Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Transport properties in magnetic field of Pb1-xSnxTe alloys doped with Indium V. JOVOVIC, S. JOOTTU-THIAGARAJ, J. WEST, J.P. HEREMANS, The Ohio State University, Columbus, OH 43210, USA, D. KHOKHLOV, Moscow State University, Moscow, Russia — The galvanomagnetic and thermomagnetic transport properties of single-crystal In-doped Pb1-xSnxTe are presented as a function of Sn (10 to 30%) and In (0 to 10%) concentrations. The concept is that the In level might pin the Fermi energy in a position with and enhanced density of states, which might increase the thermoelectric figure of merit. The transport properties were measured in a transverse magnetic field and at temperatures varying from 80 to 380K. Depending on the Sn concentrations, the prepared samples are p and n type semiconductors. The measurements of the electrical conductivity, Hall, Seebeck and transverse Nernst-Ettingshausen effects yield the carrier density and mobility, the density of states effective mass, and the scattering exponent, following the method of the four coefficients. The transport properties are interpreted in terms of hybridization of the In levels and density of state of the host alloy and observations are discussed in terms of Mahan-Sofo theory. The model provides an explanation for unexpected variation in thermoelectric and thermomagnetic properties of these alloys.

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Date submitted: 18 Nov 2006 Electronic form version 1.4