

## P R E F A C E

Materials science assumes various manifestations today. Ferrite materials have been exploited for a number of communication and computer applications. In spite of these developments in the technology of ferrites, they continue to be examined for their structure and transport properties in a systematic manner to evolve the co-relation between them. The subject matter of this dissertation is into five chapter.

In the first chapter, general aspects of ferrites like historical background, spinel structure, electrical and magnetic properties, theories of ferrimagnetism and applications of ferrites are discussed. The orientation of the present work is included at the end. The method of preparation of ferrites and actual method used are described in the second chapter. Characterization of ferrites with the help of x-ray diffraction is discussed here. I.R. absorption studies are also included here. Electrical properties of the ferrites form the subject matter of the third chapter, in which D.C. electrical resistivity, thermo emf and a.c. conductivity studies are discussed. In the fourth chapter, magnetic properties such as magnetization, hysteresis, A.C.

susceptibility, Curie temperature are presented with necessary theoretical background. Summary and conclusions of the work is presented in the fifth chapter. A list of references is given at the end of the each chapter.