Acknowledgements

I would like to express my deep sense of gratitude to Dr. K. Siva Kumar, Scientist and external supervisor at Defence Metallurgical Research Laboratory (DMRL), Hyderabad for his invaluable suggestions, excellent supervision, constant encouragement and critical discussion throughout the research program. I have been immensely benefited by his exceptional experimental skills, and analytical capabilities and remain indebted evermore for it.

I wish to express my sincere gratitude to Dr. A. K. Singh, Scientist and external supervisor at Defence Metallurgical Research Laboratory (DMRL), Hyderabad for having introduced me to this topic and teaching me X ray diffraction and texture of aluminium alloys. I am indebted to him for his inspiring guidance, unstinted support and persistent encouragement throughout the course of my work and during the preparation of this manuscript. It is indeed a great pleasure to be associated with him.

I take this opportunity to acknowledge with sincere gratefulness to Professor R. K. Mandal, Ph. D supervisor at Department of Metallurgical Engineering, Indian Institute of Technology, Banaras Hindu University, Varanasi for his initiative and inspiration to pursue this work. In fact it is difficult to express in words the help, the constructive ideas and criticisms that I have received through his logical and convincingly critical discussions. His well thought out research planning and systematic guidance will go long way in molding the career of many research aspirants. I will remain greatly indebted to him.

I also take this opportunity to express my gratitude to all successive Heads of Departments of Metallurgical Engineering, Prof. A. K. Ghosh, Prof. G. V. S. Sastry, Prof. R. K. Mandal and Prof. N.K. Mukhopadhyay for their advice and support in providing the necessary facilities to carry out this work successfully. I gratefully acknowledge Professors and faculty members, Dr. B. N. Sarma, Dr. S. N. Ojha, Dr. Vakil Singh, Dr. G. V. S. Sastry, Dr. N. C. Shanthi Srinivas, Dr. R. Manna, Dr. K. Chattopadhyay, Dr. J. K. Singh and all the staff members of Department of Metallurgical Engineering, IIT, BHU,

Varanasi for their extensive suggestions, guidance and support for this doctoral work as well as my stay at IIT, BHU.

I sincerely thank Dr. S. V. Kamat and Dr. Vikas Kumar, former and present Directors of Defence Metallurgical Research Laboratory (DMRL), Hyderabad for their kind support and help during the period of this study. I gratefully acknowledge Defence Research and Development Organization (DRDO), India for providing funding and facilities for carrying out this work. I am indebted to Dr. V. Madhu, Division Head, Armour Design and Development Division, DMRL for his very kind and generous help.

It is my privilege to express my sense of gratitude to Dr. T. K. Nandy, Division Head, Powder Metallurgy Division, DMRL, Hyderabad, for his valuable suggestions and encouragement that have really helped me to shape this study. I owe an immense debt of gratitude and reverence to Dr. Dipak Das, Scientist, DMRL for his continuous inspiration and moral support throughout the period of this work. I also extend my gratitude to Dr. Amit Bhattacharjee, Dr. P. Ghosal, Shri A. Sambasiva Rao, Dr. Chandan Mondal, Dr. M. Premkumar, Shri B. Ramakrishna, Shri Bidyapati Mishra, Shri S.G.. Savio, Shri P.R.S. Reddy, Shri Jayarami Reddy, Shri V. Ramudu, Shri. T. Sreekantha Reddy for helping me at various stages of my thesis work. It is great pleasure to acknowledge the officer and staff of Metallography, Electron Microscopy, Mechanical Working, Mechanical Behaviour, XRD, Armour Design and Development Groups of DMRL for their invaluable assistance in carrying out the experiments.

Finally, I express my profound gratitude to my wife, son, parents, sisters and other family members for their constant support, understanding and the encouragement extended.

(Pradipta Kumar Jena)