Abstract Submitted
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Magnetic Behavior of a Dy_8 Molecular Nanomagnet[1] QING ZHANG, MYRIAM SARACHIK, City College of New York, MICHAEL BAKER, City College of New York and New York University, YIZHANG CHEN, ANDREW KENT, New York University, THEOCHARIS STAMATATOS, Brock University, Ontario — As part of a study of quantum tunneling in a newly synthesized family of dysprosium-based molecular magnets that exhibit a chiral spin structure, we report initial investigations of the magnetic response of a Dy_8 cluster with the formula $(Et_4N)_4[Dy_8O(nd)_8(NO_3)_{10}(H_2O)_2]\cdot 2MeCN$ [1]. The molecular complex contains triangular arrangements of exchange coupled Dy(III) ions [2]. The compound forms an approximate snub-square Archimedean lattice unit. The measured magnetization of this network of four triangles suggests the presence of multiple spin chiral vortexes. Single crystal susceptibility and magnetization measurements indicate the presence of a hard-axis direction and an easy plane. These principal orientations have been investigated in magnetic fields up to 5 Tesla for temperatures between 1.8 and 100 K using a SQUID-based Quantum Design MPMS magnetometer. Complex easy plane magnetic hysteresis loops emerge at lower temperatures measured using Hall probe magnetometry at sub 1 K temperatures. The analysis of these measurements will be discussed and compared with results of theoretical calculations. [1] D. I. Alexandropoulos, et al., Inorg. Chem. 53, 5420 (2014). [2] J. Luzon, et al., Phys. Rev. Lett. 100, 247201 (2008).

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