

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 given at the end of this chapter. The different methods of preparation of ferrites and actual method used are described in the second chapter. The characterization of ferrites with x-ray diffraction and infra red absorption studies are also included. Electrical properties of the ferrites form the subject matter of the third chapter, in which d.c. electrical resistivity studies are discussed. In the fourth chapter, magnetic properties such as magnetization and a.c. susceptibility are presented with necessary theoretical background. Summary and conclusions of the work is presented in the fifth chapter.