

The new system [Pb(M=Bi, Sn, Mn)]RETe semimagnetic semiconductors have been investigated. Monocrystalline samples  $[Pb_{1-x}Bi_x]_{1-y}Gd_yTe$  have been prepared by vertical Bridgeman method. The thermoelectric powers, Hall coefficient, electric conductivity, were measured for different impurity concentrations of Bi. The experimental results show the donor action of Bi. The Fermi level and effective mass of the density of states are studied as a function of the impurity atoms concentration. The results obtained may be used to conclude that impurity states are really present in the PbTe conduction band. The change of the electrophysical properties with the temperatures for samples doped with different amounts of Bi should be attributed to resulting changes, in the region of allowed states in the conduction band, because of the presence of impurity states. The analysis of the data obtained from measurement of the thermoelectric power and the electrical conductivity of samples at room temperature has shown the following: with increasing impurity concentration  $x$ , the electrical conductivity increases and the thermoelectric power decreases. The samples have a  $n$ -type conductivity.

**Keywords:** semiconductors, structure, magnetic, transport properties

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