In the name of Allah, the Most Gracious and the Most Merciful,

I remember with gratitude…

My supervising guide, Dr. P. Mohanan, Professor, Department of Electronics, Cochin University of Science and Technology, for his valuable guidance, advices and timely care extended to me throughout the research period.

Prof. K, Vasudevan, Department of Electronics, Cochin University of Science and Technology for his constant encouragement and concern. His dedication for research is always a leading source of energy.

Dr. C.K, Aanandan, Professor and Head Department of Electronics, Cochin University of Science and Technology for the advice, discussions and care rented during these years.

Prof. P.R.S. Pillai, Prof. Tessamma Thomas, Dr. James Kurian and Dr. M. H. Supria, Department of Electronics, Cochin University of Science and Technology for their support.

My sincere thanks to Dr. K, G. Nair, former Head and founder of Electromagnetics and Antennas Research (CREMA) Laboratory in Department of Electronics, Cochin University of Science and Technology, for establishing full-fledged laboratory that enabled me to do my research work in a well reputed laboratory in the country.

My seniors at CREMA, especially Dr. Sujith Raman, Dr. Suma M N, Dr. Deepu V, Dr. Sariv V P, Dr. Nishamol M S, Dr. Laila D, Dr. Shameena V A and Dr. Rohit K Raj for their guidance, support and care. Their views and way of analysis had a strong impact on me.

Lindo A O, Sreekala P S, Neeraj Puskaran, Libimol, Anju and Dibin Marry, for their support.


Special thanks to Ajeesh R Sir, Dr. H. Sreemoolanadhan Sir, Dr. Mridula Miss, Dr. Binu Paul Miss and Anju Miss for their whole hearted support and guidance.

My MSc. Electronics Classmates, especially Basheer VA, Simi Thresha, Ansar Beeran, Dhanusha, Muhsina, Shabeer, Ambily, Thabsheer Abdulla, Pavan Kumar and Yogendra Kumar for their encouragement.

I thank the University Grants Commission (UGC), Govt. of India for supporting my research work financially under the JRF Research Fellowship Scheme.

My friends at home town (Arookutty), especially Abdul Gafoor, Saheer, Anas, Siraj and Anees, for their encouragement.

I wish to place on record my gratitude to my teachers, mentors and my friends at all stages of my education.

My father (Mohammed Kunju V M), mother (Naseema), sister (Nijna), grandmother and other family members (Sanooj, Abis, Abdul Rahman, Hashim, Faisal, Gafoor, …) for being there always as a constant source of energy. I am lucky to enjoy their deep love, care and patience to move on especially in hard times.

Kochi-22                      Nijas C M