for clarity.

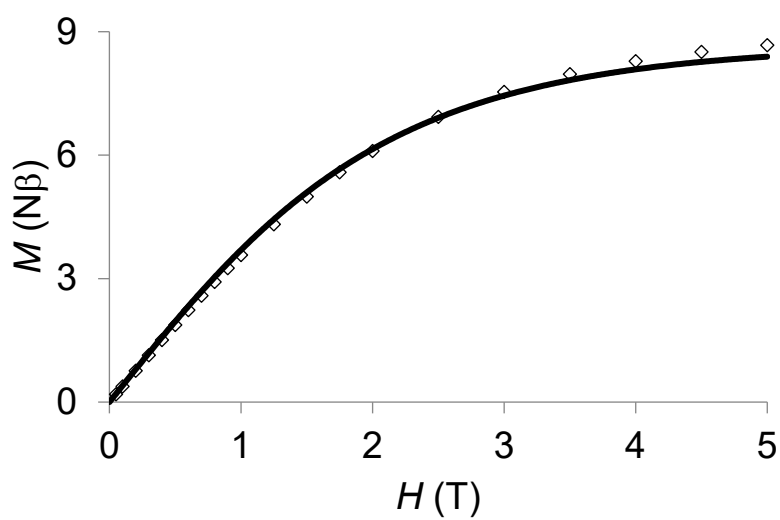


Figure S3. Field dependence of the magnetization for **3** at 2 K with an approximate model using a set of eight Cu ions.

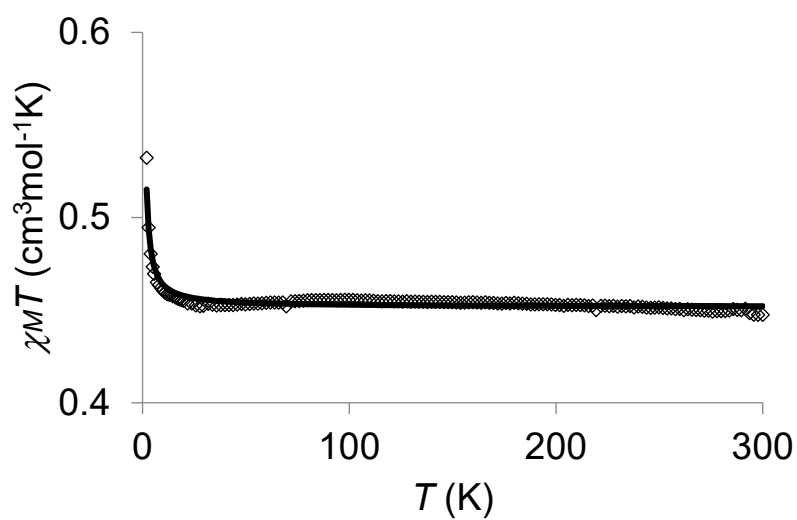


Figure S4. Temperature dependence of the  $\chi_M T$  product for complex **1** at 0.1 T applied magnetic field. The solid line corresponds to the best data fit (see text).

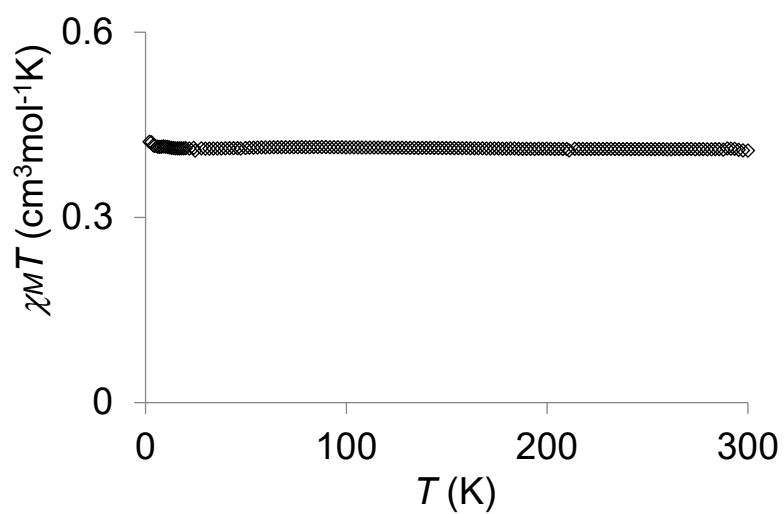


Figure S5. Temperature dependence of the  $\chi_M T$  product for complex **2** at 0.1 T applied magnetic field. The solid line corresponds to the best data fit (see text).

