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Mineralogy of Setiu Lagoon, Terengganu, sediments / Zalina Mar
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Lihat sebelah

MINERALOGY OF SETIU LAGOON, TERENGGANU SEDIMENTS

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
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PROJEK PENYELIDIKAN I DAN II**

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'Mineralogy of Setiu Lagoon, Terengganu Sediments.' oleh Zalina bt. Mat Ail.

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DEDICATION

This thesis is dedicated to my parents, brothers and sisters and also my dearest. Thank you for all of your supports and encouragements.

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LIST OF ABBREVIATIONS

$^{\circ}\text{C}$	-	Degree Celsius
μm	-	micrometer
%	-	percentage
<	-	less than
g	-	gram
mm	-	millimeter
cm	-	centimeter
ML	-	milliliter
HCl	-	hydrogen chloride
Q	-	quartz
F	-	feldspar
O	-	opaque materials
C.F	-	calcite fragments
SE	-	Secondary Electron
SEM	-	Scanning Electronic Microscope
EDS	-	Energy Dispersive Spectroscopy

BSE	-	Back-scattered Electron
Fe ₂ O ₃	-	Iron Oxide
SiO ₂	-	Silicon oxide
Na ₂ O	-	Natrium oxide
Al ₂ O ₃	-	Aluminium oxide
Al(OH) ₃	-	gibbsite

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ABSTRACT

This study was conducted to determine the elements, their oxide forms, minerals and the textural classes of the sediments in Setiu Lagoon, Terengganu. Sampling was done on the 28th of August 2005. Twelve sediment samples were collected using van veen grab in this area. To ensure the coordinates of the stations, Global Positioning System (GPS) was used. The sediments were brought back to the laboratory for analysis. The mineral contents in the sand and silt fraction were determined using petrographic microscope having an image analyzer while the element and chemical compound were determined using SEM-EDS. Generally, quartz is dominant mineral found in the sediments with more than 70 percent. Besides, minerals such as feldspar, hematite, calcite and opaque materials are also found in trace amounts. In addition, the dominant element observed is silicon followed by aluminum but not as much like silicon. Accordingly, SiO₂ (quartz) is the oxide that is dominant which is proven by the dominancy of quartz in the sand and silt fractions. The study of texture was used to analyze the particle size in the study area based on three types of particle sizes sediments, which are; sand, silt and clay. In this case, loamy sand is the texture that dominating the study area like in station 2, 3, 4, 8, 9, 10 and 11. The *USDA Textural Triangle* was used to determine this textural class.

ABSTRAK

Projek ini dijalankan bertujuan untuk mengenalpasti elemen-elemen, bentuk oksida, mineral serta untuk mengetahui jenis tekstur sedimen di kawasan lagun Setiu, Terengganu. Aktiviti penyempelan telah dilakukan pada 28 Ogos 2005. Sejumlah 12 sampel sedimen diambil di sepanjang kawasan lagun Setiu menggunakan alat van veen grab. Bagi memastikan koordinat setiap stesen, Global Positioning System (GPS) telah digunakan. Sampel sedimen ini dibawa ke makmal untuk dianalisa. Kandungan mineral dalam butiran pasir dan kelodak boleh ditentukan dengan menggunakan mikroskop petrografik yang mempunyai penganalisa imej di mana elemen dan kumpunan kimia dapat ditentukan dengan menggunakan SEM-EDS. Umumnya, kuartza adalah mineral yang dominan yang ditemui di dalam sedimen melebihi 70%. Selain itu, mineral-mineral seperti feldspar, hematit, kalsit, dan bahan-bahan legap turut ditemui tetapi hanya dalam jumlah yang kecil. Di samping itu, elemen lain yang dominan diperolehi dari kajian ini adalah seperti silikon, diikuti aluminium. Namun begitu, jumlahnya tidak seperti silikon. Secara keseluruhannya, SiO_2 (kuartza) adalah oksida yang dominan dimana dapat dibuktikan oleh pembahagian pasir dan kelodak di dalam kuartza. Kajian jenis tekstur telah digunakan bagi menganalisa saiz partikal di kawasan penyempelan berpandukan 3 jenis saiz partikal sedimen yang utama iaitu; pasir, kelodak dan liat. Namun, didapati tekstur pasir berdominasi kawasan penyempelan. Dalam kajian ini, kelas-kelas tekstur ditentukan berdasarkan *USDA Textural Triangle*.