

Abstract Submitted  
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**Spin Hamiltonian Analysis of the SMM V15 Using High Field ESR**<sup>1</sup> MATHEW MARTENS, HANS VAN TOL, National High Magnetic Field Lab, FSU, SYLVAIN BERTAINA, CNRS-Marseille, France, BERNARD BARBARA, CNRS-Grenoble, France, ACHIM MULLER, University of Bielefeld, Germany, IRINEL CHIORESCU, National High Magnetic Field Lab, FSU — We have studied molecular magnets using high field / high frequency Electron Spin Resonance. Such molecular structures contain many quantum spins linked by exchange interactions and consequently their energy structure is often complex and require a good understanding of the molecular spin Hamiltonian. In particular, we studied the V15 molecule [1], comprised of 15 spins 1/2 and a total spin 1/2, which is a system that recently showed quantum Rabi oscillations of its total quantum spin [2]. This type of molecule is an essential system for advancing molecular structures into quantum computing. We used high frequency characterization techniques (of hundreds of GHz) to gain insight into the exchange anisotropy interactions, crystal field, and anti-symmetric interactions [3] present in this system. We analyzed the data using a detailed numerical analysis of spin interactions and our findings regarding the V15 spin Hamiltonian will be discussed.

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