

STUDY ON MINERALOGY AND GEOCHEMISTRY OF SEDIMENTS AT
PULAU BIDONG, TERENGGANU

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FACULTY OF MARITIME STUDIES AND MARINE SCIENCE
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By

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

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

DECLARATION AND VERIFICATION FORM

FINAL YEAR RESEARCH PROJECT

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

Study on Mineralogy and Geochemistry of Sediments at Pulau Bidong, Terengganu by **Mohd Adi Matin Bin Ahmad**, Matric No. **UK21281** has 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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LIST OF ABBREVIATION

CaCO_3	Calcium carbonate / Calcite
SiO_2	Silicon dioxide / Quartz
$\text{Al}(\text{OH})_3$	Gibbsite
Fe_2O_3	Hematite
AlSi_2O_5	Kaolinite
FeTiO_3	Ilmenite
TiO_2	Rutile
$\text{NaAlSi}_3\text{O}_8$	Feldspar
>	More than
<	Less than
%	Per cent
mL	Mililiter
μm	Micrometer
mm	Milimeter
g	Gram
M	Molar
N	Normality
HCl	Hydrochloric acid
H_2O_2	Hydrogen peroxide
MgCl_2	Magnesium Chloride
$^\circ\text{C}$	Degree Celsius

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ABSTRACT

This study was done in order to determine the minerals contain in sediments of Pulau Bidong, Terengganu. The study also analysed the geochemistry aspect of the sediments. The sediments were collected at 32 sampling stations around Pulau Bidong water. Sediment can be defined as a fine or coarse particles that have settled to accumulate on the seafloor. Sediment consists of detritus like mineral grains and rock fragments derived from pre-existing rock. X-ray Diffractometer (XRD) was used and a total of 8 identifiable minerals were recorded in the sediments samples. Quartz (SiO_2) was the most abundance mineral identified. Quartz is a common and abundant mineral occurring in a great variety of geological environments. Quartz occurs in hydrothermal veins and pegmatite. Well-formed crystals may reach several meters in length and weigh hundreds of kilograms. These veins may bear precious metals such as gold or silver, and form the quartz ores sought in mining. Erosion of pegmatites may reveal expansive pockets of crystals, known as "cathedrals." Quartz is a common constituent of granite, sandstone, limestone, and many other igneous, sedimentary, and metamorphic rocks. In addition, from Scanning Electron Microscope Energy Dispersive Spectroscopy (SEM-EDS) analysis, it showed that the quartz also the abundance oxide compound followed with other compounds. From sedimentological characteristics analysis, the sediments of the island classified as medium sand for the mean value, poorly sorted for sorting, positive skewnees value and very leptokurtic for the kurtosis value.

KAJIAN MENGENAI MINERALOGI DAN GEOKIMIA PADA SEDIMEN PULAU BIDONG, TERENGGANU

ABSTRAK

Kajian ini dilakukan untuk menentukan kandungan mineral yang terdapat pada sedimen di Pulau Bidong, Terengganu. Selain itu, kajian ini juga menganalisis sedimen dari aspek geokimia. Sedimen telah diambil dari 32 stesen persempelan di sekitar perairan Pulau Bidong. Sedimen boleh ditakrifkan sebagai partikel halus atau kasar yang telah mendap dan terkumpul di dasar laut. Sedimen detritus yang terdiri dari butiran mineral dan serpihan batu yang berasal dari batu sedia ada. Alat yang dikenali sebagai X-ray Diffractometer (XRD) telah digunakan dan sebanyak 8 jenis mineral dikenal pasti dan direkodkan. Kuarza (SiO_2) adalah mineral yang paling banyak ditemui. Kuarza merupakan bahan mineral yang biasa dan banyak terdapat dalam pelbagai persekitaran geologi. Kuarza merupakan hasil dari hidroterma dan pegmatite. Kristal yang terbentuk dengan baik boleh mencapai beberapa meter panjang dan berat beratus kilogram. Ia boleh mengandungi logam berharga seperti emas atau perak serta membentuk bijih yang boleh dilombong. Di samping itu, analisis dari Scanning Electron Microscope Energy Dispersive Spectroscopy (SEM-EDS) juga menunjukkan bahawa sebatian oksida yang banyak merupakan kuarza diikuti dengan sebatian lain. Hasil dari analisis ciri-ciri sedimentology menunjukkan sedimen dikelaskan sebagai pasir sederhana kasar bagi nilai min, sisihan tidak sempurna bagi penyisihan, kepencongan positif dan sangat leptokurtik bagi kurtosis.