

● Semiconductors

The understanding of the electronic picture of the materials used in electronics industry is an utmost important thing for their effective use in practice. Various tools are used for the purpose and one among them is the X-ray diffraction technique. X-ray diffraction technique provides the finite details of the materials in the form of charge density picture. Charge density picture can be analyzed qualitatively and quantitatively for the type of bonding existing in solids and also for the measure of the charges involved in deciding the physical and chemical properties of the chosen system. And hence, the study on charge density using experimental X-ray diffraction information is inevitable for the better understand and the utility of the material. This research elaborately deals with the charge density distribution study on some of the ionic solids and some technologically important semiconductor materials.

Many ionic and semiconducting materials have been studied under this topic. The materials studied are given as follows.

1. Ionic Solids:

Lithium Fluoride, Sodium Fluoride, MgO, CaO, SrO, BaO and Calcium Fluoride

2. II-VI Semiconductors:

Zinc Selenide, Lead Selenide, Cadmium Telluride and Zinc Telluride

3. III-V Compound Semiconductors:

Indium Phosphide and Gallium Phosphide,

4. Elemental Semiconductor:

Germanium