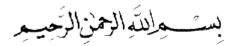

Acknowledgements



In the name of the Most Gracious, the Most Merciful, praise to Allah for giving me the guidance and strength the One whom we ultimately depend for His willing to give me the opportunity in completing this thesis. I would like to express my gratitude to those who had helped me in making this thesis a success.

A special appreciation to my supervisor, Prof. Dr. Abdul Kariem Mohd Arof for his guidance and support throughout this research studies all the way. I would like to express my gratitude for my co- supervisor, Assoc. Prof. Dr. Ramesh Subramaniam for his valuable ideas and continuous supervision. This thesis will not be smoothly completed without their wonderful patience and courage for careful reading and constructive comments until finalized manuscript for the thesis. Not to forget, Assoc. Prof. Wan Jeffry Basirun and Assoc. Prof. Dr. Mohd. Rafie Johan for their commitment upon completion of my postgraduate research study.

I would like to thank my lab-mates especially to Mdm. Mazni Md. Noor, Mr. Mohd. Zieauddin Kufian, Dr. Yap Kiat Sen and Dr. Azlin Sanusi who have given me their full support, help and their motivation. In addition, my acknowledgement also goes to Mr. Mohd. Arof and Mr. Shahril of Physics Department, Mr. Mohd. Said of Department of Mechanical Engineering, the person in charge for the technical assistance in the laboratory work.

I take this opportunity to acknowledge University of Malaya who had awarded me the scholarship and research grants which enables me to survive and continue the research program throughout the study period.

Last but not least, my sincere thanks to my family, family's friends, foster parents, colleagues, and my friends for their endless patience, constant support and their encouragement upon completion of my thesis.