

Acknowledgements

First of all, my foremost gratitude goes to my main supervisor, the late Assoc. Prof Dr. Burahanuddin Kamaluddin, who passed away during this course of research. He had fully supported me in all possible ways of my research. He was one of the kindest people that I have seen in my life. I would like to gratefully acknowledge my second supervisor Prof Dr Muhamad Rasat Muhamad, who has accepted me as his PhD student after Dr Kamaluddin has passed away. He has made very useful comments and helped me complete this thesis. My studies were generously supported by a PhD student fellowship and three postgraduate studies grants (PS199/2008, PS325/2009, and PS325/2009B), funded by the University of Malaya.

In addition, I gratefully acknowledge Professor Yoke Khin Yap from Michigan Technology, USA, for his constructive advice. I also acknowledge my close friend Dr. F. J. Sheini from Islamic Azad University, Ahvaz Iran (Pune, India), who helped me with field emission characterization. I am also thankful to Dr. M.R. Mahmoudian and Dr. M. Ebadi, from Department of Chemistry, University of Malaya, who helped to explain some chemical reactions in my work. In addition, I would like to thank Assoc. Prof Dr I. Kazeminezhad from Chamran University, Ahvaz Iran, who has edited first draft of my thesis and suggested some useful comments. I thank all technical staffs of Department of Physics (Mrs. Zurina Marzuki and Mr. Mohammad Aruf) for their useful help. Further, I would like to thank all technical staffs of N.O.R (Nano-Optoelectronics Research and Technology Laboratory) center, USM Penang Malaysia, for their kind help with PL and Raman spectroscopy measurements. I would like to express my gratitude to everyone who has helped me in many ways to complete this thesis.

Last but not least, my warmest thanks and loves go to my wife and my son for all their love and continuing support throughout this research work.

Ramin Yousefi

Kuala Lumpur, Malaysia

Nov 2010