Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Quantum coherence in Mn-based single molecule magnets C. ABEYWARDANA, F.H. CHO, University of Southern California, A. MOWSON, G. CHRISTOU, University of Florida, S. TAKAHASHI, University of Southern California — As spin systems in solids, single-molecule magnets (SMMs) form a unique class of materials that have a high-spin, and their spin state and interaction can be easily tuned by changing peripheral organic ligands and solvate molecules. In addition, it has been shown that an individual or a small ensemble of SMMs can be transferred to surface with retention of their magnetic behavior. SMM is therefore a promising system for fundamental quantum science and for applications to dense and efficient quantum memory, computing, and molecular spintronics devices. In spite of diverse interests on quantum properties in SMMs, decoherence properties that ultimately limit such behaviors have not been understood yet. Until now, coherent manipulation of spin states in SMMs has been experimentally demonstrated only in a few SMMs [1-2]. In this presentation, we investigate quantum coherence in Mn-based SMMs using a high-frequency pulsed EPR technique, which has a significant advantage to quench the spin decoherence due to electron spins [3].

[1] S. Takahashi et al., Nature **476** , 76 (2011).
[2] S. Takahashi et al., Phys. Rev. Lett. **102**, 087603 (2009).
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Date submitted: 12 Nov 2014 Electronic form version 1.4