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CORROSION STUDY OF ZINC IN ACID SOLUTION

By

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## PENGAKUAN DAN PENGESAHAN LAPORAN PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: CORROSION STUDY OF ZINC IN ACID SOLUTIONS oleh NORFARISHA BINTI PUAD, no matrik UK 10742 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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## **ABSTRACT**

Corrosion behavior of zinc has been determined in room temperature in acidic solutions. The main objective of this study is to investigate the effect of hydrochloric acid and sulfuric acid on the corrosion of sample. The acid that was used in the study was hydrochloric acid and sulfuric acid. Three sets of sample were immersed in the acids with molarities 0.1M, 0.2M and 0.3M for each acid. Hydrochloric acid and sulfuric acid solutions were used due to the facts that chlorine and sulfur are the main element in the seawater and the acid rain respectively. The samples were immersed for six hours and the weight losses of the sample were calculated and graphs were plotted. Using the weight loss measurements, the corrosion rates of zinc in solutions were determined. The samples morphology had been examined using Scanning Electron Microscope (SEM) to obtain the microscopic image of the corroded sample. Energy Dispersive X-ray Spectroscopy (EDXS) had been used to obtain the chemical composition and the distribution of the elements within the corroded sample.

## ABSTRAK

Pengoksidaan zink oleh asid hidroklorik dan asid sulfurik telah dikaji pada suhu bilik. Tujuan utama projek ini adalah untuk mengkaji kesan asid terhadap pengoksidaan sampel. Asid yang telah digunakan bagi projek ini adalah asid hidroklorik dan asid sulfurik. Setiap asid mempunyai tiga sampel berlabel A, B dan C dimana sampel direndam didalam asid bermolariti 0.1M, 0.2M dan 0.3M mengikut turutan. Asid hidroklorik dan asid sulfurik diguna kerana bagi kawasan pinggir laut komposisi utamanya ialah klorin manakala bagi hujan asid, komposisi utamanya ialah sulfur. Projek ini dijalankan bagi melihat kesan komposisi-komposisi ini terhadap pengoksidaan atau pengurangan zink. Sampel yang telah disediakan direndam didalam asid yang telah ditetapkan selama enam jam dan dikeluarkan bagi mengira pengurangan berat sampel pada setiap satu jam. Dengan menggunakan data yang telah dipelolehi, graf pengurangan berat diplot melawan masa didalam minit. Kadar pengoksidaan juga telah dikira. Sampel-sampel yang telah mengalami pengoksidaan ini juga dikaji strukturnya menggunakan Scanning Electron Microscope (SEM). Manakala Energy Dispersive X-ray Spectroscopy telah digunakan bagi mengkaji komposisi kimia yang terdapat pada sampel yang telah teroksida.