ACKNOWLEDGEMENT

It is my great honour and pleasure to express my heartiest gratitude and respect to my Research Guide Dr. (Ms) Swapnali Hazarika, Senior Scientist & Group Leader, Chemical Engineering Group, Engineering Science & Technology Division, CSIR-North East Institute of Science and Technology, Jorhat and Dr. Pradip Kr. Bhattacharyya, Associate Professor, Arya Vidyapeeth College, Guwahati for their invaluable guidance, constant support and advice throughout the research period. It has been my privilege to work under invaluable guidance and constant encouragement of them and has always been a source of inspiration to me to achieve perfection in work.

I would like to express my deep sense of gratitude to Dr N N Dutta, Retired Chief Scientist, Chemical Engineering Division, CSIR-North East Institute of Science and Technology for his keen interest on the subject.

I am grateful to Prof. B. K. Das, HOD, Department of chemistry, Gauhati University, for his advice on various occasions. I would like to acknowledge my sincere gratitude to my Doctoral Committee members, Prof. D. K. Das and Prof. P. J. Das for their insightful advices and valuable suggestions.

I am equally grateful to Mr Samiran Borthakur and Dr. M. M. Bora, Principal Technical Officer of Chemical Engineering Group, Engineering Science & Technology Division, CSIR-North East Institute of Science and Technology, Jorhat for their valuable and timely advice and assistance on various occasions.

I convey my heartiest thanks and gratitude to my Lab Mates: Indu, Hirok, Suresh, Pancahli, Naba, Abhijit, Dr. Nizamuddin Ahmed, Sourab, Bhabesh Da, Bapan Da,
Bishwajyoti, Jugal, Siddhartha, Himakshi for their numerous support, fruitful discussions we had together. Without their help, my achievements would not be possible. I am also thankful to my colleagues Aradhana Buragohain, Aparba Buragoahin, Dipankar Dutta, Satya Ranjan Neog, Rekha Dutta, and all others for their advices and support.

I also acknowledge my gratitude to all the members of Chemical Engineering Group, North-East Institute of Science and Technology, Jorhat for their help and cooperation during the investigation.

I am very much thankful to all my family members for their invaluable help for emotional, intellectual and mental support during my worst days. Without their love and sacrifice it would have been impossible for me to complete the work. Dedication of this thesis to them is just a gift of everlasting love and respect from my side.

Lastly, I extend my thanks to all those whose names have not been mentioned but helped me in various ways in my endeavour.