

## PREFACE

During the last three decades a large number of new developments have been added to the field of magnetic materials. The soft ferrites in particular have proved to be useful in modern electronics and microwave communications, and have occupied the unique position in the field of electronics, electrical, computers and T.V. applications. The present dissertation reveals the results of some of the experimental investigations that have been carried out by the author on the mixed Mg-Zn ferrite system doped with 0.01 mol. wt.%  $ZrO_2$ , at the University department of Physics, Shivaji University, Kolhapur.

This dissertation comprises five chapters. The first chapter is of an introductory, nature, consisting of the historical background of ferrites together with the theories pertaining to them. The electromagnetic properties have been discussed in brief and the orientation of the present work is also given at the end of this chapter. The second chapter deals with the brief survey of various methods of ferrite preparation along with the standard ceramic method used for the preparation of the ferrites under investigation. Flow chart is also given. The X-ray diffraction technique is used <sup>for</sup> crystal structure characterisation of system under investigation. Third chapter deals with experimental techniques used for electrical measurements such as d.c. electrical resistivity and seeback coefficient. The experimental method for determination of Curie temperature is also discussed. Chapter fourth includes magnetic hysteresis and saturation magnetisation studies. The summary and conclusions on the work

are presented in chapter fifth. A theoretical background is given at the beginning of each chapter. Experimental results have been illustrated with appropriate figures wherever necessary. A list of references has been give at the end of each chapter. However, in case of certain references, it was not possible to refer to the original work.