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RESEARCH CENTER FOR LIBRARY SERVICES AND INFORMATION TECHNOLOGY

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**DETERMINATION OF MINERALS, ELEMENTS AND OXIDES IN
SEDIMENTS OF CHUKAI RIVER ESTUARINE: KEMAMAN**

By

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

Department of Marine Science
Faculty of Science and Technology
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA
2006

1100042362

This project report should be cited as:

Hainal W.H.W.H (2006). Determination of Minerals, Elements and Oxides in Sediments of Chukai River Estuarine- Kemaman. Undergraduates thesis, Bachelor of Science (Marine Science), Faculty of Science and Technology, Kolej Universiti Sains dan Teknologi Malaysia, Terengganu.

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**JABATAN SAINS SAMUDERA
FAKULTI SAINS DAN TEKNOLOGI
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PROJEK PENYELIDIKAN I DAN II**

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DEDICATION

This thesis is dedicated to my lovely parents, Wan Hamzah Wan Ismail and Ainon Che Mohd Zain, brothers and sisters and not forget to my dearest. Thank you for all of your supports and encouragements. Thank you!!!

ACKNOWLEDGMENT

Assalamualaikum w..b.t.

Here, I would like to take this opportunity to express my appreciation to all the people who have helped me to finish this project. First and foremost, I would like to thank God following the success of this project. I would like to express my heartiest appreciation especially to my supervisor, Dr. Nor Antonina binti Abdullah who has devoted a lot of her time for invaluable guidance especially on the planning of the study, constructive, suggestion and consistent motivation during the project. I also like to thank for being generous in sharing her knowledge and exposing she to what this research is all about. Thank also to Kak Dila for her guidance and helps during the laboratory works.

I am truly indebted to Prof. Madya Dr. Siti Zauyah, Head of Department of Soil Science in UPM in helping and guiding me during the laboratory work in UPM. Thanks also to her assistant, Abang Roslan for assisting me to run the thin section analysis. Without their assistance, this project would not complete.

Then, I would like to express my deepest gratitude and thanks to En. Kamari and staff of Oceanography Laboratory for their cooperation and patience in helping me to complete my sampling and laboratory work. Special thanks to En. Nasir at SEM Laboratory for guiding me to complete my SEM analysis. Thanks also to all staff of Net Loft and others for providing the transportation during the sampling, thank you.

Here, I also wish to deliver my gratitude for the cooperation given by my friends during laboratory works. Talking about encouragement and support, I would like to thanks my housemate, Zalina, Sarah, Zai and Fiza who cheers me up during my hard days in completing this project. I appreciate your friendship and hope to keep in touch in future.

Words are not enough to express my heartfelt feeling to my beloved parents and siblings for their care, moral and financial support during my three years in the university.

Last but not at least, in order not to leave anyone out, thank you to all who were involved directly or indirectly during the completion of my project.

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LIST OF ABBREVIATIONS/ SYMBOLS/ NOTATIONS

SEM	Scanning Electronic Microscope.
EDS	Energy Dispersive X- Ray Spectroscopy.
SE	secondary electron.
BSE	back-scattered electron.
GPS	Global Positioning System.
C.F	correction factor.
CHR	corrected hydrometer reading.
T	temperature reading.
°C	degree Celcius.
%	per cent.
m	meter.
cm	centimeter.
mm	millimeter.
km	kilometer.
µm	micrometer.
nm	nanometer.
L	liter.
mL	milliliter.
g	gram.

>	more than.
<	less than.
sec	seconds.
mi	miles.
V	volt.
M	molar.
N	normality.
$Ks, KAlSi_3O_8$	K-Feldspar.
$Ab, NaAlSi_3O_8$	Albite.
$An, CaAl_2Si_2O_8$	Anorthite.
OH	Hydroxide.
$Al(OH)_3$	Gibbsite.
SiO_2	Quartz.
HCl	Hydrochloric Acid.
$MgCl_2$	Magnesium chloride.

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ABSTRACT

This study was conducted to determine the minerals, elements and oxides contents in Chukai River estuarine sediments. Five stations were randomly assigned along the river and sediment samples were collected using Van Veen grab. Mineral contents in the sand and silt fractions were determined by doing the thin section, whereas, the elements and oxide contents in the sediments were determined using the Energy Dispersive Spectroscopy (EDS). On the other hand, textures of the elements were determined by hydrometer method. Results of the sand and silt fractions showed that quartz is the dominant mineral found in most the study area followed by hematite. For the elements and oxide contents in the sediments, it showed that Si, Al, Fe and their oxides forms (SiO_2 , Al_2O_3 and Fe_2O) are present. From the both results, it showed that quartz is the dominant in all study area. For the textural classes in the sediments, stations 2 and 3 have a texture of loamy sand, stations 4 (sandy loam), while stations 1 and 5 have a textural class of clay loam and clay, respectively. The elements, oxides and minerals study are important for assessment of nutrient's storage and fertilizer besides as the information and comparison data and also as a reference for the researcher to take care of the important of minerals.

ABSTRAK

Kajian ini dijalankan adalah untuk mengenalpasti kandungan mineral, unsur dan oksida yang terdapat di dalam sedimen muara Sungai Chukai, Kemaman. Terdapat lima sampel sedimen yang diambil secara rawak di sepanjang sungai yang diambil dengan menggunakan alat penyampelan sedimen iaitu *Van Veen Grab*. Kandungan mineral di dalam pasir dan kelodak ditentukan dengan menggunakan *Thin Section*, manakala untuk menentukan kandungan unsur dan oksida di dalam sedimen pula, kaedah *Energy Dispersive Spectroscopy (EDS)* digunakan. Selain itu, kajian mengenai tekstur juga dilakukan untuk mengetahui jenis tekstur yang terdapat di kawasan tersebut. Keputusan bagi agihan pasir dan kelodak menunjukkan kehadiran quartz adalah paling tinggi dan dominan di semua tempat kajian dan diikuti dengan hematite. Kajian bagi menentukan kandungan unsur dan oksida di dalam sedimen, keputusan menunjukkan kehadiran Si, Al, Fe dan bentuk oksidanya (SiO_2 , Al_2O_3 dan Fe_2O). Dengan kedua-dua keputusan tersebut, terbukti bahawa kawasan kajian didominasi oleh mineral quartz. Bagi analisis tekstur di dalam sedimen pula, Stesen 2 dan 3 didominasi oleh tekstur pasir berlom, Stesen 4 (lom barpasir). Manakala dua stesen yang lain iaitu stesen 1 dan 5 masing-masing didominasi oleh lom liat dan liat. Pengkajian mineral tanah amat penting untuk tujuan penilaian simpanan nutrien dan pembajaan selain sebagai maklumat dan data perbandingan serta bahan rujukan bagi ahli-ahli penyelidik yang berkaitan bagi memelihara kepentingan mineral.