

Abstract Submitted  
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**Multiple magnetic phases in the frustrated spin-dimer compound**

**Ba<sub>3</sub>Mn<sub>2</sub>O<sub>8</sub>**<sup>1</sup> E. C. SAMULON, Stanford University, Y.-J. JO, National High Magnetic Field Laboratory, P. SENGUPTA, Los Alamos National Laboratory, G. M. SCHMIEDESHOFF, Occidental College, C. D. BATISTA, M. JAIME, Los Alamos National Laboratory, L. BALICAS, National High Magnetic Field Laboratory, I. R. FISHER, Stanford University — Ba<sub>3</sub>Mn<sub>2</sub>O<sub>8</sub> is a spin-dimer compound based on S=1 3d<sup>2</sup> Mn<sup>5+</sup> ions on a triangular lattice. Antiferromagnetic intradimer exchange leads to a singlet ground state in zero-field. Here we present the first results of thermodynamic measurements for single crystals probing the high-field ordered states of this material. Specific heat, magnetocaloric effect, torque magnetometry and magnetostriction measurements were performed in magnetic fields up to 32T and temperatures down to 20 mK. These measurements reveal the presence of multiple ordered states for fields above H<sub>c1</sub> ~8.7T. Both single-ion anisotropy and geometric frustration play crucial roles in determining the phase diagram.

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