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Growth and microindentation analysis of pure and doped Sb_2Se_3 crystals

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
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Abstract: Pure and doped antimony selenide (Sb_2Se_3 , $Sb_2Se_{2.8}Te_{0.2}$, and $Sb_2Se_{2.6}Te_{0.4}$) crystals have been grown from melt by the Bridgman Stockbarger method. X-ray powder diffraction analysis was carried out to determine the lattice parameters of the grown samples. The morphology of cleavage planes was observed using SEM. Energy dispersive analysis by X-rays (EDAX) was done to find out the chemical composition of the grown samples. Correlation of microhardness with other mechanical characteristics such as toughness, brittleness, and yield strength, has been investigated. The effects of Te doping on the mechanical behaviour and energy gap were also studied on the cleavage faces.

Key Words: Sb_2Se_3 , microindentation, energy gap, doping

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