The Thermoelectric Properties of PbTe Doped with Na and PbI2 Elements

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Abstract

In this study, the PbTe samples doped with PbI2 or Na were prepared using powder metallurgical techniques. The preparation procedures were optimized by the experimental results with respect to powder particle size, compaction pressure, and influence of sintering parameters. The power factor profiles of the PbTe samples with different dopant concentration at about 100°C to 250°C were calculated from the measured values of the Seebeck coefficient and the electrical of the samples. The research interpretation to the thermoelectric properties had been transformed by means of the different dopant concentration indeed. The power factor of the N-type samples was better than the P-type samples. For optimization of the power factors presented in the measurements temperature range, the optimized dopant concentration of PbI2 is 0.05 at% and of Na is 0.50 at% respectively.

Keyword：Powder metallurgical techniques, PbTe, power factor, ZT