

PREFACE

In the present day technology, Materials science is at the dominant position so far as the fundamental research on different materials is concerned. The development of newer materials has proved their innumerable applications in everyday usage. Ferrite materials in particular are being increasingly harnessed for their diverse applications in communication, defence and in many other technologies. The ever increasing demand for ferrite materials has emphasized the need of synthesizing and characterizing newer and newer of them and of correlating their structural and transport properties. This study helps identifying their potential for various applications.

Keeping this in view, an attempt is made to study the effect of chromium substitution on electrical and magnetic properties of copper and cobalt ferrites.

This dissertation comprises of five chapters. In first chapter aspects like historical developments, spinel structure, properties, applications and fundamental theories have been highlighted briefly. The orientation of the work ends this chapter. Second chapter deals with preparation and characterization of these materials. X-ray and IR techniques were employed for characterization. Hysteresis, ac susceptibility, permeability and Curie temperature studies are

presented with necessary theoretical background in chapter three. DC electrical resistivity, thermoemf and AC conductivity studies are the contents of chapter four and the last chapter summaries the work with conclusions.

Both the theoretical background and experimental results are supported by appropriate data and are illustrated with figures as and when required. A list of references is cited at the end of each chapter. In case of few references, however, it remained hard to refer the original work.

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