Acknowledgements

I would like to score my deepest sense of gratitude to my research guide, Dr. K. T. Mathew, Professor, Dept. of Electronics, Cochin University of Science and Technology, Kerala, India for his excellent guidance, constant and incessant encouragement. It has been really a great pleasure and privilege to work under him.

I am grateful to Dr. K. G. Balakrishnan, Professor & Head, Dept. of Electronics, Cochin University of Science and Technology, Kerala, India for his keen interest and persistent support during the progress of the research work.

I am much indebted to the wholehearted support extended by the formerly heads of the Department of Electronics, Prof. P. R. S. Pillai and Prof. C. S. Sridhar (presently Principal, SBMS Institute of Technology, Bangalore).

Let me express my heartfelt thanks to the founder head of the department, Prof. K. G. Nair (presently Director, STIC, CUSAT) for his timely suggestions and encouragement during the tenure of my research work.

It is with great pleasure, I record my sincere thanks to Dr. P. Mohanan, Professor, Department of Electronics, Cochin University of Science and Technology for the constant encouragement and the fruitful discussions with him, throughout the period of research.

Sincere thanks are due to Dr. C. K. Aanandan, Reader, Department of Electronics for his valuable suggestions and encouragement.

I would like to express my sincere thanks to Prof. K. Vasudevan, Dr. Deepu Rajan, Mr. James Kurian and Mr. D. Rajaveerapa, faculty of this department for the constant encouragement rendered to me.

I take this opportunity to place on record the help received from Dr. Philip Augustine, Director, Digestive Disease Centre, PVS hospital, Cochin and other staff during a collaborative work with them.

During the period of research, I was financially supported by Cochin University of Science and Technology by providing Junior Research Fellowship. Also, Technical University of Delft, The Netherlands supported the research through their Fellowship for a period of one year. Finally I received financial support from Council of Scientific and Industrial Research (CSIR) through Senior Research Fellowship. I sincerely acknowledge all these help.

I also would like to acknowledge the financial support from International Center for Theoretical Physics (ICTP), Italy by sanctioning the Young Collaborator Programme, Department of Science and Technology (DST), Govt. of India for providing the Young Scientist Award to visit Germany to attend the Nobel Laureates meeting and DFG, Germany for their support during my visit to Germany for a week.

May I express my deep felt indebtedness to Dr. U. Raveendranath, Scientist, NAL, Bangalore, Dr. Joe Jacob, Research Associate, Dept. of Electronics, CUSAT and Dr. Jacob George, Corning Inc., USA for their memorable service throughout my period of research.
I thankfully bear in mind the sincere cooperation and the enthusiastic words by Dr. Sebastian Mathew, SI. Grade Lecturer, K.E College, Mannanam, Dr. V. P. Joseph, Sr. Lecturer, Christ College, Irinjalakuda, Mr. V. M. Ananda Kumar, Lecturer, VTMNSS College, Dhanuvachapuram, Prof. V. P. Devassia, Model Engg. College, Thirkakara, Dr. Thomaskutty Mathew, Lecturer, MG University Regional Center, Edapally, Mr. Cyriac M. Odackal, Lecturer, Dept. of Electronics, Mr. Girish. G. R & D Engineer, IBM, Bangalore and Mr. Girish Kumar. C, Lecturer, College of Appl. Science, Peerumedu.

The encouragement and cooperation received from Dr. K. K. Narayanan, Lecturer, SD College Alapuzha, Dr. Ratheesh, Scientist, CMET, Thrissur, Dr. Jagannath Bhatt, Scientist, STIC, and Mr. Paul. V. John, Scientist, STIC are also thankfully acknowledged.

I would like to give a special word of thanks to my colleagues in the department, Mr. Mani. T. K., Ms. Mini. M. G., Mr. G. S Binoy, Ms. Sona. O. Kundukulam, Ms. Manju Paulson, Ms. Mridula. M., Ms. Binu Paul, Mr. Anil Lonappan, Mr. Shabeer Ali, Ms. Sree Devi, Dr. C. P. Anil Kumar, Mr. Sajith N. Pai, Mr. Prakash Kumar, Mr. Binu George, Ms. Latha Kumary and Dr. Jaimon Yohannan.

I take this opportunity to thank Dr. Beena. C, Librarian, Dept. of Physics, Mr. Suresh, Librarian, Dept. of Electronics, Ms. Jayanthi, STIC and Mr. Ibrahimkutty, Dept. of Electronics for their help and co-operation.

I would like to thank the office and technical staff of Dept. of Electronics, friends at the Dept. of Physics, CUSAT, RRL, Trivandrum and Siberia & Savanna Hostels for their interest in promoting my research.

BIJU KUMAR S.