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Galvanomagnetic and Thermomagnetic Properties of $Ag_{(1-x)}Na_xSbTe_2$ Alloys MICHELE NIELSEN, VLADIMIR JOVOVIC, CHRISTOPHER JAWORSKI, Department of Mechanical Engineering, Ohio State University, Columbus OH, JOSEPH HEREMANS, Department of Mechanical Engineering and Department of Physics, Ohio State University , Columbus, OH — Group I-V-VI_2 alloys have intrinsically low thermal conductivity[1] on the order of 0.65 W/mK due to Umklapp phonon-phonon scattering. Combined with the high valence band density of states in $AbSbTe_2$, this makes this material system ideal for thermoelectric applications up to 416 K, where $AgSbTe_2$ undergoes a crystallographic phase transition. The partial substitution of Na for Ag is expected to address this problem. We synthesize bulk $Ag_{(1-x)}Na_xSbTe_2$ alloys and measure the evolution of the phase transition as a function of Na concentration x. The thermoelectric and galvanomagnetic properties of the alloys are also studied: based on the measurement of resistivity, Seebeck, Nernst and Hall coefficients we calculate mobilities, Fermi energies and partial carrier concentrations of holes and electrons.

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