Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Discovery and Characterization of Single Crystalline $R_5Co_2Ge_3$ (R = Ce-Nd, Sm)[1] S. M. SAUNDERS[A,B], Q. LIN[A], T. KONG[A,B], G. J. MILLER[A,C], S. L. BUD'KO[A,B], P. C. CANFIELD[A,B], [A]Ames Laboratory US DOE, [B]Department of Physics and Astronomy, [C]Department of Chemistry, Iowa State University, Ames, Iowa 50011, USA. — Single crystalline $R_5Co_2Ge_3$ (R = Ce-Nd, Sm) were synthesized through flux-based crystal growth methods. In this work we analyze powder x-ray diffraction, electrical resistivity, magnetization, and specific heat of various members of the $R_5Co_2Ge_3$ family. We observe characteristic Lanthanide contraction as we increase 4f electron concentration. Magnetization measurements show an increase of transition temperature from T_C=6 K for $Ce_5Co_2Ge_3$ to T_N=220 K for $Sm_5Co_2Ge_3$, as well as other magnetic transitions upon change in temperature for various members of the family. The inferred effective moment is larger than expected from pure 4f electron contribution, suggesting contribution to the magnetization from Co in the system. Specific heat and electrical resistivity confirm the transition temperatures of the $R_5Co_2Ge_3$ series.

[1]This work is supported by the US DOE, Basic Energy Sciences under Contract No. DE-AC02-07CH11358 and the Gordon and Betty Moore Foundations EPiQS Initiative through Grant GBMF4411.

Scott Saunders
Iowa State Univ

Date submitted: 09 Nov 2016 Electronic form version 1.4