A STUDY OF SCHIFF BASE LIGANDS AS A POTENTIAL CORROSION INHIBITOR FOR MILD STEEL IN ACIDIC MEDIUM

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This Final Year Project entitled **"A Study of Schiff Base Ligands As A Potential Corrosion Inhibitor for Mild Steel in Acidic Medium"** was submitted by Nurul Amira Binti Mohd Riffin, in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Chemistry, in the Faculty of Applied Sciences, and was approved by

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TABLE OF CONTENTS

ABSTRACT

A STUDY OF SCHIFF BASE LIGANDS AS A POTENTIAL CORROSION INHIBITOR FOR MILD STEEL IN ACIDIC MEDIUM

Corrosion inhibitor was used for protection of metals and alloys in dealing toward corrosion problems. Corrosion inhibitor had great acceptance in the industries due to excellent anti-corrosive properties. Three Schiff base ligands named 2-[benzylideneamino] phenol (BL1), 2-[(4-methylbenzylidene) amino] phenol (BL2) and *N*-salicylidene-4-chloroaniline (BL3) were synthesized and characterized by using elemental analysis (CHNS), IR, NMR spectrometer and UV-VIS spectroscopy. IR spectra confirm the present of C=N group in the synthesized ligand and supported by NMR result in the confirmation of the ligands structure. The corrosion inhibition of mild steel in 1 M HCl for the three synthesized ligands have been focused in this study. The results show that inhibition efficiency increases when inhibitor concentration increases and inhibition efficiency decreases with longer immersion time of mild steel in acidic medium. The effectiveness of these inhibitor decreased in the order of BL3>BL1>BL2. BL3 shows the most percentage inhibition efficiency among the other two ligands. The inhibition efficiency of BL3 can increase in percentage up to 97.60 % is due to the presence of the benzene ring and the C=N group can form a strong π bond where the HOMO electron in electronegative chlorine donates it electron toward unoccupied orbitals (LUMO) of iron steel. The inhibitor efficiency increase from 6 hours to 18 hours due to increase in adsorption of protective film toward metal surface. Increase in desorption of protective film on the metal surface can be seen from 18 hours to 78 hours resulting in decreasing in inhibition efficiency.