Abstract Submitted
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Decoherence mechanisms in Mn3 single-molecule magnet[1] C ABEYWARDANA, Department of Chemistry, University of Southern California, Los Angeles CA 90089, USA, A. M. MOWSON, G. CHRISTOU, Department of Chemistry, University of Florida, Gainesville FL 32611, USA, S TAKAHASHI, Department of Chemistry, Department of Physics, University of Southern California, Los Angeles CA 90089, USA — In spite of wide interest in the quantum nature of SMMs, decoherence effects that ultimately limit such behavior have yet to be fully understood. Recent investigations have shown that there are three main decoherence mechanisms present in SMMs: spins can couple locally (i) to phonons (phonon decoherence); (ii) to many nuclear spins (nuclear decoherence); and (iii) to each other via dipolar interactions (dipolar decoherence)[1]. We have recently uncovered quantum coherence in a Mn3 SMM by quenching decoherence due to dipole interaction between SMMs using a high frequency electron paramagnetic resonance and low temperature [2]. In this presentation, we will discuss temperature dependence of spin relaxation times and the decoherence mechanisms in the Mn3 SMM. [1] S. Takahashi et al., Nature 476, 76 (2011). [2] C. Abeywardana et al. (2015), submitted.

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