ACKNOWLEDGMENTS

At the outset, I express my profound gratitude to my research guide, Dr B D Kulkarni, Scientist ‘H’, & Director’s Grade, NCL, Pune for his invaluable guidance, numerous discussion, constructive suggestions, and continuous encouragement throughout the course of this investigation and for proficient guidance in presenting the work in the thesis.

I am also grateful to my Co-guide Dr S N Asthana, Associate Director, HEMRL, Pune for his valuable guidance and encouragement throughout the course of research work.

I am also indebted to Dr R K Pandey, Joint Director, HEMRL, Pune for his stimulating discussions, continuous encouragement, guidance and constant help he rendered throughout the course of investigation.

I am also thankful to Sh S C Bhattacharyya, Joint Director, CPPF, Nasik; Sh B.Bhattacharya, Associate Director, HEMRL and GM, CPPF, Nasik; Sh V L Naranasimhan, former GM, CPPF, Nasik for their constant encouragement and help during the course of my work.

I am greatly indebted to Dr A Subhananda Rao, DS and Director, HEMRL, Pune for his encouragement, motivation and for his kind permission to carry out this work and publish in the form of thesis.

I am also thankful to Dr S Sivram, Director, NCL, Pune for permitting me to carry the research work at CEPD division, NCL, Pune.

I wish to express my thanks to Dr Amol Kulkarni, Scientist and Dr Ramdas B Khomane, Scientist, CEPD, NCL; Dr Rajesh G Gonade, scientist and
Dr Mohan Bhabhade, Scientist and former Head, Centre for Materials Characterization Lab, NCL for their timely help in modelling, conducting the experiments and analysis of data for my research work successfully.

I also wish to express my thanks to Shri V V Bhujale, GM and Dr. Ganesh Kumar, Manager (R&T), Ciba India Private Ltd, Mumbai; Shri D Malviya, Manager, HEL India PVT LTD, Mumbai for their help in thermo-chemical studies.

I am also thankful to Sh S K Sahu, Ms Gauri J Kulkarni, Ms N L Shubhangi and Sh S Azharuddin for carrying out experiments on kinetics and modelling.

My Special thanks and appreciation to Sh A K Nandi, Sh U T Velan, Sh V B Sutar, Sh P Paramsivam, Sh V V Jadhav and Mrs E Abraham of Chemical Engineering and Pilot Plant division of HEMRL for helping in making document.

I am also gratefully acknowledged the help rendered by the other officers and staff of TS, ADMIN, EMR, QARD division of HEMRL and also CEPD & ADMIN division of NCL, Pune in helping in administrative and other documentation work.

It also gives me great pleasure to thank my parents, Smt Kalyani Mandal & Shri Amarendra Nath Mandal for their encouragement and blessing on me.

I also take this opportunity to extend my heartfelt thanks to my beloved wife Smt Kakali Mandal and most affectionate daughter Ankita and son Arnab. This work would never have received the present shape had it not been backed by their constant encouragement and patience.

ALOK KUMAR MANDAL