Acknowledgement

These six years of research feel to me like a voyage and my passage was enlightened by the guidance and supports of many a people. It is a pleasant aspect that I have now the opportunity to express my gratitude towards them. First and foremost, I offer my sincere and heartfelt gratitude to my guide, Dr. C. J. Panchal, for his invaluable guidance and support throughout this journey. I am indebted to him not only for introducing the objective of this work to me but also for his encouragements and faith in me, which enabled me to solve the problems encountered during the various stages of my work.

I must express, here, my personal and particular gratitude to Dr. M. S. Desai, Applied Physics Department, for providing me invaluable comments and suggestions for improving this thesis. I am sincerely thankful to Prof. V. N. Potbhare, Applied Physics Department, The M. S. University of Baroda, for his continuous encouragement and motivation.

I truly believe that my work would have been impossible to complete without the suggestions, helps and co-operations of my companions of the voyage, my lab-mates. I am very thankful to Mr. Jaymin R. Ray without whom the thesis would have never successfully completed. I am greatly indebted for his support throughout my experimental work and revising manuscripts. I learnt the nuts and bolts of thin-film deposition from Mr. Vipul Kheraj and Mr. Keyur Patel. Later in the voyage, Mr. Gopal Bhatt joined me. They supported me by all means, as teachers, as friends and as philosophers, and made it unforgettable by their goodwill.

I express my sincere and warmest thanks to Principal of our college Dr. H. R. Patel. Due to his sincere efforts and active interests I got "Teacher Fellowship". I extend my gratitude to my college colleagues Major Unmesh Pandya, Dr. A. M. Shah, Dr. B. G. Desai, Dr. P. S. Desai who have always encouraged me during nervousness. I would also like to express special thanks to laboratory assistant at my college Mr. Jayesh Patel for his help. I am also thankful to the management members of our college "Shri Bhartiya Vidya Mandal".

I thank the Dean of the Faculty of Technology and Engineering, and Dr. D. R. Joshi, Head of the Applied Physics Department, for providing me the infrastructural facilities. I also thank teachers of Applied Physics Department for their support during this work. I would also like to express my thanks to non-teaching staff members of the department.

I wish to express my gratitude to my family members including my mother, elder brother and in-laws. Thank you all....for being with me. Finally, I extend my heartfelt gratitude to all my family members for their unflagging patience, love and constant support. My wife and little kids of mine Harsh and Parth supported me like everything without which this work would not have been possible to complete.

I would like to acknowledge the use of AMPS-1D program that was developed by Dr. Fonsah's group at Pennsylvania State University (PSU).

Lastly, but not the least, I am thankful to the University Grants Commission (WRO, Pune), for providing me the Teacher Fellowship under "Faculty Improvement Programme" (Tenth Plan).

Nitin M. Shah