SYNTHESIS, CHARACTERIZATIONS AND ANTI-CORROSION SCREENING OF SCHIFF BASE DERIVED FROM 4-METHYLBENZALDEHYDE AND ETHYLENEDIAMINE

NUR SYAFIQAH BINTI ABDUL RAZAK

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This Final Year Project Report entitled "**Synthesis, Characterizations and Anti-Corrosion Screening of Schiff Base derived from 4-methylbenzaldehyde and Ethylenediamine**" was submitted by Nur Syafiqah binti Abdul Razak, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Chemistry, in the Faculty of Applied Sciences, was approved by

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Siti Noriah Mohd Shotor
Supervisor
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
72000 Kuala Pilah
Negeri Sembilan Darul Khusus

_____

Dr. Sheikh Ahmad Izaddin Sheikh Mohd Ghazali
Project Coordinator
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
72000 Kuala Pilah
Negeri Sembilan Darul Khusus

_____

Mazni Musa
Head of Programme
B. Sc. (Hons.) Chemistry
Faculty of Applied Sciences
Universiti Teknologi MARA
72000 Kuala Pilah
Negeri Sembilan Darul Khusus

Date: _____

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ABSTRACT

SYNTHESIS, CHARACTERIZATIONS AND ANTI-CORROSION SCREENING OF SCHIFF BASE DERIVED FROM 4-METHYLBENZALDEHYDE AND ETHYLENEDIAMINE

Schiff bases are derived from aldehyde or ketone with amine like compounds in which the carbonyl group is replaced by an imine or azomethine group *(C=N)*. In this research, Schiff base namely *N,N-bis*(4-methylbenzylidene)ethane-1,2-diamine (4-MBenEdine) was synthesized from 4-methylbenzaldehyde and ethylenediamine. Both aldehyde and amine were dissolved in methanol and was refluxed at 60-70 °C for about 5 hours with continuous stirring. The chemical structure of the product was confirmed by elemental analysis, FT-IR and UV-Vis techniques. 4-MBenEdine produces white colour crystal with high percentage yield, 76.48 % and having sharp melting point. From the characterizations, the detection of azomethine group with other important bonds was observed from the comparison of aldehyde and amine. From the IR spectrum of 4-MBenEdine, main peaks were observed at 1638, 1508, 1024 and 819 cm^{-1} which are belong to C=N, C=C, C-N and C-H (aromatic) respectively. For UV-Vis spectrum, three transitions were detected for 4-MBenEdine. 365, 255 and 210 nm were attributed to the $n \rightarrow \pi^*$ of azomethine group, $\pi \rightarrow \pi^*$ of benzene ring and $n \rightarrow \sigma^*$ of nitrogen atom presence in ligand respectively. The corrosion inhibition efficiency on mild steel was done at various inhibitor concentrations from 1 M hydrochloric acid (HCl) that were diluted from 37 % of HCl has been investigated using weight loss technique. From the results obtained, it was found that the corrosion inhibition efficiency of 4-MBenEdine is much greater than that of corresponding amine and aldehyde. The striking effect on the corrosion inhibition activities due to the existence of *C=N* groups that adsorbed onto the mild steel surface that cause them to form a monolayer on the surface.