ACKNOWLEDGEMENTS

I am ever grateful to express my special heartfelt thanks and esteemed gratitude to my research supervisor, **Dr. K. Sethuraman**, Assistant Professor, School of Physics, Madurai Kamaraj University for his continuous guidance and moral support throughout my research career.

I express my sincere thanks to **Prof. K. Ramamurthi** (Former Senior Professor, School of Physics, Bharathidasan University), Emeritus Professor, Dept. of Physics & Nanotechnology, SRM University, Chennai for his valuable guidance, help and kindness for my research work.

I am extremely thankful for the help and encouragement rendered by **Dr. R. Rameshbabu**, Assistant Professor, School of Physics, Bharathidasan university, Trichy for his advice and personal involvement during the course of this investigation.

I express my sincere thanks to Chairperson, **Prof. N. Soundararajan**, Professor & Head, Dept. of Computational Physics, School of Physics, MKU for their well-wishes, utmost caring, valuable suggestions about my research activities.

I am grateful to **Prof. Y. Hayakawa**, Shizuoka University, Japan for his encouragement and advice during my research work and improve my knowledge from the beginning.

I wish to thank all the faculty members of school of physics **Dr. A. Basherrudin Mahmud Ahmed, Dr. S. Rajashabala, Dr. K. Anitha** and **Dr. Sujin P. Jose** for their support, help and advice. I also thank the non-teaching members of School of Physics, MKU.

My grateful thanks to **Dr. G. Gnanakumar**, Assistant Professor, School of Chemistry, MKU for his support and discussions during the course.
I am greatly indebted to my parents S. Kaliappan and K. Kalavathi, my brother Thirupathi, sisters K. Manonmani, K. Sundari, K. Lakshmi, my wife Mrs. T. Gomatheeshwari Sankarasubramanian and my uncles Mr. M. Srinivasan, Mr. R. Thirunavukkarasu for having true faith on me, which only made me to stay here for long period. Their prayers, sacrifice, understanding, loving care, constant encouragement and motivated me at each and every moment to achieve. All of them gave more freedom to me in both academic and non-academic side, which helped me to achieve everything as per my vision.

My endless and special thanks goes to my juniors, P. Soundarajaj, T. Logu, M.S. Kajamuhideen, M. Sampath, B.K. Balachandar and A. Suresh for their precious discussions, valuable suggestions and financial help for my Ph. D. course. I am forever grateful for the support, constant encouragement in throughout my research carrier. I express my heartfelt thanks to them for the love, affection and utmost care about my health and academic activities.

I express my sincere thanks to Dr. M. Navaneethan and Dr. J. Archna, Shizuoka University, Japan for their valuable guidance and suggestions during the my research period. He taught me many characterization analyses related to research problems and helped in many ways including how to handle a research problem and he still encouraging me.

I express my sincere thanks to D. Silambarasan, Dr. A. Nimrodh Ananth and Dr. V. Vasanth for his help throughout my Ph. D. course. Unselfishly he helped me very much and taught me some basic experiments. Whenever I faced troubles in the research problem, his ideas and approaches made me to try again and again with different views. I thank him for his good support.

I express my special thanks to my friends, Dr. K. Moovendaran and P. Jayapal for their continuous support, motivation and unselfish help in various ways since my research days.

I am extremely grateful to my daughter S. Saisri for her lovely smiling, understanding and support to pursue research work. I thank all those who have helped me directly or indirectly for the successful completion of my thesis. Anyone missed in this acknowledgement are also thanked.

K. SANKARASUBRAMANIAN
Dedicated to my beloved Family