

Abstract Submitted
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The role of ligand disorder in the long range dipolar ordering of $\text{Mn}_{12}\text{-ac}$ ¹ BO WEN, City College of New York, PRADEEP SUBEDI, New York University, LIN BO, City College of New York, Y. YESHURUN, Bar-Ilan University, Israel, M.P. SARACHIK, City College of New York, A.D. KENT, New York University, C. LAMPROPOULOS, G. CHRISTOU, University of Florida - Gainesville — The temperature dependence of the inverse magnetic susceptibility of both $\text{Mn}_{12}\text{-ac}$ and $\text{Mn}_{12}\text{-ac-MeOH}$ is found to give finite temperature intercepts corresponding to a Curie temperature T_c . This indicates a transition to a ferromagnetic phase at low temperature due to dipolar interactions. A transverse magnetic field suppresses T_c to a $T = 0$ quantum critical point. While the decrease of T_c with transverse field, H_\perp , in $\text{Mn}_{12}\text{-ac-MeOH}$ is consistent with mean field theory, the suppression of the ordering temperature of $\text{Mn}_{12}\text{-ac}$ is more pronounced. We suggest that the different behavior is due to the ligand disorder which is known to cause a random distribution of molecular easy axis tilts in $\text{Mn}_{12}\text{-ac}$. Our experimental results can be explained in terms of random field Ising ferromagnetism (RFIFM) in a transverse field.

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