

# Poster Presentations

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## Temperature dependent conduction in $\text{In}_2\text{Se}_3$ polycrystalline films

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### Abstract

The current conduction mechanism in  $\text{In}_2\text{Se}_3$  thin films are explored by means of temperature dependent conductivity measurements in the temperature range of 50- 320 K. In the high temperature range (above 200 K), the current transport is found to be dominated by the thermionic emission of charge carriers over the grain boundaries through the polycrystalline films. The activation energy of electrons in this region is 65 meV. In the low temperature region, the current conduction is observed to be dominated by the variable range hopping of charged particles through the energy barriers. The hopping parameters presented by degree of disorder, density of localized states near the Fermi level, the average hopping range and energy are determined and was found to exhibit values of  $1.98 \times 10^5 K$ ,  $8.5 \times 10^{21} \text{cm}^{-3} / eV$ , 11.95 A and 16.49 meV, respectively. The obtained values are promising as they indicate the applicability of the  $\text{In}_2\text{Se}_3$  films as memory cells of low scattering and high hopping rates.

Keywords:  $\text{In}_2\text{Se}_3$ ; hopping parameters; density of localized states