ACKNOWLEDGEMENTS

It gives me immense pleasure to express my sincere gratitude towards my research guide, Prof. (Dr.) S. H. Pawar, Emeritus Scientist & Vice-Chancellor, D. Y. Patil University, Kolhapur for his guidance and encouragement. His overly enthusiastic and integral view on research and his mission for providing ‘only high-quality work without any compromise’, has made a deep impression on me. I owe him lots of gratitude for having me shown this way of research. I am also sincerely grateful to Prof. (Mrs.) Y. S. Pawar for all her love and shelter as a Gurumata.

I am very much thankful to Prof. A. V. Rao, Head, Department of Physics, Shivaji University, Kolhapur for encouragement and providing facilities to carry out the experiment and complete this work. I am also thankful to all my teachers for their guidance and help during my research work.

I am very much grateful to Dr. H. R. Bharagava, Former Additional Director, and Dr. S. B. Gupta Joint Director, D.R.D.O., New Delhi, for the fruitful discussions during my research work. My sincere thanks are due to Prof. P. L Paulose, Department of Condensed Matter Physics & Material Science, Tata Institute of Fundamental Research (TIFR), Colaba, Mumbai for all the necessary measurements and implicit encouragement. I am also sincerely thankful to Dr. Hari Kishan and Dr. V.P.S. Awana, National Physical Laboratory, New Delhi for their fruitful discussions and suggestions during my work. I am earnestly obliged to Dr. P.S. Patil, Department of Physics, Shivaji University, Kolhapur for his gratifying presence with me right from the beginning of my post graduate voyage.

I am thankful to many of the present and former members of our group I had the pleasure to meet and work with. I am indebted to all my lab mates for useful scientific discussions stimulating new ideas and making the lab an interesting place to work, in no particular order, Dr. L. A. Ekal, Dr. D.D. Shivagan Dr. P. M. Shirage, Dr. S. B. Mane, Dr. R. K. Nimat, Mr. B.M. Shikare Mr. B. E. Walunj, Dr. A. B. Jadhav, Dr. K.M. Subhedar, Dr. R. S. Hyam, Dr. B. B. Patil, Mr. M. B. Kadam, Mr. R. S. Kalubarme, Mr. R.S. Joshi, Mr. K. P. Shinde, Mr. S. S. Pawar, Mrs.
A. G. Bhosale, Mr. M. G. Chourashiya, Miss. A.U. Chavan and Mr. A.P. Jamale. I am also thankful to Miss. Monika Mudgal, Miss. Arpita Vajpayee, Mr. Rahul Tripathi, Mr. Anuj Kumar Dhiman, Dr. M.M. Kulkarni, Dr. S.B. Sadale and Dr. Sarfraj Mujawar for their support and inspiration.

Needed to be mentioned, I am indeed thankful to Archana, Vidula, Mr. Sandip Patil, Mrs. Sonal Patil, Asmita and many more, the treasure being endless, for their moral support in the very walk of life.

I would also like to thank Mr. P. R. Chougule and Mr. R. R. Kamble for their co-operation. Away from the lab, but always with me, I also extend my thanks to all the staff of Physics Department, USIC and CFC especially Mr. S.R. Kalash and Mr. A.V. Mohite for various undefined assistance and support.

I would like to touch upon the fact that my eternal stature is not sufficient to dare and thank the one who showed me the light of life, My Mom and Daddy for their implicit and myriad endeavours which made me learn my own existence. How can I dare to thank my own eternal part, my everything, My Bhaiya who is the never before source of encouragement and power.

Finally this contentedness is not merely a gesture of gratitude but it’s a souvenir of whatever I owe to my Almighty.

Mr. B. B. Sinha