

PREFACE

The work embodied in this thesis entitled "Physico-chemical studies of inorganic materials" was initiated in June 1979 and carried out in the Department of Inorganic Chemistry of Indian Association for the Cultivation of Science.

The thesis comprises of seven chapters. In Chapter 1 various aspects of phase transformation in solid state has been briefly outlined along with the purpose of the present work. Chapter 2 deals with characterization, thermal and dielectric properties of hydrated and anhydrous rare earth iodates. Chapter 3 contains similar studies made for cadmium(II), barium(II) and lead(II) perrhenates. The electron transport and magnetic properties of some mixed valence alkali thiocuprates, viz. KCu_4S_3 , $RbCu_4S_3$, $CsCu_4S_3$ and $Na_3Cu_4S_4$ form the subject matter of Chapter 4. In Chapter 5 phase transition behavior of some copper(I) ion conducting solid electrolytes, $CsCu_4Cl_3I_2$, $Cs_{1-x}Rb_xCu_4Cl_3I_2$ and $CsCu_4Cl_{3+m}I_{2-m}$ have been reported. Differential scanning calorimetric studies of several compounds showing order-disorder transitions have been described in Chapter 6. Chapter 7 deals with physico-chemical studies of a formally nickel(IV) compound $KNiIO_6 \cdot 0.5H_2O$.

The Chapters 2-7 have a common layout. An abstract of the work reported is given at the beginning. This is followed by an