

Abstract Submitted
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Transport Properties of Ce, Sm, and Ho Doped Bismuth Antimony¹ K.C. LUKAS, H. ZHAO, Z.F. REN, C.P. OPEIL, Boston College — Bi₈₈Sb₁₂ alloy has been doped with Ce, Sm, and Ho prepared under two different fabrication conditions. The first being ball milled for 12 hours and a hot pressed at 240 °C and the second ball milled for 6 hours and hot pressed at 200 °C. It is found that Ce, Sm, and Ho dopants all have a similar impact on the transport properties. A ZT enhancement is seen due to doping which is an effect of an enhanced Seebeck coefficient as a result of a decrease in the carrier concentration most likely caused by a widening band gap. The alteration of the band gap does not appear to be caused by the magnetic moments of Ce, Sm, and Ho based on the similar change to the gap size with the widely varying magnetic moments of the dopants. Also, similar results were not obtained with Fe doped samples, where Fe has a magnetic moment similar to Ce and greater than Sm.

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