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MAJOR ELEMENTS AND OXIDES IN SEDIMENTS OF JOHOR COASTS (SOUTH CHINA SEA)

By

Chung Mei Kim

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
COLLAGE UNIVERSITY SCIENCE AND TECHNOLOGY MALAYSIA
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DEDICATED TO:

MY DEAREST FATHER, MOTHER AND FAMILY.

THANKS FOR YOUR ENCOURAGEMENT AND SUPPORT.

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Disahkan oleh:

Penyelia Utama

Nama: Tarikh: 26 April 2006

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.

Ketua Jabatan Sains Samudera

Nama: Tarikh:

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.

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LIST OF ABBREVIATIONS / SYMBOLS

%	percentage
^{0}C	degree Celcius
Φ	phi
L	liter
mL	mililiter
µm	micrometer
cm	centimeter
mm	milimeter
g	gram
N	Normality
M	mol
Q	quartz
O	opaque material
Si	silicon
Al	aluminium
O	oxygen
Ca	calcium
K	potassium
Mg	magnesium
Fe	iron
Na	sodium
Cl	chlorine

Mn	manganese
SiO_2	Silicon oxide
Al_2O_3	Aluminium oxide
FeO	Iron oxide
CaO	Calcium oxide
Na_2O	Sodium oxide
MgO	Magnesium oxide
K_2O	Potassium oxide
$NaHCO_3$	Sodium Bicarbonate
HCl	Hydrochloric Acid
H_2O_2	Hydrogen Peroxide
$MgCl_2$	Magnesium Chlorite
AV	average
SD	standard deviation
>	more than
<	less than
SEM-EDS	Scanning Electron Microscope & Energy Dispersive Specroscopy

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ABSTRCT

Twenty sediments samples were collected from the Johor coastal areas (South China Sea). The sediments were analyzed to determine the major elements, oxides and sediment texture in the study area. The major elements and oxides were analyzed using the Scanning Electron Microscope and Energy Dispersive Spectroscopy (SEM-EDS) while the texture was determined using the hydrometer method. In general, the dominant elements found in the sediments of the study area are Si, Al and Fe and the oxide is SiO_2 which indicates that the area is highly siliceous (SiO_2). The dominance of quartz might be due to the weathering products of granite, which is the dominant rock found along the coastal area of East Coast of Peninsular Malaysia. Al_2O_3 and FeO are the next most abundant major oxide components after SiO_2 which indicates that feldspar and iron minerals are the common minerals found in sediments of the study area. MgO and K_2O are the minor oxides in sediments. In addition, the SiO_2 / Al_2O_3 ratio indicates that quartz and feldspar are present in roughly equal abundances in the sediments while the range of SiO_2 / CaO ratios indicates that quartz has a much greater abundance than calcium carbonate in sediments of study area. For the texture analysis, sandy clay loam covers almost 70% in the study area. It clearly showed that the study area was mainly covered by sandy sediment. Clay texture was only found in station 30 which is located offshore.

ABSTRAK

Sebanyak dua puluh sampel telah diambil semasa penyempalan, dimana ia telah dijalankan di persisiran pantai Johor (Laut China Selatan). Sampel sedimen telah dilakukan analisis untuk mengkaji komposisi elemen dan oxida serta juga tekstur sedimen untuk sedimen persisiran pantai Johor (Laut China Selatan). Alat Scanning Electron Microscope dan Energy Dispersive Spectroscopy (SEM-EDS) telah digunakan untuk menganalisis komposisi dan oxida sedimen manakala bagi tekstur sedimen, kaedah hyrometer telah digunakan. Secara umumnya, Si, Al dan Fe adalah dominan dalam sedimen kawasan kajian dan silika oxida (SiO_2) yang tinggi menunjukkan kawasan kajian adalah sangat siliceous. Kuarza adalah dominan di kawasan kajian. Kawasan kajian ini didominasi oleh kuarza adalah disebabkan hasilan produk daripada granite akibat proses luluhawa, dimana batu granite adalah dijumpai mendominasi di sepanjang persisiran pantai timur Semenanjung Malaysia. Al_2O_3 dan FeO adalah dominan oxida selepas SiO_2 yang menunjukkan feldspar dan Fe mineral adalah mineral yang biasa didapati dalam sedimen di kawasan kajian. MgO dan K_2O wujud sebagai minor oxida dalam sedimen. Tambahan pula, nisbah bagi SiO_2 / Al_2O_3 menunjukkan kuarza dan feldspar wujud dalam peratus yang agak sama dalam sedimen di kawasan kajian manakala nisbah bagi SiO_2 / CaO pula menunjukkan lebih banyak kuarza daripada kalsium karbonat dalam sedimen di kawasan kajian. Bagi analisis tekstur pula, sandy clay loam adalah dominan tekstur kelas yang merangkumi 70% kawasan kajian.. Ini dengan jelas menunjukkan kawasan kajian adalah didominasikan oleh sedimen pasir. Namun begitu, tekstur berliat hanya dijumpai di stesen 30 di kawasan luar pantai.