

ACKNOWLEDGEMENTS

There are a number of special people who have contributed in assorted ways in making this PhD thesis a realization. It is a pleasure for me to convey my gratitude to them all in my humble acknowledgement.

First and foremost, I would like to thank my supervisor and friend Assoc. Prof. Dr. Zurina Osman for her supervision, advice, and guidance. Her perpetual energy and enthusiasm in research was contagious and motivational for me, even during tough times in my PhD pursuit. It has been an honour to be her first PhD student and hope to keep our collaboration in the future.

I would also gratefully acknowledge Prof. Datin Dr. Saadah Abd Rahman for her motherly advice and unflagging support. She has been a constant source of encouragement and was always accessible and willing to help her students with their research despite her hectic schedule as a professor. I am also thankful for the excellent example she has provided as a successful woman physicist and professor.

My deepest gratitude goes to my family for their unflagging love and support throughout my life; this thesis is simply impossible without them. My parents deserve special mention for their unconditional support and prayers. My father made sure I felt his confidence and encouragement, and his advice was consistently timely and useful. My mother raised me with her caring and gentle love and she will be forever the compass of my life. I would also like to express special thanks to my wonderful husband Naharudin and beautiful princess Athirah Amani. I am forever indebted for their understanding, endless patience and encouragement when it was most required.

Finally, I would like to thank everybody who was important to the successful realization of this thesis, as well as expressing my apology that I could not mention personally one by one.