I am so thankful to everyone who believed in me and encouraged me throughout my journey to where I am today.

I am profoundly grateful to Dr. K. Vyas, who was my Research Supervisor, for his constant guidance and encouragement throughout the work.

I am also thankful to my co-supervisor Prof. P. K. Dubey, Chairman BOS, Department of Chemistry, JNTU, for his encouragement, suggestions and support to complete the thesis.

I sincerely thank Dr. Moses Babu for his support and for the training I have received during my association.

I am indebted to Dr. K. Anji Reddy, Chairman of DRL, Dr. A. Venkateswaralu (Former President, DRF, DRL) and Dr. Rajagopalan (Former President, Discovery Research, DRL) for giving me an opportunity to upgrade my academic qualification.

I extend my sincere thanks to Mr. B. Venkata Subbaiah (IPDO) and Mr. A. K. Srinivasan (CPS) for their support.

My special thanks are due to all my present and Ex-colleagues in analytical, Mrs. R. Srivijaya, Mrs. A. Siva Lakshmi Devi, Mr. D. Srinivasa Rao, Mr. Y. Kaviraj, Mr. Sampath Alwar, Mr. Dipayan Paul, Mr. N. Manoj Kumar, Mr. B. R. Sreekanth Sarma, Mr. Nagaiah and Mr. T. Lakshmi Kumar, for their affection and help rendered.
I extend my sincere thanks to all my teachers, especially Mr. G. Subba Raju, Mr. K. Samba Siva Rao and Mr. Madhusudana Rao, for their inspiring teaching and encouragement.

I am thankful to Dr. G. V. S. Sesha Kumar, Dr. A. Chandra Sekhar, Mr. N. M. Sekhar, Dr. M. Takhi and Mr. Ch. Ramesh, for their encouragement.

It is my great pleasure to acknowledge the support extended by IPM, HR and Maintenance Departments.

My special thanks are due to my childhood friends, during my school days at Govt. Junior College, Pittalavani Palem, for their encouragement.

This thesis would not have seen the light of the day but for the blessing of my parents. I extend my special thanks to my brothers, Mr. R. V. Ravi and Mr. R. V. Jyoteendranath for their support. I wish to thank my sister, brother-in-law and cousins. Without their love and support I would not have been able to finish this degree.

Although, it was a nice experience throughout my Ph. D tenure, I could not devote sufficient time to my family. My wife Jyothi was always patient extending moral support that can be never be forgotten. And our children Sai Neelalohith and Srikrishna Aditya are reasons for the energy and smile.