

Thermal annealing enhanced the crystallinity and it exhibits β - In_3Se_2 and γ - In_3Se_2 with hexagonal crystal structure for 250°C, 350°C, respectively. The calculated direct band gap of as deposited and annealed films were found between 2.66 eV and 2.89 eV. The change in optical band gap values of the films could be associated with change in crystallographic phase formation of β - In_2Se_3 (decrease in band gap) γ - In_2Se_3 (increase in band gap). It was observed that the PL intensity decreases for the annealed films. For 150 annealed films slightly red shifted compared to amorphous film, which is due to re - orientation of grain. Impact of annealing on the phase change also reflected in PL intensity of the films.

References

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