

Abstract Submitted  
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**High-Frequency Electron Paramagnetic Resonance (HFEP) Studies on Supramolecular Aggregates of Exchange-Biased Single-Molecule Magnets**<sup>1</sup> M. SHIDDIQ, Florida State Univ, NHMFL, T.N. NGUYEN, T. GHOSH, K.A. ABBOD, G. CHRISTOU, Univ of Florida, S. HILL, Florida State Univ, NHMFL — Single-Molecule magnets (SMMs) have potential applications in molecular memory and spintronics devices. For these applications, coupling two or more SMMs either to each other or to other components of a device is essential. However, the interaction should be relatively weak in order to maintain the intrinsic properties of each SMM. We have performed comprehensive HFEP studies on supramolecular aggregates of triangular Mn<sub>3</sub> SMMs: [Mn<sub>6</sub><sup>III</sup>O<sub>2</sub>(O<sub>2</sub>CMe)<sub>6</sub>(dpd)<sub>3</sub>](I<sub>3</sub>)<sub>2</sub> ([Mn<sub>3</sub>]<sub>2</sub>) and [Mn<sub>12</sub>O<sub>4</sub>(O<sub>2</sub>CMe)<sub>12</sub>(pdpd)<sub>6</sub>](ClO<sub>4</sub>)<sub>4</sub>([Mn<sub>3</sub>]<sub>4</sub>). Single-crystal [Mn<sub>3</sub>]<sub>2</sub> spectra shows additional spectral features that are lacking in spectra of the isolated Mn<sub>3</sub> units, which can be attributed to the exchange coupling within the dimers. Furthermore powder and solution spectra are essentially identical, indicating that the supramolecular dimers remain intact in solution and thus their unique properties survive outside of a crystal. Analysis of the powder spectra of [Mn<sub>3</sub>]<sub>4</sub> suggests that the four Mn<sub>3</sub> building blocks are too weakly coupled to be detected by EPR. The results on [Mn<sub>3</sub>]<sub>4</sub> support the DC susceptibility and micro-SQUID measurements [1].

[1] T. N. Nguyen, et al., JACS 133, 20688-20691 (2011).

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