ACKNOWLEDGEMENT

I understand that behind any successful work there is a huge list of supporters without whom the task would have been difficult to complete. It is the same in my case too. Now I am submitting my Ph.D. thesis and this work would not have been accomplished without the support, help, guidance and blessings of a large number of people.

Foremost, I would like to express my sincere gratitude to my supervisor Prof. Nandiraju V. S. Rao for giving me such an exciting and state of art project. His guidance always remains invaluable throughout my carrier. My supervisor has guided me how to cope up the difficulties with patience and how to learn. He has been a source of inspiration in my life. I appreciate his right approach and timely actions in most of the problems be it either the experiments or in my personal life. My heartiest gratitude to you, Sir for all that I have learnt from you.

There is a giant list of personalities who in some way or the other have supported me all these years of my research work. Through their valuable knowledge and experiences, I have gained great confidence in myself and it has helped me immensely. I am grateful to Head of the department, Prof. C. R. Bhattacharjee and Prof. S. B. Paul, Dr. P. C. Paul, Dr. P. Mondal, Dr. Manoj kr. Paul, Dr. Sk. Jasmuddin, Dr. D. Sengupta, Dr. H. Acharya, Dr. S. K. Ghosh, Dr. S. Choudhury, Dr. T. S. Singh for guiding me throughout.

My sincere thanks to Prof. Poonam Tandon, Lucknow Universtiy, Dr. V. Madhurima, Mizoram University, Dr. Vineet Gupta, Lucknow Universtiy, Dr. Sharmistha Ghosh, Calcutta University for giving me an opportunity to do work in their laboratory.

I acknowledge to our technical staff Mr. P. R Ramesh, Mr. S. Bhattacharjee, Mr. B. Nath, Md. J. A. Borbhuiya and Mr. R. Kurmi for their help and support,
when it needed most. I am also thankful to office staff Md. J.A. Borbhuiya, Mr. L. Mar and Mr. S. Bagdi for their cooperation.

I express my sincere thanks to my lab senior Dr. Trirup Datta Choudhury, Dr. Rahul K. Nath, Dr. Nirmalangshu Chakraborty, Dr. Rahul Deb and Dr. Dipika Debnath Sarkar.

My sincere thanks to my friends Srimanta Halder, Ramakrishna Laha, Saptarshi Dhibar, Kabirul Islam Hasimur Rahaman, Lutful Haque Khan and Sanowar Ali they did many works for me behind the screen. My thanks to all my friends at home for being with me always.

My heartiest thanks to my lab mates Atiqur Rahman Laskar, Somen Debnath, Venkatesh Gude, Gayatri Kalita, Kalpana Upadhyaya, Srikanth Turlapati Mr. P. R Ramesh and other research scholar of our department for their support during my research. I would like to thanks to the fourth semester students of our liquid crystal group of different year for their help efficiently during my research work in the laboratory.

I have been lucky enough to get a friend like Nazma, without her help it would have been difficult to do this huge task of Ph.D work. I have gained immensely from the valuable discussions and suggestions and express my gratitude for her support and encouragement throughout the period of my research.

My deepest gratitude to Madam (Mrs. N. A. Lakshmi), for her love, affection and moral support throughout my Ph.D. program

Nothing can be accomplished without family support. My sincere thanks to my father Adv. Kabirul Islam and mother Lutfunnesha Begum for supporting my decision to do Ph.D. My heartiest thank to them for being with me always. My greatest thanks go to my younger brothers Er. Golam Samsuddin for always
inspiring me. They have helped me in every way they can. I greatly owe to my family. It is only through the care and blessings of all my family and relatives that I have been able to pursue my aim in life. I thank you all from the bottom of my heart.

I am heartily thankful to Ministry of Minority Affairs and University Grant Commission for financial help through Maulana Azad National Fellowship (MANF).

I am also thankful to Department of Chemistry as well as Assam University, Silchar for giving me the platform to do education up to this level.

Ph.D. is not the job of a single person. It is the work of all who supported you and tolerated you throughout this difficult period. I once again would like to thank all of you for being with me always.

(Golam Mohiuddin)