

“INFERENCES AND FUTURE WORK”

Inference made from research works

From the research work presented in previous chapters, it is quite evident that cadmium telluride was investigated during the course of Ph.D. This compound was grown in the form of thin films using a screen printing method and the grown thin films were sintered at different temperatures around 500 °C. From the discussion given in all chapters, following broad conclusions can be drawn.

- 1) CdTe thin films grown by screen printing technique possess good stoichiometry which was confirmed from EDAX.
- 2) The stoichiometry was found to improve with sintering temperature around 500 °C.
- 3) The lattice parameters evaluated from the XRD analysis confirm a cubic structure. Various parameters have been calculated using XRD data and they match with reported values.
- 4) Polycrystalline nature of CdTe thin films was confirmed by TEM. The uniformity of surface of films shows better features after sintering.
- 5) Smoothness of the surface improves as a positive effect of sintering which was confirmed from AFM analysis.

- 6) The SEM images in present case show better continuity of the films after sintering.
- 7) From the absorption studies the band gap of CdTe grown in present case in the form of thin films was evaluated.
- 8) Absorption of incident radiation represents maxima near the absorption edge.
- 9) The refractive index showing its variation which is analogues to normal dispersion law.
- 10) The real and imaginary part of complex dielectric constant shows a decrease with increase in photon energy.
- 11) The capacitance of the films shown enhancement in its values with increasing temperature.
- 12) The capacitance decreases with increase in frequency. This was attributed to the variation in charge mobility.
- 13) From the photo conductivity measurement it could be inferred that CdTe exhibits good photo conducting properties.
- 14) The photo current increases with increase in intensity of illumination.
- 15) The variation in the value of P with sintering temperatures can be considered as advantage of post deposition process to utilize screen printed thinfilms as photo detector.
- 16) The sintering process improves the photo response parameters related with transit time of charge carriers.

Looking at the brief conclusions mentioned above, it can be inferred that CdTe material when grown in the form of thin films using screen printing and sintered at temperatures around 500 °C can be further investigated to improve its parameter so that it can be successfully used as photo detector which is one of the prime viable application of this material.