P R E F A C E

In recent years, there has been a growing awareness of the need to study the relation between the microstructure and properties of materials. This has led to the gradual adoption of the term 'materials science' to describe such a study and has given the impression that such an approach to materials is of very recent vintage. Concurrently, it is concerned with applying any newly gained perspectives to the improvement of the specific properties that materials can possess and to their wiser utilization.

In this small dissertation the effect of two sintering temperatures on resistivity, energy of activation, magnetisation, I $-$ V characteristics of some copper manganese ferrites is observed and is discussed in the light of microstructure observed with scanning electron microscope.

First chapter deals with an introduction to ferrites and some important aspects of ferrites viz. historical developments, crystal structure, general properties and the influence of various other factors on the properties. The application of ferrites and orientation of the problem is given at the end of this chapter. In the second chapter, the method of preperation with special reference to sintering method is given. In the same chapter the characterisation with x-ray diffraction technique is fully discussed and carried out. Third chapter describes the studies on conduction with necessary theoretical

background and experimental technique. The subject matter of chapter four consists of the theoretical background, data and discussion of ferrites, of magnetization, curie temperature, $I-V$ characteristics. The relevant experimental technique are briefly described at each stage. The fourth chapter is devoted for the microstructure and ferrites. Effect of microstructure on ferrite properties and the general aspects of ferrite microstructure are described here.

The last chapter is for summary and conclusions. A list of references is given at the end of every chapter. In case of a few references, it was not possible to refere to the original work.