RESUME

Name **Dr. Ch.S.Lakshmi**

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Date of Birth **:** 10/06/1974

Nationality **:** Indian

Sex **:** Female

Community **:** O.C.

Area of Research **:** Magnetic Materials**,** Multiferroics

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Academic Record from Undergraduate Degree

Degree	Specialisation	University/Institute	Year of Completion	Marks & Division
Ph.D	Nanoferrites	Andhra University, Visakhapatnam	2016	Awarded
M.Phil.	Physics	Andhra University, Visakhapatnam	2004	74% (I Division)
M.Sc.	Physics	Andhra University, Visakhapatnam	1996	66.7% (I Division)
B.Sc.	Mathematics, Physics, Chemistry	Andhra University, Visakhapatnam	1994	74% (I Division)

Details of Doctoral Thesis :

Area of Thesis work : Nanoferrites

Title of Thesis : Structural, Dielectric and Magnetic properties of Antimony and Niobium doped nano Nickel-Zinc ferrites

Supervisor : Prof. S. Bangarraju

Year of award of Ph.D : 2016

Additional Qualifications:

- Completed Master of Computer Applications from Indira Gandhi National Open University (IGNOU) in the year 2009.
- Qualified Andhra Pradesh State Eligibility Test (**APSET**) conducted by Andhra University in the year 2018.

(a) Teaching Experience – 25 years

S. No.	Institute / Organization	Position held	From	To	Total Experience
1	Gayatri Vidya Parishad College of Engineering for Women, Madhurawada, Visakhapatnam	Assistant Professor in Physics	31/08/2019	Till Date	2 years
1	VS Lakshmi Degree College, Kakinada	Guest Lecturer	01/07/2018	31/03/2019	8 months
2	GVP College of Engineering (A), Madhurawada, Visakhapatnam	Assistant Professor	23/09/2017	31/05/2019	9 months
3	Jawaharlal Nehru Technological University, Kakinada	Assistant Professor	14/07/2015	12/07/2017	2 years
4	Regency Institute of Technology, YANAM	Head of the Department & Associate Professor	26/07/1999	30/06/2015	16 years
5	Rajiv Gandhi Institute of Degree and P.G.Courses, Kakinada	Lecturer	14/07/1996	26/07/1999	3 years

(b) **Administrative Experience**

Period	Organisation	Designation	Nature of Responsibility
June 2010 – June 2015	Regency Institute of Technology, Adivipolam, YANAM (U.T. of Puducherry)	Associate Professor & Head of the Department	Acted as Head of the Department for Applied Sciences and Humanities
June 2006 – June 2015	Regency Institute of Technology, Adivipolam, YANAM (U.T. of Puducherry)	ISO Coordinator	Maintenance of ISO files

(c) **Sponsored Research Projects**

Year of Funding	Sponsoring Organisation	Title of Project	Amount of Grant	Co-Investigators (if any)

2008	Department of Science, Technology and Environment, Puducherry	Structural and Electrical Properties of certain Sb^{5+} and Nb^{5+} substituted nano Nickel-Zinc ferrites **(Grant No: No.10/DSTE/GIA/RP/JSA-1/2008/899)**	Rs.75,000	Nil
2016	Carrying out collaborative research work with Dr.Ch.S.L.N.Sridhar, VBIT, Hyderabad on Titanium doped nano Mn-Zn ferrites	This project is funded by UGC, New Delhi	Rs.1,74,000	

d) Other Information:

- Acted as faculty representative in the Governing Body meeting at Regency Institute of Technology, Yanam
- Acted as Member, Board of Studies, Department of Physics, Ideal Degree College, Kakinada.

Current Areas of Research Specialisation : Nanoferrites, Multiferroics

Equipment available for carrying out research activity: The following list of equipment is funded by DSTE, Puducherry to carry out my research work.

Name of the Item	Purpose of Study
Balance	for weighing out the samples in correct proportions
Digital pH meter	for accurate mixing of the solutions with correct pH
Magnetic Stirrer with Hot Plate	for stirring while heating of the metal salts in solution
Setup of Hydrothermal apparatus – Autoclave	**for synthesis of nanoferrite samples**
Hot Air Oven	for drying the samples

Publications

1. Research Experience : 8 years

(A) Research scholars guiding : 01
(Doing Ph.D. in K.L.University, Vijayawada The scholar has completed her experimental work and going to communicate the research paper by the end of May 2019)

(B) Research scholars presently working : 01(completed experimental work)

(C) Number of Publications :

S. No	Status of Journal	No. of Papers
1	International Journals	07
2	National Journals	01
3	International Conferences	Nil
4	National Conferences	03

(D) List of Publications : 06

International Journals

S. No.	Authors	Title of the Research paper	Name of the Journal	Volume No.	Page Nos.	Year of publication	Impact factor
1	Ch.S.Lakshmi	Evidence of Super paramagnetism in Nano phased copper Doped Nickel Zinc Ferrites Synthesized by Hydrothermal Method	Optik - International Journal for Light and Electron Optics Elsevier			Accepted for publication	2.443
2	Ch.S.Lakshmi	Dielectric Properties of Superparamagnetic Titanium doped Nanophased Mn-Zn ferrites for High Frequency Applications	Materials Research Express, IOP Article reference: MRX-118626.R1	6(12)	126117	2020	1.449
3	Ch.S.Lakshmi	Structural and Dielectric Studies on Nanocrystalline Titanium Doped Manganese Zinc Ferrites Synthesized by Hydrothermal Method	International Journal of Advanced Technology in Engineering and Science	5	397-402	2017	Nil
4	Ch.S.Lakshmi	Influence of Nb^{+5} Doping in Mn-Zn Nano Ferrites	Materials Research Express, IOP	4(11)		2017	1.068
5	Ch.S.Lakshmi	Experimental Characterization of Nanocrystalline Niobium Doped Nickel-Zinc Ferrites: Occurrence of Superparamagnetism	Journal of Material Science, Springer			2016	2.599
6	Ch.S.Lakshmi	Structural, Morphological, Magnetic and Dielectric Characterization of Nano-Phased Antimony Doped Manganese Zinc	Journal of Physics and Chemistry of Solids, Elsevier	92	70-84	2016	2.059

