
Study of the basic properties and lattice disorder effects in II-VI mixed crystals grown by Bridgman technique

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II-VI mixed crystals found several applications in modern optoelectronics, including the construction of visible radiation sources, gamma and x-ray radiation detectors, green laser diodes, electro-optic modulators, solar cells, and infrared devices. Essential properties of ternary and quaternary compounds are changes in energy band gap and lattice constant values with some compositional modification.

This work used the high-pressure and high-temperature Bridgman technique to grow the crystals. It is one of the oldest techniques for growing crystals and employs crystal growth from the melt. The Bridgman technique is very suitable for growing high-resistivity crystals and, for this reason, is commonly used to grow crystals considered as potential ionizing radiation detectors.

The crystal's quality is a critical property of the material used in many applications. The materials' quality significantly impacts the prospective detector's sensitivity and effectiveness. Therefore, the lattice disorder needs to be defined. The impact of the lattice disorder on the crystal lattice's thermal resistivity was determined for all grown mixed crystals.