ACKNOWLEDGEMENT

This Thesis is submitted for the requirements for obtaining the Degree of Doctor of Philosophy of Bangalore University, Bangalore based on the studies carried out in the Department of Physics, Bangalore University, Bangalore, Department of Chemistry, MSRIT, Bangalore, Department of Physics, Indian Institute of Science (I.I.Sc.), Bangalore.

I express my deep sense of gratitude to my research Guide Dr. B. Eraiah, Department of Physics, Bangalore University, Bangalore for his valuable guidance, inspiring thoughts, encouragement and appropriate suggestions at every stage of this Thesis.

I am grateful to Dr. H. Nagabhushana, Associate professor, Tumkur University, Tumkur, for his suggestions, and encouragement during my research work.

My grateful acknowledgements are due to Panchajanya Vidya peeta welfare trust, Bangalore, for the encouragement to pursue higher studies leading to Ph.D. I express my gratitude to Sri. P.L. Nanjundaswamy, Chairman, Sri. S. Shivamallu, Managing trusty,

Sri. Dr. M. Mahadeva, treasurer, Sri. Chinnaswamy, chairman, governing council,

Sri. S. Mariswamy, Trustee, and Sri. A.R. Krishnamurthy, Trustee, P.V.P. WET, Bangalore, for their keen interest in my work and constant encouragement.

I would like to extend my deepest sense of gratitude to Prof. B.M. Nagabhushana, Dept. of chemistry, M. S. Ramaiah Institute of Technology Bangalore, and Dr. R.P.S. Chakradhar, Sr. Scientist, NAL, Bangalore who provided sample preparation, synthesis and EPR measurements.

I am very thankful to Prof. Sarath Ananthmurthy, chairman, Department of physics and former chairman’s Prof. M. C Radhakrishna, Prof. B.A. Kagali, Prof. R.V. Anavekar, Department of Physics, Bangalore University, for their help in various ways. I extend my sincere thanks to all other Faculty members, Research scholars and non-teaching staff of Physics Department, Bangalore University.

I sincere gratitude to Prof. J.L. Rao, S.V. University, Tirupathi, extended EPR studies and intellectual help, Dr. C. Shivakumara, Department. of SSCU, IISc, and Dr. K.P. Ramesh, Department. Of physics, IISc, Bangalore, for their advice and encouragement.

I would like to thank Prof. D.N. Rao, HOD, Department of chemistry, MSRIT, Dr. Chikkahanumantharayappa, Mr. Gurulinga, and sri. Jarali for their help at different stages of characterization.

Finally, I would like to thank my spouse N. Pushpalatha and my daughter Vedanshi Bodh for being very supportive and patient during stressed periods of this work. I express my sincere gratitude to my parents, brothers Dr B. Shivakumar swamy, Mr. T. B. Parameswara, sister-in-laws, nephews, mother-in-laws and relatives for their encouragement and moral support.

I am also grateful to my friends for all the help and encouragement given in the course of my study of this thesis.

I am ever grateful to those who have helped me directly and indirectly in bringing out my Thesis in the present form.

B. Umesh