STUDY ON THE GEOCHEMISTRY AND MINERALOGY OF MERANG COASTAL SEDIMENTS

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2012

STUDY ON THE GEOCHEMISTRY AND MINERALOGY OF MERANG COASTAL SEDIMENTS

By

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Research Report submitted in partial fulfillment of
the requirement for the degree of
Bachelor of Science (Marine Science)

Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITI MALAYSIA TERENGGANU
2012

This project report should be cited as:

Ismail, M.N.F. 2012. Study on the Geochemistry and Mineralogy of Merang Coastal Sediments. Undergraduate thesis, Bachelor of Science in Marine Science, Faculty of Maritime Studies and Marine Science, University Malaysia Terengganu, Terengganu, 57p.

DEPARTMENT OF MARINE SCIENCE
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DECLARATION AND VERIFICATION FORM

FINAL YEAR RESEARCH PROJECT

It is hereby declared and verified that this research report entitled:

Study on the geochemistry and mineralogy of Merang coastal sediments by **Muhammad Nur Firdaus bin Ismail**, Matric No. **UK20228** has been examined and all errors identified have been corrected. This report issubmitted to the Department of Marine Science as partial fulfillment towards obtaining the Degree of **Bachelor of Science (Marine Science)**, Faculty of Maritime Studies and Marine Science, Universiti Malaysia Terengganu.

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ACKNOWLEDGEMENTS

First, I am very thankful to Allah SWT for giving me enough strength and optimum determination to finish my research project. I also would like to thank my supervisor, Dr. Nor Antonina binti Abdullah and my second supervisor, Profesor Madya Dr Rosnan B Yaacob for their precious guidance and continuous support through the completion of this project.

Moreover, my gratitude goes to staffs of Institute of Oceanography UMT and Physics Instrumentation Laboratory for their patience in helping and teaching me during conducting the project especially to Mdm. Norita and Mr. Zulbairudin. My appreciation also goes to the staffs of Oceanography Laboratory and Remote Sensing Laboratory for allowing me to use apparatus and instruments during my lab work.

Thank you also to my colleagues and friends who have willingly and kindly assisted me in various ways especially Adi Matin, Ranjini, Wei Sin, Zuriati, Hafiz, Ain, Elmi and other persons that is not stated which had directly and indirectly involved in fulfilling this research project.

My deepest appreciation goes to my beloved family who supported and encourages me in many ways. Finally, this project will not be able to complete without the help of anyone above.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Al	Aluminium
Ca	Calcium
Cl	Chlorine
Fe	Iron
K	Potassium
Mg	Magnesium
Mn	Manganese
Na	Sodium
O	Oxygen
Si	Silicon
%	percentage
^{0}C	degree Celsius
ml	milliliter
µm	micrometer
mm	millimeter
g	gram
<	less than
>	more than
SEM	Scanning Electron Microscope
EDS	Energy Dispersive X-ray Spectrometer
XRD	X-ray Power Diffraction

LIST OF APPENDICES

ABSTRACT

The study was conducted to determine elemental contents, mineral contents and sedimentological characteristics of Merang coastal sediments. The sediments were collected from 17 stations by using Smith McIntyre grab. The sediments were analyzed by using three methods; Scanning Electron Microscope - Energy Dispersive X-Ray Spectroscopy (SEM-EDS) for elemental contents analysis, X-ray Power Diffraction (XRD) for mineral contents and dry sieve method for sedimentological characteristics analysis. The result of SEM-EDS analysis showed that quartz is the dominant mineral in all stations (62.32 %). Besides, the result of XRD peaks also showed that quartz is the dominant mineral in every station. Based on the result of hydrometer analysis, there were two textures of sediment that were identified which are sand and loamy sand. The group of sand texture was mostly found at nearshore area (Stations 2, 6, 7, 8, 10, 11, 14 and 15). However, loamy sand texture was found at offshore area (Stations 1, 3, 4, 5, 9, 12, 13, 16 and 17).

ABSTRAK

Tujuan kajian ini dijalankan adalah untuk mengenalpasti kandungan-kandungan elemen, kandungan-kandungan mineral dan ciri-ciri sedimen dasar laut di perairan Merang. Sedimen-sedimen dikumpul dengan menggunakan *Smith McIntyre grab*. Sedimen-sedimen tersebut dianalisis melalui tiga kaedah: *Scanning Electron Microscope - Energy Dispersive X-Ray Spectroscopy* (*SEM-EDS*) bagi analisis geokimia, *X-ray Power Diffraction* (*XRD*) bagi analisis kandungan-kandungan mineral dan kaedah ayakan kering bagi analisis ciri-ciri sedimen dasar laut. Keputusan daripada analisis *SEM-EDS* menunjukkan bahawa *quartz* adalah kompaun yang dominan di keseluruhan stesen (62.32 %). Selain itu, keputusan daripada analisis *XRD* juga menunjukkan bahawa *quartz* adalah mineral yang dominan di setiap stesen. Berdasarkan keputusan daripada analisis hidrometer, terdapat dua tekstur sedimen dasar laut yang dapat dikenalpasti iaitu pasir dan *loamy sand*. Sedimen berpasir dijumpai di kawasan yang berdekatan dengan kawasan pantai (Stesen 2, 6, 7, 8, 10, 11, 14 and 15) manakala sedimen yang terdiri dari tekstur *loamy sand* ditemui di kawasan yang berjauhan dengan kawasan pantai (stesen 1, 3, 4, 5, 9, 12, 13, 16 and 17).