ABSTRACT

The thesis entitled “Synthesis, characterization and studies of Novel Ceramic - Materials” is organized into FIVE chapters.

CHAPTER – I is introductory in nature. In this chapter, through relevant literature support author has made an attempt to shed more light on the basic aspects of:

- Introduction of Ferrites
- Mixed ferrites and spinal ferrites
- Classification of ferrites
- Application of ferrites

Apart from this, limitations and scope of present study is also discussed.

CHAPTER – II deals with synthesis of various ferrites like Nickel ferrite, barium hexaferrite and calcium ferrite. The various method of preparation of ferrites and its important is explained in this chapter.

CHAPTER – III deals with the characterization of ferrites. The various characterization techniques that are employed ferrites composites such as Fourier Transmission Infra Red Spectroscopy (FTIR), X-Ray Diffraction studies (XRD), and Scanning Electron Microscopy (SEM) are discussed. Their results and discussion are also presented.

CHAPTER – IV In this chapter measurement technique employed for the measurement of various electrical properties of ferrites composites along with their results and discussions are presented. The electrical properties, discussed in this chapter are as follows:

- DC and AC conductivity
- Dielectric behavior and dielectric spectroscopy

Relevant theoretical background of some of the above mentioned properties are also discussed.

CHAPTER – V deals with conclusions and scope of future work. In this chapter conclusions drawn from various studies carried over ferrites are presented. On the basis of results so obtained from above studies, some of the possible applications of
these composites are also suggested. A brief note on limitation of present study and scope for future work are mentioned.

In conclusion, the study gave the author an opportunity to work in a new and exciting field of ferrites which are regarded as smart materials of the century. Due to some constraints, author could study only limited aspects of the field. Nevertheless he has the satisfaction of making contribution to the field.