

## ACKNOWLEDGEMENTS

At first, I wish to place on record sincere gratitude to **Dr. Francis C. Peter, Vice Chancellor**, St. Peter's Institute of Higher Education and Research, Avadi, Chennai, for providing me with an opportunity to perform my research in this Institute.

I am thankful to **Dr. L Mahesh Kumar, Registrar**, St. Peter's Institute of Higher Education and Research, Avadi, Chennai, for providing me with an opportunity to perform the research in the Department of Mechanical Engineering and helping me get critical and constructive technical review of the project.

I also thank **Dr. S.Gunasekaran, Dean, Research and Development**, St. Peter's Institute of Higher Education and Research, Avadi, Chennai, for being very kind, cooperative and helpful in continuing the research in a smooth manner with regular interaction.

I express sincere gratitude to my advisor and supervisor **Dr.K.Purushothaman**, Professor and Head, Department of Mechanical Engineering, St Peter's College of Engineering and Technology, Avadi, Chennai, for imparting his immense knowledge and continuous guidance, support, and motivation throughout this research.

Besides my advisor, I thank the rest of the thesis committee: **Dr.E. Ganapathy Sundaram**, Professor and Head, Department of Mechanical Engineering, Velammal Engineering College, Chennai, and **Dr. P.Periasamy**, Professor and Head, Department of Mechanical Engineering, St. Peter's Institute of Higher Education and Research, Avadi, Chennai, for their insightful comments and questions which widened this research from various perspectives.

I convey sincere thanks to **Dr.B.C.Jain**, Ankur Scientific Ltd, and **Arunkumar Doraiswamy**, Yashika Industries, who permitted access to the laboratory and research facilities in the earlier period.

I owe my gratitude to **Ganesan** and **Ranjan** (late) for their constant and continuous encouragement in my perseverance with the project. I am also thankful to **Anna Ravi** , **Malini Ganesan**, and **Rambabu** for providing me with their valuable inputs.

Finally, I am grateful to my wife **Rukmini**, standing beside me, providing me with the intelligence and persistence to accomplish my goals, and constantly reminding me of all that I do not understand.