

Calculation of Thermoelectric Parameters PbTe:Ag

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Now one of the most promising alternative energy is thermoelectricity. It is known for this application of lead telluride and compounds based on it are the most promising in the medium temperature range. Efficient thermoelectric converter is realized through the establishment of needed characteristics at the material that ensure, in "permanent" electronic subsystem, a significant deterioration phonon component of the crystal. Promising ways for that is doping material. For create effective thermoelectric converters necessary materials as n- and p-type conductivity.

Among the most famous acceptor impurity can be identified thallium and alkali metals. However, they have several disadvantages in particular, thallium is highly toxic, and with alkali metals there are many technological problems, due to their high chemical activity which significantly complicates the process of synthesis material. Silver impurity also has acceptor action in Lead Telluride and does not have aforementioned drawbacks.

This work is devoted to the study of thermoelectric parameters PbTe: Ag with different silver content: 0.05; 0.1; 0.15; 0.2 and 0.3 at. %.

Determined that the maximum figure of merit at 300 K observed when the silver content of 0.15 at. %.

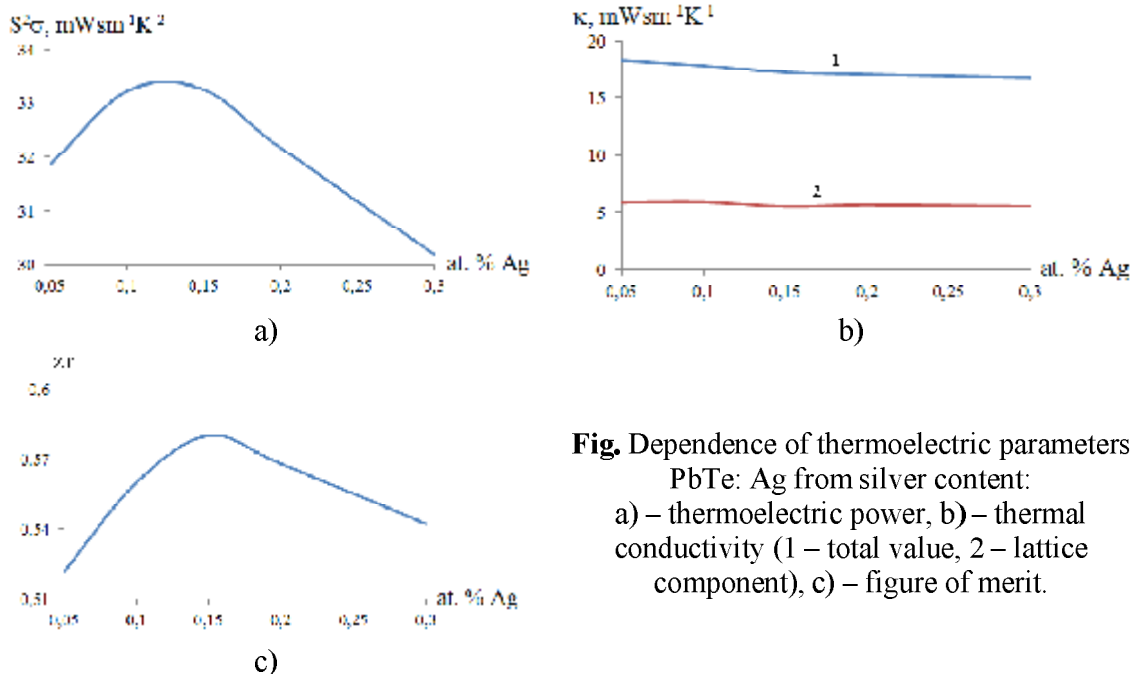


Fig. Dependence of thermoelectric parameters PbTe: Ag from silver content: a) – thermoelectric power, b) – thermal conductivity (1 – total value, 2 – lattice component), c) – figure of merit.

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