

Thermoelectric efficiency of the extruded samples of $\text{Bi}_{0,5}\text{Sb}_{1,5}\text{Te}_3$ and $\text{Bi}_2\text{Te}_{2,7}\text{Se}_{0,3}$ solid solutions with different grain size

E. G. Djafarov, T. D. Aliyeva, D. Sh Abdinov

Institute Photoelectronics Azerbaijan Academy of Sciences, Baku, Azerbaijan

The effect of grain size of a starting powder and heat treatment on thermoelectric efficiency (Z) of extruded samples of $\text{Bi}_{0,5}\text{Sb}_{1,5}\text{Te}_3$ and $\text{Bi}_2\text{Te}_{2,7}\text{Se}_{0,3}$ solid solutions in temperature range from 77 up to 350 K. It is clarified, that in case of $\text{Bi}_{0,5}\text{Sb}_{1,5}\text{Te}_3$ solid solution maximal Z is observed in samples with of grains 630 microns and passed heat treatment in vacuum at 690 K within 5 hours. In a case of $\text{Bi}_2\text{Te}_{2,7}\text{Se}_{0,3}$ solid solutions in samples with dimension of grains 630 microns, non-passed heat treatment. It is shown, that the obtained results are satisfactorily explained by effect of texture and structural imperfections on density and mobility of charge carriers, and also on the scattering mechanism of phonons in extruded samples of the investigated solid solutions.

Л и т е р а т у р а

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