ACKNOWLEDGEMENTS

It is a matter of enormous pleasure for me to express my deep sense of appreciation to my honored supervisor Prof. A. Kumar for his vibrant and scrupulous supervision, motivation and inspiration during my PhD work. I was blessed enough to gain all resources for his genial inspiration and fervent encouragement throughout the progress of my work. Without his staid involvement, thoughtfulness and persistence, it would have been more demanding for me to complete this thesis in time. I always appreciate the training given by him, which has always helped me to achieve my longing desired goal.

I prolong my sincere thankfulness to my DRC committee members, Dr. Dambarudhar Mohanta, Department of Physics and Dr. Anand Ramteke, Department of MBBT, Tezpur University for their inspiration, motivation and fruitful discussion during my PhD work. I am exceedingly obliged to all the faculties of Department of Physics for their subjective involvement, appropriate help, and encouraging discussion to carry out research.

I would like to thank Dr. Raju Khan of NEIST, CSIR, Jorhat for allowing me to work in his lab and giving that opportunity when I need it at the foremost point of my research time period during my PhD stage. Without his support I would not have completed the research of my PhD. I am privileged would like to acknowledge the Department of Physics and MBBT, Tezpur University for co-operation in characterization of some samples.

I would like to thank Dr. Pintu Sen, (BARC), who also has helped me during my PhD primary days in my research.

I would also like to thank Dr. Anup Nath, Kamrup College, Guwahati, for being a constant support and during this whole tenure of journey towards PhD. He was always there as a senior, as a friend and co guide too. I also extend my earnest thankfulness to the past and present members of Materials Research Laboratory and GPS laboratory, Department of Physics, Tezpur University that I have had the inclination to work with or along with; Rajiv, Jagat Da, Rituraaj, Bhagyalakhi, Madhavi, and Debalina.

I appreciate having capitalized on this great prospect given to me at Tezpur University. The facilities at Tezpur University have allowed me to enrich my experience equally at academic and personal level. I had already been a student at Department of Physics, Tezpur University for M.Sc, and I deeply appreciate the endless encouragement and academic support received from all my teachers that stirred me to pursue research in Physics. I would like to acknowledge DAE BRNS for providing funding opportunities which helped in carrying out the research work. I appreciate the help from technical staff and office staff of Department of Physics for their timely help on various aspects.

No words can repay for the uninterrupted encouragement, moral support, and blessings that I received from my parents. The immense amount of support, encouragement and motivation and to stand by me during the hard times, I would never feel ample without mentioning the upkeep of Ma during the time of PhD. Above everything the support and love I got all this time from my eldest brother (Joy Sharma), and eldest sister in law (Daisy Bhauju) who always stood by me, and also the immense encouragement I got from my elder brother (Bednidhi Sharma) and sister in law (Medha Bhauju). And yes Nishant whose presence was always there, thank you.

Date: Place: Tezpur

(Arati Sharma)

xi