Crystal Growth of Binary Semiconductors CdTe, CdSe, PbTe, PbSe, and Determination of their Structural and Electrical Parameters.

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Abstract: Single crystals of binary semiconductors CdTe, CdSe, PbTe and PbSe were grown by sublimation and condensation techniques using argon as the carrier gas. Powder X-ray diffractometry as well as Laue method were employed for the structural analysis. By using Hall technique, the density and polarity of charge carriers were determined in single crystals. PbTe and PbSe crystals were grown as p-type with charge density of about $1.1 \times 10^{18}$ cm$^{-3}$ whereas CdTe and CdSe were grown as intrinsic. Thermo - electric technique was also utilised to determine the energy gap of single and polycrystals of CdTe and CdSe.