Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Developing rich H vs. T diagrams of molecule-based multiferroics
AMANDA CLUNE, KENDALL HUGHEY, Univ of Tennessee, Knoxville, NANDITA ABHYANKAR, Florida State University, National High Magnetic Field Laboratory, SHALINEE CHIKARA, National High Magnetic Field Laboratory, WEI TIAN, JAIME FERNANDEZ-BACA, Oak Ridge National Laboratory, VIVIEN ZAPF, National High Magnetic Field Laboratory, MIKE WHANGBO, North Carolina State University, NARESH DALAL, Florida State University, National High Magnetic Field Laboratory, JOHN SINGLETON, National High Magnetic Field Laboratory, JANICE MUSFELDT, Univ of Tennessee, Knoxville — The magnetization of two molecule-based multiferroics, $(CH_3)_2NH_2]Mn(HCOO)_3$ and $(NH_4)_2FeCl_5H_2O$, was measured using pulsed magnetic fields of up to 60 T and temperatures down to 0.5 K, to reveal their H vs. T phase diagrams. The results were compared with spin-density calculations, polarization measurements, neutron scattering, and magneto-infrared spectroscopy to understand the spin behavior of the two compounds. The ability of these experimental techniques to completely parameterize the quantum magnetism of such materials, combined with the use of molecular architecture to adjust bond lengths, potentials and interaction strengths with great subtlety, promises to yield significant progress in the field of multiferroics.

Amanda Clune
Univ of Tennessee, Knoxville

Date submitted: 11 Nov 2016 Electronic form version 1.4