

Growth of semiconducting $\text{Cd}_{0.96}\text{Zn}_{0.04}\text{Te}$ single crystal by modified Bridgman and vapor phase transport methods

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Abstract: Single crystals of $\text{Cd}_{0.96}\text{Zn}_{0.04}\text{Te}$ (CZT) with 14 mm in diameter were grown by seedless modified Bridgman method. Also, crystals with the same chemical composition were grown by vapor phase inert gas-transport method (VPGT), and single crystals up to 3.5 mm in diameter were obtained. Structural studies by XRD and back reflection Laue method show that the grown crystals are single phase with high purity, which preferentially have been grown along [111] crystal axis. The energy gap of as-grown crystals is about 1.2 eV. The electrical properties measured by Van der Pauw method, show that the resistivity is in order of $10^4 \Omega\cdot\text{cm}$. The electrical conductivity of crystals grown by Bridgman method is p-type, and for VPGT-crystals is n-type.

Keywords: *Crystal growth, Semiconductor, Bridgman, vapor phase transport, Cd-Zn-Te.*