

Abstract Submitted
for the SES10 Meeting of
The American Physical Society

Electronic Transport Properties of Pd-substituted (Zr,Hf)NiSn Half Heusler Alloys WESTLY NOLTING, RUMANA YAQUB, SANSHRUT SAPKOTA, KEVIN STOKES, University of New Orleans — ZrNiSn-based alloys which crystallize in the half-Heusler structure are currently being investigated as potential thermoelectric materials due to their relatively large Seebeck coefficient. Here, we present measurements of the electronic transport properties of $\text{Zr}_{0.5}\text{Hf}_{0.5}\text{Ni}_{1-x}\text{Pd}_x\text{Sn}_{0.99}\text{Sb}_{0.01}$ semiconducting half-Heusler compounds with Pd concentrations range from $x=0$ to 1. The compounds are synthesized by solid-state chemical reaction at 900°C . The compounds are densified into 10 mm pellets by uniaxial hot pressing. Measured electrical conductivity, thermoelectric power, and Hall coefficient data are analyzed to extract carrier concentration and carrier mobility. All compounds in the series are n-type. The magnitude of the Seebeck coefficient is found to decrease with increasing Pd concentration. The electrical conductivity and carrier mobility are found to be dependent on the materials processing conditions as well as the Pd concentration.

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Date submitted: 16 Aug 2010

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