ACKNOWLEDGEMENTS

I would like to thank all people who have helped me in different aspects and inspired me during my doctoral work.

I would like to express my sincere gratitude to my adviser Prof. Satish C. Gupta Sir, for his invaluable guidance, constant encouragement, inspiration, keen interest and good wishes. His wide knowledge and his logical way of thinking on critical scientific problems have been of great value for me.

I also like to thank Prof. S. K. Sikka Sir for his valuable suggestions and comments towards my research problems and explanations suggested from the outcome of these problems.

This thesis would not have been possible without the guidance, help, support, critical analysis and valuable suggestions from Dr. K. D. Joshi Sir who has been truly invaluable to me both on an academic and a personal level, for which I am extremely grateful. I am also thankful to him for sharing his excellent knowledge and scientific understanding with me.

It gives me immense pleasure to thank the members of the doctoral committee Prof. S. V. G. Menon (Chairman), Prof. S. L. Chaplot (Member), Prof. S. C. Sabharwal (Member) and Prof. P. Ch. Sahu (Member) for their critical review and suggestions during the progress review and pre-synopsis viva-voce.

I am grateful to all the members of Applied Physics Division. Specially, I would like to thank Rav Sir(Mr. Amit S. Rav), Amitda(Mr Amit Sur), Pandey Sir (Mr. Gaurav Pandey) who helped me in understanding the high pressure experiments and Ashokjee, Prakash, Kulbhushan, Bhaskar, Sarad, Siddhu for the technical support in conducting the experiments. I also acknowledge the assistance provided by Sahoo (Mr. B. D. Sahoo) for various fruitful discussions, preparation of the thesis.

I owe my heartfelt gratitude and indebtedness to my grandmother, my father, mother, father-in-law, mother-in-law for the constant appreciation and courage.

Finally, I would like to thank my life mate Suparna, for her continuous encouragement, care and constant support in every aspect of my life. She continuously supported me during my research work and writing thesis.

Lastly, I beg apology to all the people whom I have missed to mention in this page.