

C O N T E N T S

Chapter	Title	Page
I	<u>INTRODUCTION</u>	
	1.1) Historical	1
	1.2) Crystal structure of ferrites	2
	1.2.a) Normal Spinel Ferrites	5
	1.2.b) Inverse Spinel Ferrites	5
	1.2.c) Random Spinel Ferrites	5
	1.3) Substitutional Ferrites	6
	1.4) Electrical Properties of ferrites	7
	1.4.a) Introduction	7
	1.4b) Thermoelectric power	7
	1.5) Magnetic Properties of Ferrites	9
	1.5.1) Magnetisation in ferrites	9
	1.5.2) Hysteresis and Domains	11
	1.5.3) Structural Explanation of Ferrimagnetism.	12
	1.5.4) Neel's Theory of Ferrimagnetism.	14
	1.5.5) Yafet-Kittel Theory	19
	1.5.6) Spiral spins	21
	1.6) Application of Ferrites	22
	1.7) Orientation of the problem	23
	References.	
II	<u>CHARACTERISATION</u>	
	A) Method of preparation	28
	2.1) Introduction	28
	2.2) Mechanism of solid state reaction	28

Chapter	Title	Page
	2.3) The general formula of the system	29
	2.4) Raw Materials	29
	2.5) Weighing	29
	2.6) Pre-sintering	30
	2.7) Pellet formation	32
	2.8) Final Sintering	32
B)	X-ray Diffraction study	32
	2.9) Introduction	32
	2.10) Details of Diffractometer	32
	2.11) Result and Discussion	33
C)	Curie Temperature	48
	2.12) Measurement of T_c	48
	References	63
	<u>Electrical Properties</u>	
III	THERMOELECTRIC POWER STUDIES	66
	3.1) Introduction	66
	3.2) Thermoelectric power measurement	68
	3.3) Result and Discussion	68
	References	80
IV	STUDIES ON SUSCEPTIBILITY AND MAGNETISATION	81
A)	Susceptibility	81
	4.1) Introduction	81
	4.2) Experimental measurement of $\chi_{ac}-T$	82
	4.3) Result and Discussion	83

Chapter	Title	Page
B)	Magnetisation Studies	91
4.4)	Introduction	91
4.5)	Measurement procedure	93
4.6)	Result and Discussion	94
	References	104
V	SUMMARY AND CONCLUSION	107
	References	116
