

Abstract Submitted
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Low temperature thermoelectric properties of hot pressed composite samples of CrSb₂: evidence for possible phonon-drag effect.¹ MANI POKHAREL, Mercer University, MACHHINDRA KOIRALA, Rensselaer Polytechnic Institute, ZHIFENG REN, University of Huston, CYRIL OPEIL, Boston College — We present on the thermoelectric transport properties of CrSb₂ samples prepared by hot-press densification in the temperature range of 2 - 350 K. At around 10 K, the thermal conductivity of CrSb₂ decreases dramatically by three orders of magnitude compared to the single crystal counterpart. Analysis shows that the reduced thermal conductivity results from increased scattering of the phonons off the grain-boundaries within the samples. A strong interrelationship between the thermal conductivity and the Seebeck coefficient is observed; indicating a significant presence of phonon-drag effect in this system. With $ZT = 0.018$ at 310 K for the sample hot pressed at 600 °C, an increase in ZT by 80 % over the previously reported values for polycrystalline samples is achieved.

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