

Abstract Submitted
for the MAS17 Meeting of
The American Physical Society

Synthesis and Magnetic Characterization of Double Perovskites¹

DEMETRIOS PAPAKOSTAS, CONNOR WILLIAMS, JEREMY CARLO, Villanova University — Geometric magnetic frustration occurs when magnetic ions are arranged spatially such that magnetic order is inhibited. Frustrated materials are of interest to the research community due to their rich magnetic phase diagrams, exhibiting exotic physics and sensitivity to parameters such as doping and structural distortion. We have performed SQUID susceptibility measurements on the following $4d^1/5d^1$ ($\text{Mo}^{5+}/\text{W}^{5+}$) double perovskite compounds: $\text{Ba}_2\text{YbMoO}_6$, Ba_2LuWO_6 , Ba_2YWO_6 , $\text{Ba}_2\text{ScMoO}_6$, and $\text{Sr}_2\text{ScMoO}_6$. Double perovskites exhibit frustration in the presence of antiferromagnetic correlations. In our measurements, all five compounds exhibited Curie-Weiss behavior with large and negative Curie-Weiss temperatures indicative of antiferromagnetic correlations. No evidence of magnetic order was found to 2K, indicating high frustration indices as seen in spin-singlet candidates such as Ba_2YMoO_6 and $\text{Ba}_2\text{LuMoO}_6$.

¹We acknowledge B. Eigenbrodt of Villanova University for assistance with sample synthesis, G. Luke of McMaster University for assistance with magnetic measurements, and the Research Corporation for Scientific Advancement for financial support.

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Date submitted: 27 Sep 2017

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