

Abstract Submitted
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Thermoelectric Properties of $\text{RE}_3\text{Ru}_4\text{Ge}_{13}$ compounds (RE = Y, Dy, Ho, Lu) D. MORELLI, Michigan State University, H. KONG, X. SHI, C. UHER, University of Michigan — Rare earth based compounds have been suggested as ideal thermoelectric materials due to the potential existence of sharp features in their electron density of states. One such series of compounds is of the form $\text{R}_3\text{Ru}_4\text{Ge}_{13}$. These materials crystallize in the cubic structure $\text{Pm}\bar{3}\text{n}$ and are known to exhibit a variety of interesting properties, including magnetic ordering, superconductivity, and anomalous semiconductor-like resistivity. These compounds can be considered as variants of the cubic structure compound RERuGe_3 ($\text{RE}_4\text{Ru}_4\text{Ge}_{12}$) in which one RE atom is replaced by a germanium atom. This “extra” Ge atom can reside on either the Ge or RE site, and the site disorder combined with the complex unit cell of these compounds suggests inherent low lattice thermal conductivity. In order to survey the potential of these materials as thermoelectrics we have synthesized several member compounds of this family. Results on Seebeck coefficient, resistivity, Hall coefficient, and thermal conductivity as a function of temperature will be reported.

D. Morelli
Michigan State University

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