I feel privileged in expressing my most sincere gratitude to Dr. H.C. Srivastava, Senior Deputy Director, and Head Chemistry Division, ATIRA, under whose inspiring and meticulous guidance this work was carried out and I am sure they will continue to guide me in my future career also.

I am grateful to Dr. T. Radhakrishnan, Director, ATIRA for allowing me to carry out this work in ATIRA.

I am thankful to Dr. M.M. Gharia for his constant encouragement, advice and guidance. I sincerely thank Dr. Raj Kumar and Dr. S.P. Phadnis for their useful discussions and invaluable help.

I am oweful to Dr. R.S. Chauhan for his encouragement throughout the course of my work here and for his help in carrying out microscopy work.

My heartfelt thanks are due to Messrs H.H. Bhatt, P.J. Bose, and C.S. Rao, Mrs. Rekha Shah and Dr. H.B. Pandya for their help in carrying out work on sophisticated instruments.

No words can express the spontaneous feelings I have in thanking my colleagues Messrs A.B. Shah, T. Palaniappan, R.B. Bhavsar and V.S. Badhi for their co-operation and help.

In fact, I am indebted to all the staff members of ATIRA.
especially to those of Chemistry Division for their co-operation in carrying out the work. I remain obliged to them for ever.

Messrs F.M. Thakkar, D.L. Trivedi and R.C. Vora deserve a special mention for their timely and invaluable help in preparing this thesis.

Award of research fellowship from the Council of Scientific and Industrial Research (CSIR), New Delhi, is sincerely acknowledged.

Finally, I record my special gratitude to my elders for their constant encouragement and support.