

Acknowledgement

This PhD thesis is the fruit of a few years of ardent learning and research experience. Words cannot express how grateful I am to all those who played a significant role during my PhD years and without whom this thesis would not have been possible.

At first, I would like to thank to almighty for giving me strength to complete this step.

I would like to express my sincere thanks to my respected supervisor, Prof. S.K. Dolui for his inspiring guidance, endless patience, and work of freedom and giving me the opportunity to work in his laboratory. It would have not been possible for me to bring out this thesis without his help, fatherly care, and constant encouragement throughout the research work. Words are not enough to thank him for all the concern he has shown and all the support he has rendered to ensure my personal well-being.

I am grateful to Prof. N. Karak and Prof. K.K. Baruah Sir for their suggestions and discussions. I am grateful to all the faculty members of Department of Chemical Sciences for their help and suggestions.

I would like to acknowledge the sophisticated instrument facilities received from Department of Chemical Sciences and other Departments of Tezpur University.

I am particularly thankful to technical staff, for arranging instrumental and laboratory facilities throughout the study. Special thanks also go to office staff, Chemical Sciences Department. They are always there for us.

I am very much grateful to the authors of books, monographs, handbooks, reports, patents, research papers, etc. which helped me in writing this thesis.

I am truly thankful to my lab mates and friends Binod Da, Surajit Da, Lakshya Da, Amar Da, Isha Da, Monalisha Ba, Shyamalima, Momina, Dhaneswar, Bhaskar, Bikash, and Kiran for their aspiring guidance, invaluable constructive criticism, and friendly advice during my work. It has been a great adventure. I will remember forever for their friendship and help.

I am also thankful to all my friends and seniors especially Parash, Dipankar, Biju, Prithviraj, Saumik, Iftikar, Zoon, Rumajyoti, Ujjal Da, Indu Ba, Gyan Da, and Monoj Da for their support and

help. I would also like to express my love and gratitude to Mani, Zakir, Jayanta, and Debananda. Thank you very much for being my wonderful friend.

I am grateful to Mrs. Sutapa Dolui for her motherly care, kindness, and encouragement and Swapnil for his brotherly affection and support.

I am thankful to library staff and administrative staff of TU for cooperation and University Grant Commission for financial support in the form Junior Research Fellowship (sanctioned vide letter No. F.17-3/2003(SA-I) dated 3 March 2014).

I feel deepest sense of gratitude to my parents for their blessing, love, and affection. I would like to express my respect and gratitude to my Bul Ba, Ju Ba, Lu Ba, Papu Da, Bina, Dhan, Seng, Parmi, Munu, and my brothers-in-law for their constant encouragement, inspiration, and support throughout my studies to fulfill my dream.

I owe heartfelt gratitude to my Mahi and Bhekuldai for their blessings, support, and constant inspiration. I am very much thankful to Khaw for his encouragement, advice, and endless wishes. Your eternal love will be always in my heart and inspire me in every step of my life.

Finally, I thank the authorities of Tezpur University for granting me the permission to carry out this work.

Pronob Gogoi