		Ferrites					
7	Ch.S.Lakshmi	Structural, magnetic and dielectric investigations in antimony doped nano-phased nickel-zinc ferrites	**Physica B**: Condensed Matter, Elsevier	459	97-104	2015	1.386

(c) **Papers in National Conferences**

S.No.	Year of Publication	Title of Paper	Name and Place of Conference
1	2013	Synthesis and magnetic properties of high valency doped nano Ni-Zn ferrites	National Workshop on Thin film preparation and its Applications, Gayathri Vidyaparishad College of Engineering, Madhurawada
2	2010	Hydrothermal Synthesis and Characterization of certain pure and substituted mixed ferrites	National Conference on Nanomaterials and Composites held at SKBR College, Amalapuram
3	2009	Structural studies on high valency doped nano Ni-Zn ferrites	National conference on nanomaterials, Sri Venkateswara Degree College, Cuddapah

References:

Prof.K.C.Chandramouli
Professor &Dean
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Research Plan for the next 5 years
Introduction

Ferrite cores find themselves in ever increasing utility in small and compact electronic devices with their increasing demand in the present technological applications. Since throughput power in these cores is proportional to product of frequency and induction within the permissible loss levels, the main trend in their development has been to improve the performance by increasing the operating (switching) frequency. However, the conventional studies explicitly point out that the increase in frequency can be realized either by increasing the magnetization or by decreasing different losses involved or by both. Hence, efforts were made to obtain higher values of saturation magnetization while keeping the losses within the permissible levels by way of adopting different cationic substitution mechanisms including the approach of simultaneous

substitutions into both the octahedral and tetrahedral sub-lattices in ferrites. In recent times, the advent of nanotechnology has opened a new opportunity to develop novel high frequency nanoferrites. In conventional bulk ferrites, each particle possesses many magnetic domains which cause interference or resonance. Domain wall resonance restricts the frequency characteristics of the initial permeability. When the size of the magnetic particle is smaller than the critical size for multi domain formation, the particle is in a single domain state. Domain wall resonance is avoided and the material can work at high frequencies. Addition of High valency dopants in ferrites is found to improve power losses.

Main thrust

Thus, investigation of ferrites and their composites at nano scales has been looked as quite promising for the simple reason that the magnetic nanoparticles coated with insulating matrix in a core shell arrangement are proved to be excellent materials for miniaturized high frequency electronic devices due to their high electrical resistivity and useful exchange coupled ferromagnetic properties. Besides, apart from the applications of high frequency electronic devices, the magnetic nanoparticles of high magnetic moment were found to be beneficial for in vitro and in vivo targeted drug delivery, hyperthermia and imaging applications. Similarly, cobalt ferrite nanoparticles and metal bonded cobalt ferrite composites have recently been shown to be competing materials for automotive and non-contact torque sensor applications. Further, nanoparticle filled ferrite-polymer nanocomposites with good microwave absorbing characteristics are increasingly found to be good candidates for electromagnetic interference problems and stealth applications.

Importance of the work

The importance of the proposed work mainly lies in its design in exploring the highly useful materials by novel investigative methods. In the process, it is proposed to make good use of expertise and potential of both chemistry and physics people apart from involving a good number of research scholars and post-graduate students at various stages of the project. In view of the fact that magnetic nanoparticles offer inexpensive solutions to number of applications of current technological interest and contribute significantly to miniaturization, biomedical and stealth areas, a systematic progress of the proposed research by understanding the chemistry, properties and potential of the magnetic nanoparticles would certainly throw more light, both from technological and academic point of view, in elucidating the finer aspects in their design for future requirements.

Novelty of the work

The field of nanoscience and technology is being explored by the scientific community all over the world as the advantages offered by these materials have been demonstrated in many applications today, and we can expect they will continue to make the daily life easier and better

for most people tomorrow. The proposed materials are novel in terms of their development and they are aimed at specific applications in each of the cases. Still lot of work on high valency doped nanoferrites can explore new applications.

Aims and objectives of the proposed research

a. Design and synthesis of magnetic nanoparticles doped with cations using wet chemistry

b. Characterization of nanoparticles

c. Functionalization/suitable surface modifications

d. Consolidation of powders into desired shapes

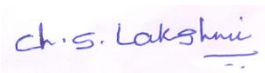
e. Structural, electrical and magnetic properties of the finished products

f. Explore the possibility to use the materials in application systems.

Work Summary

Selective compositions with expected improvements based on theoretical models will be designed and followed by processing in different forms. Comparison of properties so measured for each material and their analysis would be expected to contribute to the development of concepts for nanostructured materials and their elaboration. In order to meet the aims and objectives mentioned, the work plan of the proposal will broadly be categorized into the following six stages and then working for realizing the same in specified time frames:

Date :06/09/2021
Place : Visakhapatnam



Signature of Applicant