ACKNOWLEDGEMENT

I would like to express my sincere gratitude to Honourable Chancellor Dr. G. VISWANATHAN, Vice-Presidents Shri. SHANKAR VISWANATHAN, Shri. SEKAR VISWANATHAN, Shri. G. V. SELVAM and Vice-Chancellor Dr. V. RAJU of VIT University, Vellore for providing the opportunity and facilities to carry out my research work in this esteemed institution.

I express my profound gratitude and deep regards to my research guide Dr. S. NARAYANAN, Pro-Vice Chancellor & Senior Professor, VIT University, Vellore for his exemplary guidance, monitoring and constant encouragement throughout the course of this thesis. The blessing, help and guidance given by him time to time shall carry me a long way in the journey of my life.

I would like to take this opportunity to express a deep sense of gratitude to my research co-guide Dr. S. DENIS ASHOK, Professor, Mechatronics Division, School of Mechanical and Building Sciences for his cordial support, valuable information and guidance, which helped me in completing this task through various stages.

I would like to thank Dean Dr. A. SENTHIL KUMAR, Senior Professor and Dr. P. KUPPAN, Professor & Research Co-ordinator of SMBS for their kind help, interaction and extending workshop facilities with acoustic emission data acquisition system, which had been granted by DST, New Delhi. I would like to express my sincere thanks to Dr. C. RAMALINGAM, Former Associate Dean, Academic Research and Dr. S. BABU, Associate Dean, Academic Research, VIT University, Vellore for their kind support to carry out my research work.

I would like to express my sincere thanks to my Research Advisor Dr. S. MUTHUKUMARAN, Assistant Professor, NIT, Trichy, my Doctoral Committee members, Dr. S. MUTHUPANDI, Professor, NIT, Trichy and Dr. B. RAJMOHAN, Professor, MIT campus, Anna University, Chennai for their critical inputs to carry out the research work.
I am obliged to all my faculty colleagues of SMBS for their valuable information and constant encouragement all the way throughout the period of my research work. I appreciate the technical assistance received from staff members of SMBS, Mr. S. MOHAN and Mr. S. RAJKUMAR on handling machines and test equipment.

Most importantly, none of this would have been possible without the love and patience of my family. I would like to express my heart-felt gratitude to my beloved father Shri. V. SUBRAMANIAM, my loving mother Smt. S. AKILA, my loving wife Smt. S. SARASWATHY DEVI, my affectionate daughter S. MONASRI, my brother, sister and extended family members, who have been a constant source of love, concern, support and strength during all these years.

Finally, I thank the Almighty for the blessings and healthy life, all the way throughout the period of my life.

Place: Vellore
Date: S. Senthil Kumar