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Mechanical properties of $\text{Al}_x\text{In}_{1-x}\text{Sb}$ ternary alloys under the effect of pressure and temperature

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ABSTRACT

The pseudo-potential method (EPM) within the virtual crystal approximation (VCA) including disorder effect was used to determine the mechanical properties of $\text{Al}_x\text{In}_{1-x}\text{Sb}$ alloys in zinc-blende structure. The studied properties as elastic constants and their related quantities as bulk, shear and Young moduli are calculated and compared with the published data and showed generally good agreement. Other related quantities are also successfully studied. The variation of all studied quantities with composition, pressure and temperature has been examined. Most of our results can give an important reference especially in the region of high pressure and temperature.

Keywords:

Mechanical properties

Pressure

Temperature

Composition

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