ACKNOWLEDGMENT:

I earnestly extend my profound gratitude to Prof. L.M. Manocha, Head, G.H. Patel Institute of Materials Science, Sardar Patel University, Vallabh Vidyanagar, under whom I had the opportunity of working as a research student. I have been highly benefited from his precious probing ebullient circumspection, care, inspiration and supervision which stood as the guiding light in this exercise of my higher learning. I seek an annotation to put out my feeling of indebtedness towards my guide as he was able to transcend the experience of my almost ability. The years spent in his counsel and company will have a casting positive impact on my professional carrier. It is difficult to look forwards to adequate to thank him a lot for his constant loving care and affection.

I can never forget the moral support and inspirations given by Dr. (Mrs.) S. Manocha, Reader in Materials Science Department. This thesis is an outcome of her binding concern, support and valuable suggestions and making me aware of many points which are indeed very central to one’s understanding of the subject. So, I am highly thankful to her.

I gratefully place on records, the concrete suggestions and valuable advise given from time to time by Dr. N.M. Batra Lecturer in the Department of Materials Science.

I sincerely appreciate and thank my friends and colleagues Jignesh Patel, Deval Yogendra Vashistha, Nilesh Patel, Umesh Patel, Ketan Patel, Alpesh Patel, Miss Mukta Patel, Ashish Patel, Jignesh Bhagat, Chetan Panchal and Miss Bindu Stephen for their support and assistance during my stay in the laboratory.

I am thankful to non teaching staff Shri S.A. Barot, Shri P.C. Parikh, Shri. Piyush Parmar, Shri R.M. Rana of the institute for their constant cooperation.

I am thankful to Shri. C.L. Patel, Chairman Charutar Vidya Mandal and to Dr. B.P. Swadas, Principal, B.V.M. Engineering College for giving me permission and encouragement for doing Ph.D. I am very much grateful to
Prof. B.K. Raghunath, Prof. and Head of the Mechanical Eng. Department B.V.M. Eng. College for giving me a moral support and encouragement during my Ph.D. work.

I am also thankful to Shri. Shashank Joshi and Shri. Amit Trivedi, the Lecturers in Mechanical Eng. Dept. B.V.M. Engineering College for helping me in many inflections that made the work best of it. I place on record my regards to the senior Professors of Mechanical Eng. Dept., B.V.M. Engineering College for their good wishes and co-operation in all stages of my work.

And ineffable to my mentor L.M. Manocha, my respected parents and my wife Archana who rendered my academic morale heady.

(Sanjay B. Shah)