

Thermal Expansion and Thermal Conductivity of $(\text{In}_2\text{S}_3)_x(\text{AgIn}_5\text{S}_8)_{1-x}$ Alloys

I. V. Bodnar ¹,

A. A. Feshchenko ²,

V. V. Khoroshko ³

2021

1, 2, 3 Information and Computer-Aided Systems Design Department,
Belarusian State University of Informatics and Radioelectronics, Minsk,
Belarus

Abstract: The thermal expansion and thermal conductivity of In_2S_3 and AgIn_5S_8 single-crystal compounds and $(\text{In}_2\text{S}_3)_x(\text{AgIn}_5\text{S}_8)_{1-x}$ alloys grown by the Bridgman method are studied. It is established that the thermal-expansion coefficient linearly varies under changes in the composition parameter x and the thermal conductivity has a minimum for the equimolar composition. From experimental data on the thermal-expansion coefficient, the Debye temperature and the root-mean-square (rms) dynamic displacements of atoms are calculated. It is shown that, as the content of Ag atoms in the alloys is increased, the Debye temperature increases and the rms dynamic displacements of atoms in the crystal lattice decrease.

This article published in:

Bodnar, I. V. Thermal Expansion and Thermal Conductivity of $(\text{In}_2\text{S}_3)_x(\text{AgIn}_5\text{S}_8)_{1-x}$ Alloys / I. V. Bodnar, A. A. Feshchenko, V. V.

Khoroshko // Semiconductors. – 2021. – Vol. 55. – № 2. – P. 133-136. –
<https://doi.org/10.1134/S1063782621020081>.

Internet-link for the article:

<https://www.springerprofessional.de/en/thermal-expansion-and-thermal-conductivity-of-in2s3-x-agin5s8-1-/18884286>.