ACKNOWLEDGEMENTS

It is with great reverence that I wish to express my heartfelt indebtedness to my esteemed supervisors Prof. S. P. Purohit and Prof. K. C. Mathur, Department of Physics and Materials Science and Engineering, Jaypee Institute of Information Technology, Noida, whose generous help, moral support and valuable guidance were readily available throughout my research work. Their physical insight and encouragement have been the impetus for me to learn a lot in every phase of my Ph.D. work. Most importantly, their technical soundness along with spirituality and wonderful social behavior made them visionary, wonderful and inspiring supervisors for me.

I sincerely express my gratitude to Dr. Y. Medury, Former Chancellor and COO-Education, Prof. J. P. Gupta, Former Vice-Chancellor, Prof. S. C. Saxena, Vice-Chancellor, Prof. Krishna Gopal, Dean (A&R) and Col. Vijay Kumar, Registrar, JIIT Noida for providing all facilities during my research work.

I would like to take this opportunity to thank Prof. D. K. Rai, Head of the Department of Physics and Materials Science and Engineering, JIIT Noida for providing me timely help, advice and the necessary research facilities. I am specially thankful to Dr. Vivek Sajal and Dr. B. P. Chamola for their suggestions, continuous cooperation and guidance all through this work. I am also thankful to Prof. Bani Singh for his timely discussions and motivation.

Throughout my time in JIIT, my special thanks to Dr. R. K. Dwivedi and Dr. P. Chowdhury and to the all faculty members of the Department of Physics and Materials Science and Engineering (PMSE), JIIT Noida for their valuable suggestions and encouragement.

I am grateful to the staff members of the Department of PMSE, Library and Server Room for providing me necessary help. I am also deeply indebted to all my colleagues Vikas Singh, Deepti Maikhuri, Hitesh Jaiswal, Diksha Gupta, Mamta, Dr. Rajkumar Verma, Jaisri, Neha Atale, Capt. (Retd.) Nivedita Mishra, G Swapna and all research scholars of the PMSE Department for their timely help in many ways to accomplish this arduous task.

I wish to express heartfelt veneration for my most respected and beloved parents and mother-in-law for their support, forbearance, immutable encouragement and
inspiration throughout my studies. I would like to emphasize the constant encouragement received from my loving sisters, sister-in-laws, brother and brother-in-laws. I also wish to place on record heartiest thanks to my husband Dr. Lokendra Kumar, Department of Mathematics, JIIT Noida and my loving daughter Yuvika who were always behind me extending for their sustained affection, unending love and support.

The teaching assistantship provided by Jaypee Institute of Information Technology, Noida, is acknowledged gratefully.

At last I owe to the grace of Almighty, whose divine light provided me the perseverance, guidance, enormous patience, inspiration, faith and strength to carry out this work.

(Anchala)