

## Influence of Pressing Conditions on Thermoelectric Properties of PbTe-Sb<sub>2</sub>Te<sub>3</sub>

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Thermoelement legs are made by the method of cold pressing. Samples are maintained at pressing some time for improving of uniformity and partial relaxation of mechanical stress. The influence of maintaining time in the state of stress in samples on their thermoelectric properties was investigated.

The compounds PbTe-Sb<sub>2</sub>Te<sub>3</sub> with concentration of 0,3 mol.% Sb<sub>2</sub>Te<sub>3</sub> were synthesized by direct fusion method with mixing of the components at the melting point. Pre-cleared Pb, Te and Sb were used as initial components for synthesis. Sb<sub>2</sub>Te<sub>3</sub> compound was synthesized in advance. All materials of B4 purity class were taken in stoichiometric ratio. From the samples were formed compacts by grinding and pressing at pressure 0,2 GPa with maintaining time 5, 10 and 15 minutes.

Temperature dependences of the Seebeck coefficient were determined by standard method [1].

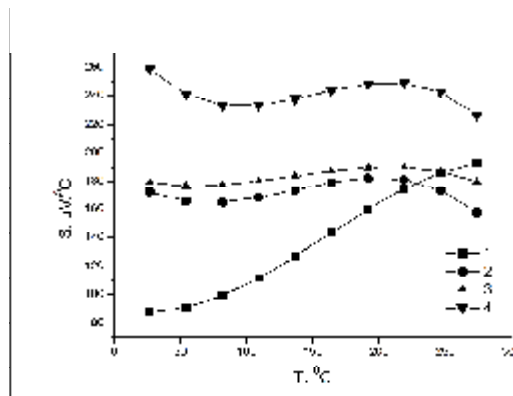


Fig. 1. Temperature dependence of the Seebeck coefficient: 1 – PbTe (5 min), 2 – PbTe + 0,3 mol. % Sb<sub>2</sub>Te<sub>3</sub> (5 min), 3 – PbTe + 0,3 mol. % Sb<sub>2</sub>Te<sub>3</sub> (10 min), 4 – PbTe + 0,3 mol. % Sb<sub>2</sub>Te<sub>3</sub> (15 min)

The temperature dependences of the Seebeck coefficient for the samples show that the value of the S for PbTe increases throughout the temperature range. Seebeck coefficient for PbTe + 0,3 mol. % Sb<sub>2</sub>Te<sub>3</sub> solid solutions increases with the pressing time. For samples 2-4 curves of the temperature dependence S (T) are identical. The sharp increase in S compared with other observed for sample 4. The difference in curves 1 and 2-4 can be explained by the influence of impurities on the plasticity of the material.

1. I.A. Drabkin, O.E. Kvyatovsky, B.Ya. Moyjes, L.M. Sysoyeva. FTS, 21, 188 (1987).