Determination of minerals, elements and oxides in sediments of Chukai iver estuarine:Kemaman / Wan Hainal Hayani Wan Hamzah.

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

By

Wan Hainal Hayani binti Wan Hamzah

Research Report submitted in partial fulfillment of
the requirements for the degree of
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Department of Marine Science
Faculty of Science and Technology
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JABATAN SAINS SAMUDERA
FAKULTI SAINS DAN TEKNOLOGI
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA

PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk :
Determination of Minerals, Elements and Oxides in Sediments of Chukai River : Kemaman oleh Wan Hainal Hayani Bt. Wan Hamzah, No. Matrik UK 8168 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Samudera sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Samudera, Fakulti Sains dan Teknologi , Kolej Universiti Sains dan Teknologi Malaysia.

Disahkan oleh :

.....

Penyelia Utama

Nama :

Cop Rasmi :

Dr. Nor Antonina Abdullah
Lecturer
Department of Marine Science
Faculty of Science and Technology
University College of Science and Technology Malaysia
21030 Kuala Terengganu.

Tarikh : 7 May 2006

.....

Ketua Jabatan Sains Samudera

Nama :

Cop Rasmi :

PROF. MADYA DR. HJ. ROSNAN HJ. YAACOB
Ketua
Jabatan Sains Samudera
Fakulti Sains dan Teknologi
Kolej Universiti Sains dan Teknologi Malaysia
21030 Kuala Terengganu.

Tarikh : .....

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!!!

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LIST OF ABREVIATIONS/ 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.
^{o}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,Na $AlSi_3O_8$	Albinate.
An,$CaAl_2Si_3O_8$	Anorthite.
OH	Hydroxide.
$Al(OH)_3$	Gibbsite.
SiO_2	Quartz.
HCl	Hydrocloric 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.