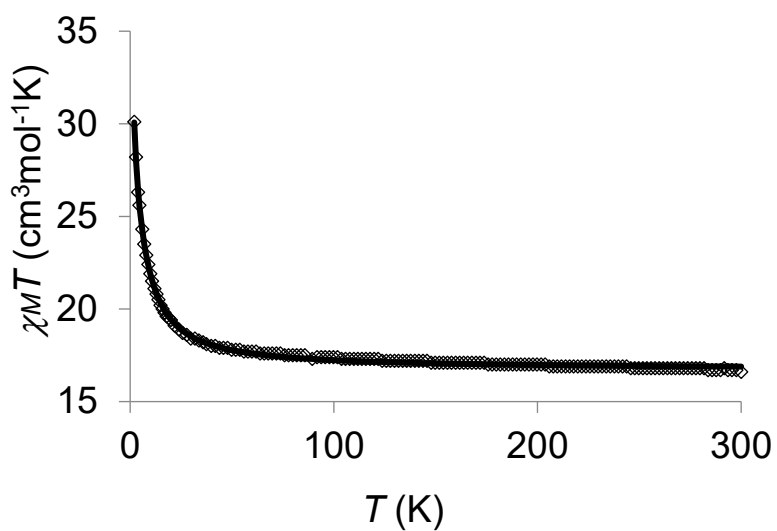


Figure S6. Temperature dependence of the  $\chi_M T$  product for complex **4** at 0.1 T applied magnetic field. The solid line corresponds to the best data fit (see text).

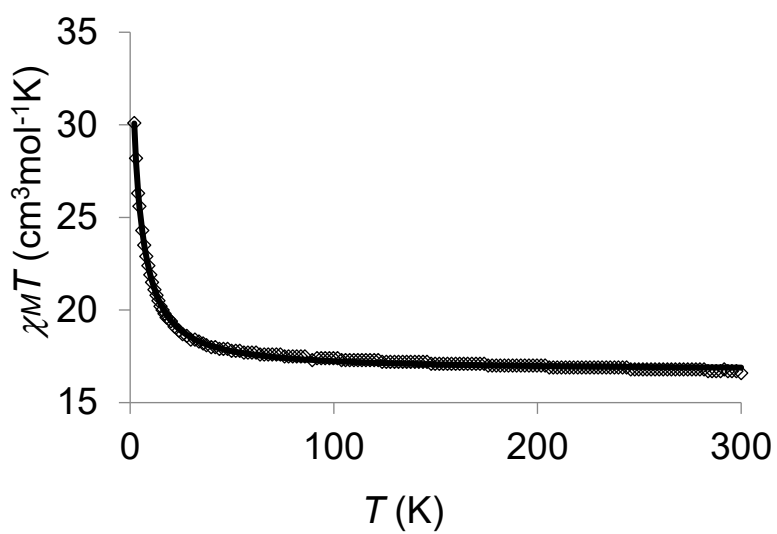


Figure S7. Temperature dependence of the  $\chi_M T$  product for complex **9** at 0.1 T applied magnetic field. The solid line corresponds to the best data fit (see text).

