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Magnetization barrier reduction in Mn_{12} single-molecule magnets GAGE REDLER, CHANGHYUN KOO, SAITI DATTA, Department of Physics, University of Florida, Gainesville, FL-32611, USA, CHRISTOS LAMPROPOULOS, THEOCHARIS C. STAMATATOS, GEORGE CHRISTOU, Department of Chemistry, University of Florida, Gainesville, FL-32611, USA, STEPHEN HILL, Department of Physics, University of Florida, Gainesville, FL 32611; NHMFL and Department of Physics, Florida State University, Tallahassee, FL 32310 — High-frequency electron paramagnetic resonance (HFEPR) and AC susceptibility data will be presented for a new high-symmetry Mn_{12}Ac complex, $[Mn_{12}O_{12}(OAc)_{16}(MeOH)_4] \cdot MeOH$, in which the acetic acid solvent is replaced by a single methanol. The results are compared with those of several other Mn_{12} single-molecule magnets (SMMs), including $Mn_{12}Ac \cdot 2CH_3COOH$. AC susceptibility studies indicate that $Mn_{12}Ac \cdot MeOH$ has a relatively large effective barrier, $U_{eff} \sim 74$ K, in comparison to $Mn_{12}Ac \cdot 2CH_3COOH$. Meanwhile, EPR studies suggest more-or-less identical zero-field-splitting parameters for the two complexes. Based on these findings, we discuss the factors that can lead to reductions in U_{eff} in various Mn_{12} SMMs.

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