I express sincere thanks from my soul to my grandfather Shri. Durai. Sundaram and uncle Dr. S. Manoharan for providing suitable environment and support to my studies and future. I dedicate this work to them.

I am extremely thankful to my research guide and supervisor, Dr. K. Rajarajan, Associate Professor of Physics, Rajeswari Vedachalam Government Arts College, Chengalpet, for his enthusiastic encouragement, valuable suggestions, inspiration, words of wisdom, personal care and distant vision towards my future.

I express my sincere thanks to the Vice Chancellor, Registrar and Director (Research and Development Centre) of Bharathiar University, Coimbatore for their valuable support to carry out the research work.

I sincerely acknowledge the Doctoral Committee members Dr. P. Kulandaivel Professor and Head, Department of Physics Bharathiar, University, Coimbatore and Dr. K. Srinivasan, Associate Professor, Department of Physics, Research and development centre, Bharathiar University, Coimbatore for their right direction to carry out this work.

I also extremely thankful to Dr. P. Sagayaraj, Associate professor, Department of Physics, Loyola College, Chennai, Dr. R. Jayavel, Professor, Crystal growth centre, Anna University, Chennai, Dr. M. Nizam Mohiden, Assistant Professor in Physics, The New College, Chennai Dr. M. Palanisamy, Professor, Department of chemistry, Anna University, Chennai, Dr. K. Jagannathan, Assistant Proressor, Department of Physics, SRM University, Chennai, Dr. S. Murugavel, Assistant professor, Periyar Government institute of Technology,
Vellore for useful discussions during material synthesis and spectral and structural analysis.

I am thankful to Dr. Babu Varghese, SAIF, IITM, Chennai, Dr. R. Jagan SAIF, IITM, Chennai Dr. Uma Devi SAIF, IITM, Chennai and Dr. P. K. Das, Department of Inorganic and Physical Chemistry, IISc, Bangalore, for giving me the opportunity to do the NLO studies. I personally acknowledge Dr. S. Kalainathan, School of Advanced Sciences, VIT University, Vellore, for allowing me to avail the laboratory facilities to carry out the spectral studies.

I am grateful to all my co researchers Mr. K. Sendilkumar, Mrs. A. Subashini and Mr. A. Baskaran, Research fellow, Rajeswari Vedachalam Government College, Chengalpet. I am also grateful to my friends from IIT Madras, IISC Bangalore, Anna University, Madras University Guindy campus, Chennai, CIF Pondicherry University, CECRI Karaikudi and VIT University.

Very special and genuine thanks to my wife Mrs. D.V. Sridevi, Assistant Professor in Chemistry, Ganathipathi Tulsi Jain College of Engineering, Vellore, for her earnest encouragement and keen interest she evinced in my higher education. She has been a tower of strength and a source of inspiration in all my academic activity.

I wish to express my deep and heartfelt thanks to my sister Mrs. P. Janyathi Manogaran and affectionate brother Mr. V.Suresh and Mr. S. Kumaravel for their inexhaustible help, moral support, loving care and their motivation throughout the course of my research work.

I am conscious of my indebtedness to each and every individual who helped me in many ways in the preparation of this thesis.