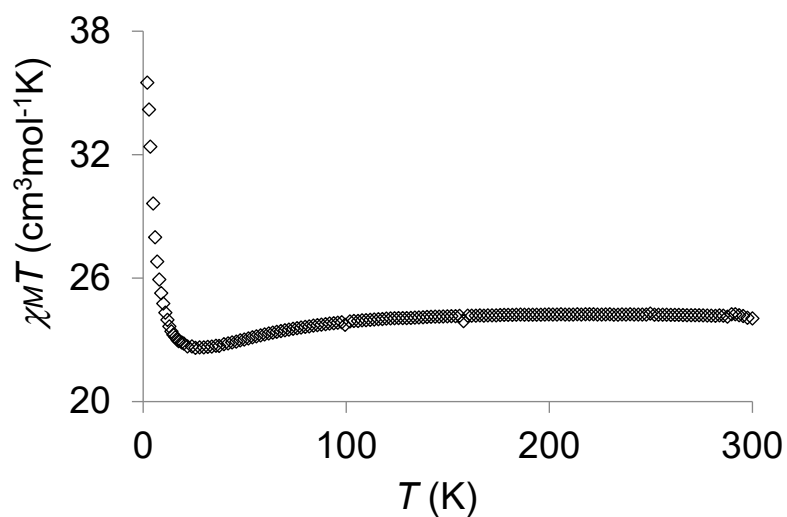
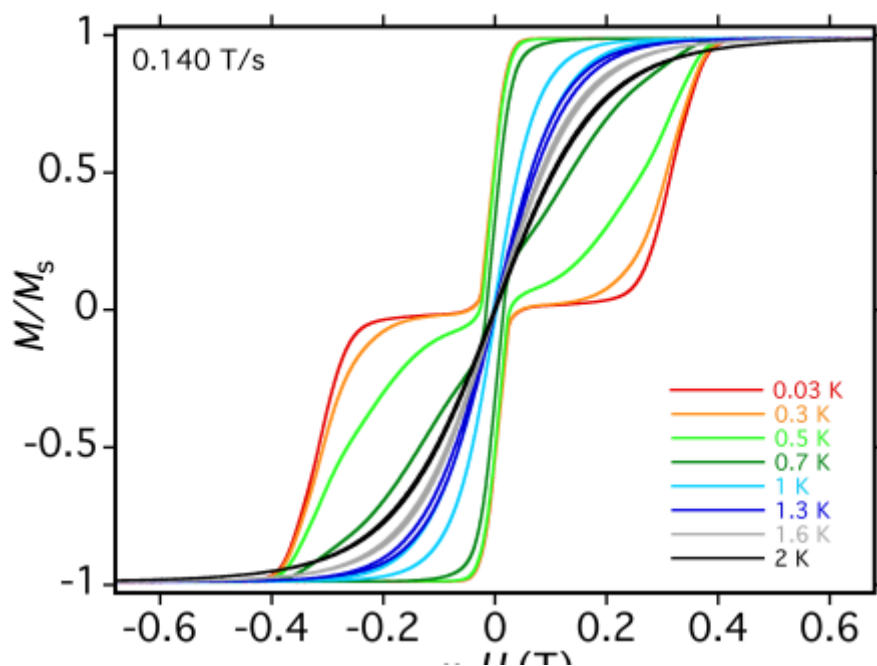


Figure S8. Temperature dependence of the  $\chi_M T$  product for complex **5** at 0.1 T applied magnetic field. The solid line corresponds to the best data fit (see text).



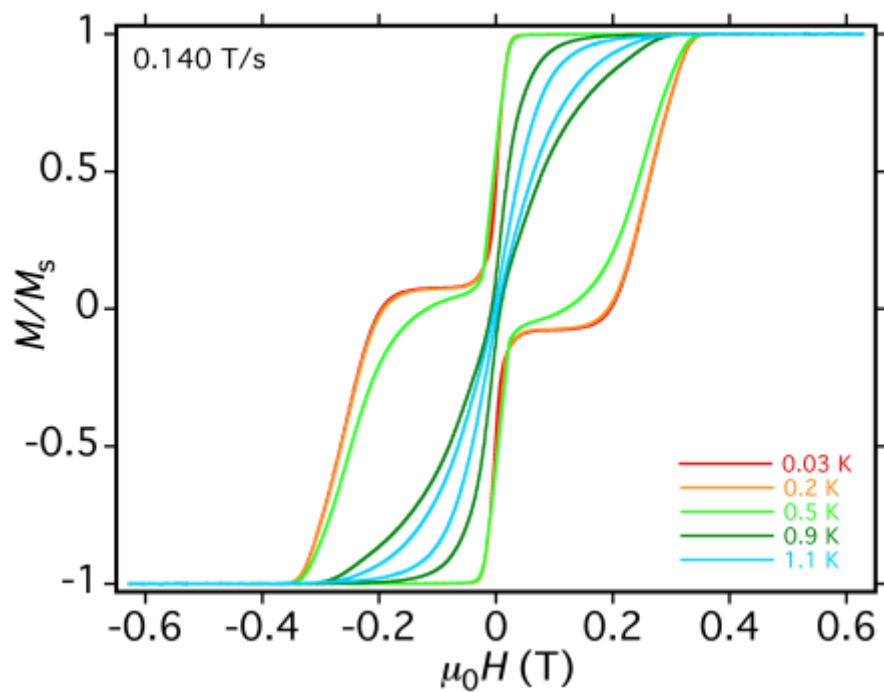


Figure S9. Single-crystal magnetization ( $M$ ) vs. applied field measurements ( $\mu_0H$ ) for complexes **8** (up) and **6** (down) at several temperatures and 0.14 T/s (top), and at 0.04 K for several field sweep rates (bottom).  $M$  is normalized to its saturation value at 1.4 T.