



ACKNOWLEDGEMENTS

I express my immense gratitude to my supervisor Prof. N. L. Singh for his valuable guidance, motivation and encouragement. My PhD work would not have been possible without his constant support and helpful discussions. I was fortunate enough to avail all resources of his genial inspiration and enthusiastic encouragement throughout the course of my work. I always admire the training given by him, which has always helped me to achieve my desired goal.

I would like to thank Prof. C. F. Desai, former Head, Prof. A.C. Sharma, Head, Physics Department for providing me an opportunity to work in the Physics Department of M. S. University of Baroda. I am grateful to Dr. P. K. Mehta for his encouragement and helpful discussions while interpreting the experimental data.

My special thanks to Dr. Amit Roy, Director, IUAC, New Delhi, Dr. D. K. Avasthi, Co-ordinator-Material Science Division and whole operating team of Pelletron accelerator for providing irradiation facility at Inter University Accelerator Centre (former Nuclear Science Centre) New Delhi. I would also like to thank Dr. A. Tripathi, Dr. F. Singh, Mr. V. Shivakumar, Mr. P.Kulriya, Ms. I. Sulania for providing various characterization techniques at the centre and for many fruitful discussions during my stay at IUAC. Financial assistance given by IUAC, New Delhi is also gratefully acknowledged.

I would like to thank Dr. Ajay Gupta, Center director, IUC-UGC-CSR, Indore and Dr. V. Ganeshan, Dr. A.M. Avasthi, Dr. V. Shrinet (ERDA, Vadodara) and Dr. P. M. Raole (FCIPT, Gandhinagar) for providing laboratory facility. I also thank to Dr. R. V. Upadhyaya, Department of Physics, Bhavanagar University, Bhavanagar for SQUID analysis.

Many thanks to Dr. K.P. Singh and operating staff of cyclotron of Department of Physics, Punjab University, Chandigarh for providing proton beam irradiation facility.

UGC-DRS laboratory, Physics Department is gratefully acknowledged for providing characterization facilities.

I am very thankful to Dr. Rudzani Nemutudi for extracting time from his very busy schedule for AFM/Optical imaging during my visit at iThemba labs, Cape Town, South Africa.

I am thankful to my laboratory colleagues and friends Dr. Anjum, Ms. Bhagwati, Ms. Dolly, Ms. Chaitali, Ms. Sangeeta for holding scientific discussion as well as relaxing conversations during lunch breaks. I also wish to thank the whole non-teaching staff of the department for helping in all kinds of administrative work.

My heartfelt thank to my senior colleagues at ITER-India Mr. Arun Chakroborty-Project Manager, Dr. M Bandyopadhyay, Dr. M. J. Singh, Mr. C. Rotti for providing all time support and pleasant atmosphere to work with. I also wish to thank my colleagues Bindu, Anil, Roopesh and Kanan for providing their support and encouragement during the struggling period of thesis completion. They are very nice friends, anyone wish to have. I am very grateful to my senior colleague cum friend Ms. P. Bharathi for helping in finalizing important portion of thesis. I also like to thank all my lab mates at IPR for their support and fruitful discussions.

I am short of words for expressing my gratitude to my sister Ms. Deepa, brother-in-law Mr. Dipen, and little Tanvi and entire family for their constant support. I am indebted to my parents: Mr. Prakashchandra and Mrs. Jyotikaben for their unconditional love, support, encouragement and their strong faith in my abilities to complete this thesis. Without their several sacrifices, it would not have been possible for me to accomplish whatever I have achieved in my life so far. I dedicate my entire thesis work to my parents.

Date: 22nd Sept, '09

Vadodara

(Sejal Shah)