Chapter -6

Scope for the Future
6. SCOPE FOR THE FUTURE

This Chapter deals with the scope for the future.

The present study falls within the field of crystal growth and characterization which is a thrust area of research having both scientific and technological importance. Scientific studies on crystalline materials normally involve: (i) nucleation and growth of crystals; (ii) structural and physical characterization; etc. The present research work, reported in this thesis, is of scientific nature.

Several investigations have been made in the present study and several useful results have been obtained. However, several more investigations have to be carried out in the future to understand the full potential of these new composite material crystals.

The pure and CdS added \((\text{NaCl})_x(\text{NaBr})_y(\text{NaI})_{1-y}\) crystals grown in the present study are found to be harder than the end member crystals. Also, CdS added crystals are found to have significantly deviated properties. So, their application in device fabrication is expected to having good results in the future. Hence, the technological research involving the growth of large crystals required for device fabrication and fabrication of devices can be considered as a future scope.
The crystals grown in the present study are polycrystalline in nature. Growth of large single crystals of the systems considered in the present study using a Czochralski puller and characterizing the same can be considered as a future scope as this is expected to yield a good understanding of these new materials for use in various devices.

The dielectric studies may be extended to various frequencies for all the crystals grown in the present study. Also, the electrical measurements (both AC and DC) may be extended to lower and higher temperatures.

UV-Visible and FTIR spectral studies can be done to understand the transmittance property of these crystals. In addition, a photoluminescence spectral study made on these CdS added crystals is expected to bring more understanding about the particle surface of CdS present in the alkali halide crystal. The X-ray diffraction studies can be extended to find out atomic positions and consequently to improve the understanding of these new materials.

Only CdS has been used as the dopant in the present study. The study may be extended in the future by considering other II-VI compounds.