Acknowledgements

Let me humbly express my heartfelt thanks to Dr. S. Jayalekshmi (Reader, Department of Physics, CUSAT), my guide for her invaluable guidance, wise advices, constant encouragement and above all, the maternal affection and warmth she has extended to me always. She has spared much of her precious time and energy for the successful completion of my research work. I feel blessed to get her as my guide. I would also like to thank the HOD, Physics for rendering me all the necessary facilities. My sincere thanks to Dr. M. K. Jayaraj, Prof K. P. Vijaya Kumar, Prof C. Sudha Kartha, Dr. B. Pradeep, Prof M. R. Anantharaman and Sri P. K. Sarangadharan, faculty members of the Department of Physics, CUSAT for allowing me to use their laboratory facilities. Special thanks to Prof. K. P. R. Kartha, NIPER, Chandigarh for providing me the necessary help. My sincere thanks to Dr. Ashalatha, Reader, K.K.T.M College, Kottungaloor for encouraging me to work in the field of conducting polymers. Prof Rani Joseph, Department of Polymer Science and Rubber Technology, Dr. K. SreeKumar and Dr. Joseph Makkolil, Department of Chemistry have cleared my doubts and given suggestions, which provided a smooth pathway for research. My special thanks to them also.

Ravi sir (Dr. K. Raveendranath) (late), my teacher deserves a special mention. He has been a great inspiration for me always and has helped me in all the ways he could. He is indeed a friend, philosopher and guide. Mr. Rajive and Mr. Aravind have helped me a lot, especially during the early stages of my work. Timely help rendered by Mr. Febin and Ms. Chandni is invaluable. Let me extend my sincere gratitude to them. Mr. Arun, Mrs. Jeeju, Mr. Anil, Mr. Francis, Mr. Sreekanth, Mr. Joseph John
sir and Mrs. Sreevalsa have also provided the necessary assistance and moral support. Thanks to all of them. Timely help rendered by Dr. Joseph Mathai and Dr. Shaji is gratefully acknowledged.

My sincere gratitude to Dr. R.S. Jayasree, Department of Radiology, S.C.T.I.M.S.T, Thiruvananthapuram for spending her precious time in recording the photoluminescence spectra of the samples. Help rendered by Dr. Jyotsna Ravi and Dr. Thomas Lee with the photo-acoustics studies of the polyaniline samples is invaluable. I would also like to thank Dr. Ganesh and Ms. Swati Pandya, CSR Indore for their help with the thermo power measurements on my samples. Sincere thanks to Dr. Vasanth Sathe of the same institution for recording the Raman spectra of the samples. My heart felt thanks to Dr. D. Sakti Kumar, Bio Nano Electronics Research Center, Toyo University, Japan for the TEM images of the samples. I am also indebted to Ms. Honey and Ms. Usha of the polymer department who have helped me much with their technical advices. Mr. Baiju John, CIFT, Cochin has helped me with the mechanical strength measurements on PANI and PANI-PMMA samples. My special thanks to him also. I remember with gratitude the fruitful discussions with Dr. R.S. Anand, I.I.T., Kanpur about organic optoelectronic devices.

Mr. Sajeel, Mr. Manoj and Mrs. Resmi have helped me a lot during the early stages of my research work. Special thanks to all other research scholars in CUSAT who have helped me in one way or the other during my course of work. My sincere gratitude to all the office, laboratory, library and STIC staff for doing the needful assistance in time. I am very much indebted to K.S.C.S.T.E for providing the research fellowship.

Lots of love to my parents, sister, family members and my fiancée for giving me full support and assistance. The wonderful moments that I have
enjoyed with the family members of my guide, which include Dr.K.P.R.Kartha, Anku, Mr.Jayakrishnan, Smt.RemaDevi, Smt.Jayasri and Mr.Jayaraj still linger in my mind. I would like to thank them all for their love and friendship. I thank God almighty for helping me to complete my research successfully in time.

Amitesh M