

PREFACE

The chief goal of materials science and technology is the study of relationship between the processing of materials and their properties. During past few decades, wide range of ferrites produced by solid state reaction between component oxides to suit a particular application is presented as an outcome of material science. The present dissertaion deals with the recent development in ferrites their electrical and magnetic properties and the role that microstructure plays to effect these properties.

The dissertation includes mainly the work carried on Magnesium-Cobalt ferrites sintered at same sintering temperature but for different intervals of time.

The 1st chapter is introductory. Some important aspects of ferrites such as composition and structure, general properties, applications of ferrites with necessary historical background forms the basis of 1st chapter. The orientation of the problem is given at the end of this chapter.

Chapter II describes the general methods of ferrite preparation. Standard technology of ferrite preparation. The calculation of lattice parameters to characterize the crystal structure by using X-ray diffraction technique.

The third chapter presents the electrical resitivity studies of ferrites. Conduction mechanism in ferrites, calculation of activation energies of ferrites, determination of Curie temperature of samples are fully explained.

Chapter IV consists of explanation of magnetization behaviour of ferrites. Theories of magnetization in ferrites, experimental set up, hysteresis studies, calculation of saturation magnetization M_s are included in this chapter.

The last chapter is reserved for summary and conclusion. While discussing the theories and experimental part figures, graphs and tables are presented. A list of references is given at the end of each chapter. In some cases it was not possible to go through the original work.