CORROSION BEHAVIOR OF ZINC [illegible]
IN SEAWATER

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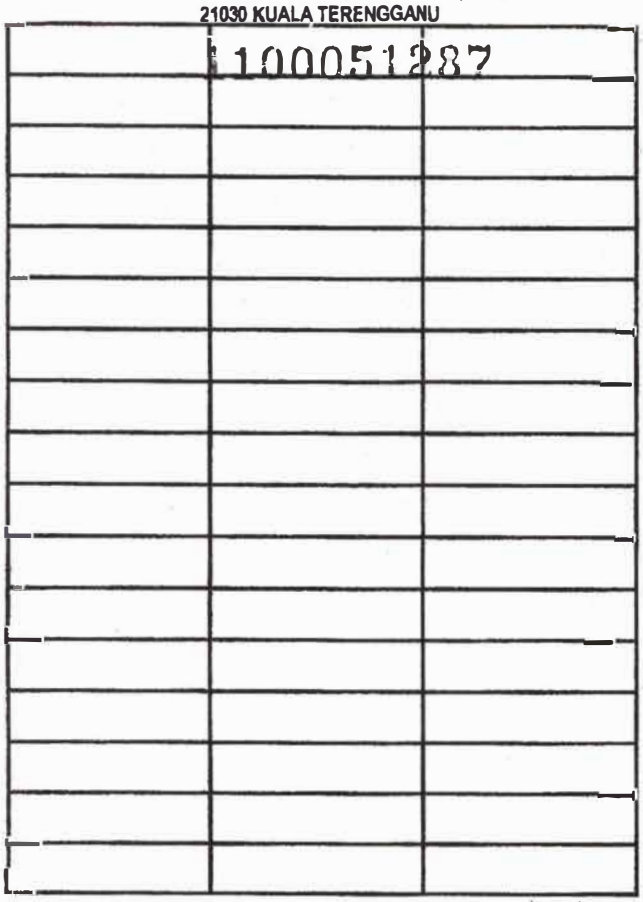
Corrosion behavior of zinc metals in seawater / Siti Nur Rubika Rahim.



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PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: CORROSION BEHAVIOR OF ZINC METAL IN SEAWATER oleh SITI NUR RUBIKA BINTI RAHIM, no matrik UK 10355 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan Ijazah Sarjana Muda Sains Gunaan (Fizik Elektronik dan Instrumentasi), Fakulti Sains dan Teknologi, Universiti Malaysia Terengganu.

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CORROSION BEHAVIOR OF ZINC METAL IN SEAWATER

By

Siti Nur Rubika Bt Rahim

Research Report submitted in partial fulfillment of
the requirement for the degree of
Bachelor of Applied Sciences (Physics, Electronics, and Instrumentations)

Department of Physical Sciences
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LIST OF ABBREVIATION / SYMBOLS

ppt	-	Parts per thousand
cps	-	Count per second
CTD	-	Conductivity, Temperature and Depth
MIC	-	Microbiologically Influence Corrosion
SEM	-	Scanning Electron Microscope
EDS	-	Energy Dispersive Spectroscopy
Δm	-	Dissolution rate
m_0	-	Original weight of zinc
m_1	-	Weight after corrosion reaction
A	-	Total surface area
T	-	Time of exposure in hours
K_{corr}	-	Corrosion rate
K_{jetty}	-	Corrosion rate of zinc immersed in jetty
K_{beach}	-	Corrosion rate of zinc immersed in beach
$K_{estuary}$	-	Corrosion rate of zinc immersed in estuary

ABSTRACT

The corrosion behavior of thin layer of zinc in three types of seawater has been investigated, and the result has confirmed that the significant corrosion process has occurred, as compared to the original surface. Pure zinc was chosen because it is one of the noble elements, which is hard to corrode and the result has proved that zinc was passively reacted towards seawater. Corrosion rate was determined based on the weight loss produced by zinc during immersion time. The corrosion rate was found to be nearly constant during all three experiments that have been carried out. The morphological surface of corroded zinc and the elemental mapping have been analyzed by SEM and EDS respectively.

ABSTRAK

Tindak balas kepingan nipis zink tulen telah dikaji dan keputusannya telah menunjukkan bahawa wujudnya tanda-tanda pengaratan , dibandingkan dengan permukaan asal zink itu. Kepingan zink yang tulen dipilih untuk eksperimen ini kerana zink merupakan salah satu elemen yang amat sukar untuk berkarat, dan keputusan yang diperolehi telah membuktikan bahawa zink telah bertindak secara pasif terhadap sampel air laut. Kadar pengaratan diperolehi berdasarkan kadar kehilangan jisim pada zink setelah direndam dalam sampel air laut selama 720 jam. Kadar pengaratan didapati sekata untuk semua eksperimen yang telah dijalankan. Morfologi permukaan dan pemetaan unsur pada permukaan zink yang berkarat telah dianalisis menggunakan SEM dan EDS.