

ACKNOWLEDGEMENTS

I would never have been able to complete my dissertation without the ardent guidance of my supervisor, help from friends, and support from my family members.

I would like to express my deepest gratitude to my supervisor, Associate Prof. Dr. Ismail bin Yusoff, Dr. Rosmadi bin Fauzi and Dr. NurIslami bin Rahman, for their excellent guidance, caring, and patience, thus providing myself with an excellent atmosphere for conducting this research.

I would like to thank Prof. Dr. Yatimahbinti Alias, for her help during the field work. I would like to extend special thanks to Syed Hasan Muhammad Alatas, Syarifah Bahjah Abdullah Alatas, Ami Fauzi Bahbereh, Sayed Sulaiman SH, Syarifah Wirdah and other workers in the Department of Mines and Energy Aceh for helping and allowing me to collect all samples from the research - field. My research would not have been possible without their support and help.

I would also like to express my thanks to my parents. They have always been supporting and encouraging me with their best wishes.

Finally, I would like to thank all my friends. They were always there cheering me up and stood by me through the good and bad times.