Acknowledgements

First of all I would like to express my deep sense of gratitude to Dr. Manoj Kumar Singh, thesis advisor, for his kind support and attention. Throughout my years of Ph.d he has not only been guiding me patiently through the course of research but also inspiring me with his enthusiasm and encouraging words.

The time I spent in Centre of material science, University of Allahabad (AU) has been the most wonderful period of my life. This was especially because of the kind of the co-operation and attention I received from all the faculties of Centre of material science, University of Allahabad and my thanks are due to all of them. Particularly I would like to express my deep gratitude Prof. Ravindra Dhar (Coordinator, Centre of material science), Dr. Rajiv Giri, Dr. Prashant Dubey and Dr. Brajendra Singh. I extend my sincere thanks to Prof. Ravindra Dhar, Coordinator, Centre of Material Sciences, for extending all kinds of Experimental facilities whenever it was needed. I would like to thanks all office staff and technical staffs of the Center of Material Science for their co-operation and encouragement.

It is my privilege to thank Dr. Ashok Kumar (Scientist, National Physical Laboratory, New Delhi) for cooperation in part of the research work I am grateful to my teachers Prof. Raja Ram Yadav, Prof. P. S. Yadav, Prof. K. N. Uttam, Department of Physics, University of Allahabad for their teaching.

I am grateful to Dr. Hari Pratap Bhasker (Department of Physics, C. M. P., AU) for moral support, scientific suggestions and encouragement. I am also very thankful to Dr. Manavendra Kumar (AU) and Dr. Ram Pratap Yadav (Department of Physics, Govt. P.G. College, Saidabad, Allahabad) for scientific discussion during my research work. I am also thankful to Dr. Rajesh Yadav, Dr. Harish Chand Yadav, Dr. Ajay Kumar Yadav, Dr. Ajeet Singh, Dr. Vikash Barnwal and Dr. Pradeep Kumar Priya for their valuable scientific discussion and moral support during my research works. Special thank goes to Dr. Chandan
Yadav (Postdoctoral Researcher, IMS Laboratory, and University of Bordeaux France) for scientific discussion and help in proof reading of my thesis.

There are many who have helped me, in one way or another, in writing of this thesis, and to whom thanks are due. Particularly, I am thankful to Vikram Jeet Yadav, Akhilesh Yadav, Sanjay Gaur, Suraj Rai, Yogesh kumar, Aditya kumar, Jai Magnal Yadav, Anup Kumar Yadav, Pradeep Kharawar, Shivam Singh, Kritinjay Tripathi, Shakti Singh, Navneet Yadav, Mulayam Singh Patel, Balram Yadav for their consistent support and suggestions during the thesis work. Their help and friendship shall always be remembered. Special thank goes to my friends Akhilesh Yadav, Ram Pratap Singh, Sunil Verma and Dr. Laxamm Yadav (Zakir Hussin College, DU) and many others with whom I have shared many pleasant moments.

I owe my deepest gratitude to my beloved parents (Raj Kumari and Ram Nath), Grandparents and whole family members for their unwavering support and encouragement throughout my research work. I am not having words to express my feelings about their dedication on me and my education. I wish to convey my sincere thanks to my elder brother Vinod Singh, without their encouragement and support it would never have been possible for me to complete my research work. I express deep love and blessing to my Nephew Vidhi singh, Urvi Singh and younger brother Vaibahv Singh, Umesh Singh and Balram Singh and Sisters Radhika, Ravita, Lalita Singh, Pooja and Anjali. They all are always great source of inspiration to me. Finally UGC, India is kindly acknowledged for their financial support.

(Gulab Singh)