Acknowledgements

All praises be to GOD the cherisher and sustainer of the universe, who bestowed upon me enough guidance benevolence to carry out this work.

I wish to express my deepest sense of gratitude, indebtedness and sincere regards to my thesis supervisor Dr. Alimuddin (Department of Applied Physics, Z.H. College of Engg & Tech, A.M.U., Aligarh) for his able guidance, keen interest, invaluable suggestions, continuous support and encouragement during the course of this work. I am also deeply indebted to him for careful reading the manuscripts, enlightening discussions, carried comments and making numerous improvements in the present work. His wisdom and enormous patience helped me in all respects for the completion of this work.

I am grateful to Prof. K. M. Lal, Chairman, Prof. S. Alim Hussain Naqvi and Prof. Javed Husain, Department of Applied Physics, A.M.U., Aligarh, for their valuable suggestion and co-operation and also thankful to every member of the teaching and non-teaching staff of the Department, for their kind co-operation.

I am thankful to Prof. Ajay Gupta Centre-Director, Indor Centre, for providing the Mossbauer Facilities at the Centre, fruitful discussion and suggestions, Dr. V.R. Reddy (Scientist), Mr. Dileep Kumar Gupta, Ms. Pooja Sharma, Dr. Amit Suraiya and Mr. Sujoy Chakravarty, Inter University Energy Facilities, University Campus, Indore (M.P.) (India) for their discussion and pleasant co-operation.

I am also thankful to Prof. Zafar Ahmad Siddiqui, Prof. Mohd. Shakir Ms. Shama Parveen, Ms. Raazia Arif and Dr. Shah Mohd. Shadab, Department of Chemistry, A.M.U., Aligarh, for co-operation in preparing of complexes and valuable discussion.

Thanks are also due to the Chairman, Department of Physics, A.M.U., Aligarh, for providing me the seminar facilities.

I wish to express my sincere thanks to all editors, publishers and their honourable referees, who have published our research papers.
I also express my thanks to Dr. Rajesh Kumar, Dr. Ajay Kumar, Mr. Shalendra Kumar, Mr. Ajay Kumar, Mr. Syed. Asad Ali and Mr. Parvez Ahmad Alvi, for their nice company and Mr. Mohd. Hasan for his sincere attention throughout typing of this thesis.

It is my pleasure to acknowledge Er. Mohd. Mohsin for his assistance and guidance in computer work.

Last but not the least, I would like to express my whole hearted gratitude to my parents, all my family members, relatives and friends for their blessing inspiration and other supports.

Finally my special thanks are due to my wife, son and daughter for encouragement and tremendous patience during this work.

Sikander Ali