Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Magnetic Properties of New Triangular Lattice Magnets $\mathbf{A_4BB_2O_{12}}$[1] RYAN RAWL, University of Tennessee, HAIDONG ZHOU, University of Tennessee, National High Magnetic Field Laboratory , JIE MA, Shanghai Jiao Tong University, University of Tennessee, CLARINA DELA CRUZ, Oak Ridge National Laboratory, MINSEONG LEE, EUN SANG CHOI, KUAN WEN CHEN, RYAN BAUMBACH, National High Magnetic Field Laboratory — Quasi-two dimensional (-2D) triangular lattice magnets (TLMs) may adopt a variety of intriguing ground states including a 120 planar, collinear striped, ferromagnetic, and quantum spin liquid structures. Reduction of interplane interactions can be engineered via addition of non-magnetic layers and provide a glimpse into more truly 2D behavior on a triangular lattice. Members of $A_4BB_2O_{12}$ (A=Ba, La, Sr; B= Co, Ni, Mn) have been synthesized and examined using x-ray diffraction, AC and DC susceptibility, specific heat, and powder neutron diffraction. The magnetic properties are examined in relation to chemical pressure and spin size. A rich phase diagram is observed for $Ba_2La_2MnW_2O_{12}$.

[1]R. R and H.D.Z. thank the support of NSF-DMR-1350002.

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Date submitted: 08 Nov 2016 Electronic form version 1.4