

A STUDY ON THE MINERALOGY AND GEOCHEMISTRY  
OF RIVER ESTUARINE SEDIMENTS, KERTEH,  
TERENGGANU

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FACULTY OF MARITIME STUDIES AND MARINE SCIENCE  
UNIVERSITI MALAYSIA TERENGGANU

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**A STUDY ON THE MINERALOGY AND GEOCHEMISTRY OF RIVER  
ESTUARINE SEDIMENTS, KERTEH, TERRENGANU**

**By**

**Goh Wei Sin**

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

**Department of Marine Science**

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**DEPARTMENT OF MARINE SCIENCE  
FACULTY OF MARITIME STUDIES AND MARINE SCIENCE  
UNIVERSITI MALAYSIA TERENGGANU**

**DECLARATION AND VERIFICATION REPORT**

**FINAL YEAR RESEARCH PROJECT**

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

**A Study On The Mineralogy And Geochemistry Of River Estuarine Sediments, Kerteh, Terengganu by Goh Wei Sin, Matric No. UK 20464** have been examined and all errors identified have been corrected. This report is submitted 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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## ABBREVIATIONS

%	percentage
°C	degree Celcius
Φ	phi
L	liter
mL	milliliter
μm	micrometer
cm	centimeter
mm	millimeter
g	gram
Q	quartz
O	oxygen
Si	silicon
Al	aluminium
Ca	calcium
K	potassium
Mg	magnesium
Mn	manganese
Fe	iron
Na	sodium
Cl	chlorine
C	carbon
SiO <sub>2</sub>	Silicon oxide

$\text{Al}_2\text{O}_3$	Aluminium oxide
$\text{FeO}$	Iron oxide
$\text{CaO}$	Calcium oxide
$\text{MgO}$	Magnesium oxide
$\text{K}_2\text{O}$	Potassium oxide
$\text{Na}_2\text{O}$	Sodium oxide
$\text{MnO}$	Manganese oxide
$\text{NaHCO}_3$	Sodium bicarbonate
$\text{HCL}$	Hydrochloric acid
$\text{H}_2\text{O}_2$	Hydrogen peroxide
$\text{MgCl}_2$	Magnesium chloride
$\text{CuK}\alpha$	Copper Potassium Alpha
X	times
PSA	particle size analyzer
SEM - EDS	Scanning Electron Microscope - Energy Dispersive X - ray Spectroscopy
USDA	United States Department of Agricultural
St	Station
>	more than
<	less than

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## ABSTRACT

Eleven sediments samples were collected from the Kerteh river estuarine area on 27<sup>th</sup> June 2011. The samples were prepared for mineralogy, chemical constituents and sedimentological characteristics determination. Scanning Electron Microscope and Energy Dispersive Spectroscopy (SEM – EDS) was used to detect the chemical constituents while the mineral contents in sediments were determined by using the X – Ray Diffractometer (XRD) machines. Generally, O, Si and Al were the elements found to be dominant in the study area which indicates the area is highly siliceous (SiO<sub>2</sub>). The East Coast of Peninsular Malaysia having granite as the dominant rock to the abundance of quartz in the study area. For the sedimentological characteristics, dry sieving was used and the result stated that the sediments were medium sand, poorly sorted, negative skewed and extremely leptokurtic. For the texture analysis, it clearly showed that the study area was mainly covered by coarse sediment.



Kajian Mineralogi Dan Geokimia Terhadap Sedimen Di Muara Sungai, Kerteh,  
Terengganu

**ABSTRAK**

Sebelas sampel telah diambil dari kawasan muara sungai kerteh pada 27<sup>th</sup> June 2011. Semua sampel itu akan disediakan untuk menjalani analisis penentuan mineral, komposisi kimia dan ciri-ciri sedimentologi. Alat Scanning Electron Microscope dan Energy Dispersive Spectroscopy (SEM - EDS) adalah digunakan untuk tujuan penentuan komposisi kimia manakala X - Ray Diffractometer (XRD) digunakan bagi analisis jenis-jenis mineral bagi sampel dari kawasan kajian. Secara umum, O, Si, Al adalah unsur-unsur yang dominan di kawasan kajian di mana fenomena ini menunjukkan kawasan itu tinggi kandungan silika (SiO<sub>2</sub>). Kawasan pantai timur semenanjung Malaysia yang didominasi oleh batuan jenis granit smenjadi faktor kehadiran kuarza yang berjumlah banyak. Bagi ciri-ciri sedimentologi pula, kaedah ayakan kering digunakan dan keputusannya menunjukkan sampel itu adalah pasir pertengahan, susunan yang tidak sekata, kepencongan negatif dan sangat leptokurtik. Kaedah Hidrometer digunakan untuk menentukan saiz tekstur. Ini jelas menunjukkan bahawa kawasan kajian itu didominasi oleh kelas tekstur pasir.