

## **Thermoelectric properties semimetal and semiconductor $\text{Bi}_{1-x}\text{Sb}_x$ foils**

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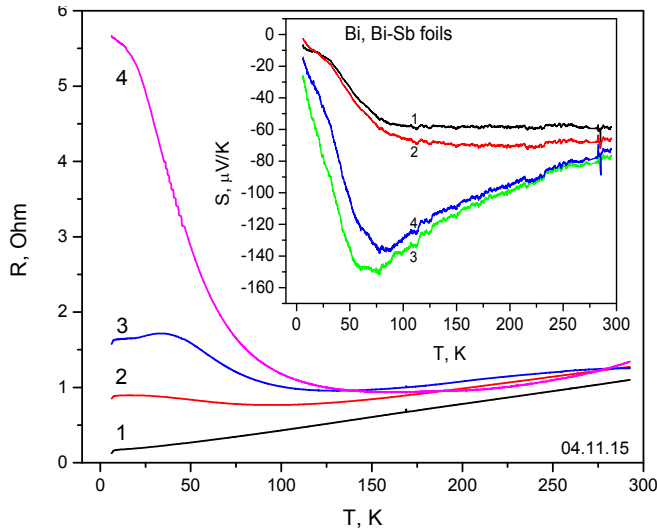
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We have studied thermoelectric magneto- thermoelectric properties of  $\text{Bi}_{1-x}\text{Sb}_x$  foils in semimetal and semiconductor states. The  $\text{Bi}_{1-x}\text{Sb}_x$  foils were prepared by crystallization a thin layer of the melt on the inside polished of surface of a rapidly rotating copper cylinder. The cooling rate of the liquid phase was  $\sim 5 \cdot 10^5$  K/s [1]. The rapidly solidified foils have a microcrystalline structure and texture (1012) with thickness 15-40  $\mu\text{m}$ .



**Fig.1.** Resistance and thermopower (inset) as a function of temperature for the Bi and  $\text{Bi}_{1-x}\text{Sb}_x$  foils. 1- Bi, 2- Bi-3at%Sb, 3- Bi-9at%Sb, 4- Bi-15at%Sb.

The thermoelectric figure of merit depending on the foils structure, magnetic field and entire temperature has been calculated.

It is discussed the question the enhancement of the thermoelectric figure of merit in semiconductor  $\text{Bi}_{1-x}\text{Sb}_x$  foils at high temperatures, using the reduction phonon-thermal conductivity, due to phonon – grain boundary scattering.

References:

[1] V. G. Shepelevich. Inorganic Materials **22**, 378 – 380(1986)