Acknowledgement

I am pleased to express my heartfelt gratitude to Dr. V. Parthasarathi, Professor, Department of Physics, Bharathidasan University, Tiruchirappalli for his invaluable guidance, numerous illuminating discussions and the keen interest he showed during the course of the present work.

I am thankful to Dr. M. Lakshmanan, Professor and Head, Department of Physics, Bharathidasan University, Tiruchirappalli for providing the facilities available in the Department of Physics to carry out the research work.

I would like to express my sincere thanks to Dr. K. Ramamurthi, Professor, Department of Physics, Bharathidasan University (a member of the doctoral committee) for his constant encouragement and his valuable suggestions throughout the course of the Ph.D. work.

I am immensely grateful to Dr. Anthony Linden, Institute of Organic Chemistry, University of Zürich, Zürich, Switzerland, for permitting me to use the diffractometer facilities and teaching me the rudiments of data collection and for the constant support. My sincere thanks are due to Dr. Kurt J. Schenk, Institute of Crystallography, University of Lausanne, Switzerland for collecting the X-ray data of two of my compounds.

I express my sincere thanks to Professor P. Kaliannan, Professor M. Daniel and Professor S. Dhanuskodi, Dr. S. Arumugam, Reader and Mr. K. Thamilmaran, Lecturer (Sl. Grade), Department of Physics, Bharathidasan University, Tiruchirappalli, for their encouragement and support extended to me throughout the period of my research work. I am grateful to Professor R. Jeyaraman and Professor K. Panchanatheswaran, Department of Chemistry, Bharathidasan University, for their valuable suggestions. I thank Dr. S. Krishnaswamy, Professor and Dr. Z. A. Rafi, Reader, School of Biotechnology, Madurai Kamaraj University, Madurai, for providing the facilities of the Bioinformatics Centre.
My heartfelt thanks are due to (late) Professor D. P. Jindal, University Institute of Pharmaceutical Sciences, Panjab University, Chandigarh and his colleagues Dr. Ranju Gupta, Senior Lecturer, Dr. Poonam Piplani, Senior Lecturer, Dr. Sonal Dubey, Ms. Sheetal Guleria, Ms. Ruchi Malik and Ms. Pooja Gupta, for providing most of the compounds reported in the thesis.

I also extend my sincere thanks to Professor Bharati Badami, Department of Chemistry, Karnatak University, Dharwad and her research scholars Mr. Vinay Sunagar, Mr. R. Sanyal, Ms. Jyoti, R. Kavali and Mr. R. K. Hunnur, for providing triazole compounds.

I also thank my senior researchers Dr. A. Thiruvalluvar, Reader, Department of Physics, Raja Serafoji College, Thanjavur, Mrs. Dr. L. Vijayalakshmi, Reader, Department of Physics, Anna Arts and Science College, Musiri, Mrs. G. Vasuki, Lecturer (Sr. Grade), Department of Physics, K.N. Government College for Women, Thanjavur and my fellow researchers Mrs. R. Hema, Lecturer (Sr. Grade), Department of Physics, Seethalakshmi Ramasamy College, Tiruchirappalli and Mr. T. V. Sundar, Lecturer, Department of Physics, National College, Tiruchirappalli, for their timely help during my thesis writing.

I thank the Council of Scientific and Industrial Research (CSIR), Government of India, New Delhi and COSTED, Chennai, Tamil Nadu, for the partial travel grant for attending the XIX Congress and General Assembly of the International Union of Crystallography held at Geneva, Switzerland during August 6-15, 2002.

My sincere thanks are due to Dr. E. Elangovan, Post Doctoral Fellow, Materials Research Centre, Indian Institute of Science, Bangalore, Dr. Murali, Lecturer, Department of Chemistry, National College, Tiruchirappalli, Mrs. K. Udayalakshmi and Mr. V. Krishnakumar, Research Scholars, Department of Physics, Bharathidasan University, for their help.

I wish to express my sincere thanks to Mr. R. Kalasekar, Instrumentation and Refrigeration of India, Chennai and Mr. Narendran, Chennai for their timely help during my visit to Switzerland.

I wish to express my sincere thanks to my friends Rajangam, Sivakumar, Jayaraj, Rajapandi, Chermakani, Karupasamy, Jayaraman, Rajkumar, Loganathan, Thambidurai, Ajmal Khan, Humayun Kabir, Selvam, Ansari, Salamullah,
Vijayakumar, Elango and Durai Kannan, for their constant support and encouragement. I consider it as my good fortune to have such great friends. I owe a lot to them. My heartfelt gratitude to Dr. B. Stephen Inbaraj, Research Associate (CSIR), Department of Chemistry and Mr. R. Jagadeesh, Research Scholar, Department of Physics, Regional Engineering College, Tiruchirappalli.

I extend my sincere thanks to my hostel mates Mr. C. Johnson, Mr. P. Stalin, Mr. A. Prasad, Mr. Y. Barna and Mr. M. Prakash. I express my sincere thanks to Dr. N. Stanley, Post Doctoral Fellow, University of Ohio, USA and Mr. K. Sarkunam, Mr. V. Rajendran and Ms. S. Jose Kavitha, Department of Chemistry and Mr. M. Saravanan, Department of Economics, Bharathidasan University, for their timely help during my thesis writing.

I acknowledge the deep affection shown by Research colleagues Ms. Dr. P. A. Angeli Mary, Ms. K. Vasantha, Mrs. T. Seethalakshmi, Mr. T. Kanna, Mr. M. Mohammed Naseer Ali, Mr. S. Manivannan, Mr. C. Senthil Kumar, Mr. D. V. Senthil Kumar, Mr. P. Palaniyandi, Mr. V. K. Chandrasekar, Mr. S. Rajendran, Mr. K. Mydeen, Mr. N. Manivannan and Mr. J. Ramajothi. My special thanks are due to Mr. D. Senthil Kumar, Mr. A. Savaridasan and Mr. A. Karthik for their help.

I am thankful to the staff of the Computer Center and non-teaching staff of Department of Physics, Bharathidasan University, Tiruchirappalli for their cooperation. Thanks are also due to Mr. P. Padmanaban, Programmer, Informatics Centre, Bharathidasan University, Tiruchirappalli for his help.

My sincere thanks are due to my beloved parents and sister, for their patients, encouragement and moral support to complete this work.

I am very kind enough to M/s Golden Net Computers, Chinthamani Bazaar, Trichy-2, for his invaluable efforts in building the thesis into this fastidious form. I record my acknowledgement to all who are directly and indirectly involved in this thesis.

S. Thamotharan