

**SYNTHESIS, CHARACTERIZATION AND ANTI-CORROSION  
SCREENING OF Zn(II) THIAcetAZONE COMPLEX**

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This Final Year Project Report entitled “**Synthesis, Characterization and Anti-Corrosion Screening of Zn(II) Thiacetazone Complex**” was submitted by Siti Aisyah binti Musa, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Chemistry, in the Faculty of Applied Sciences, and was approved by



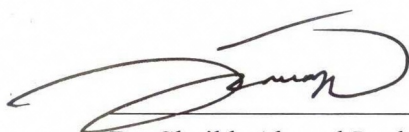
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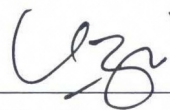
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## TABLE OF CONTENTS

	<b>Page</b>
<b>ACKNOWLEDGEMENTS</b>	ii
<b>TABLE OF CONTENTS</b>	iii
<b>LIST OF TABLES</b>	v
<b>LIST OF FIGURES</b>	vi
<b>LIST OF ABBREVIATIONS</b>	vii
<b>ABSTRACT</b>	ix
<b>ABSTRAK</b>	x
<b>CHAPTER 1 INTRODUCTION</b>	
1.1 Background of Study	1
1.2 Problem Statement	4
1.3 Significance of Study	5
1.4 Objectives of Study	6
<b>CHAPTER 2 LITERATURE REVIEW</b>	
2.1 Coordination Modes of Thiosemicarbazone	7
2.2 Characterization of Schiff Base and Metal Complexes	10
2.2.1 Fourier Transform Infrared	10
2.2.2 UV-Vis Spectroscopy	12
2.2.3 X-ray Crystallography	14
2.2.4 Nuclear Magnetic Resonance Spectroscopy	14
2.3 Applications	17
2.3.1 Biological Activities	17
2.3.2 Corrosion Inhibitor	18
<b>CHAPTER 3 METHODOLOGY</b>	
3.1 Materials	19
3.1.1 Chemicals	19
3.1.2 Apparatus	19
3.1.3 Instruments	19
3.2 Methods	20
3.2.1 Synthesis of Zn Complex	20
3.3 Characterizations	21
3.3.1 Fourier-Transform Infrared (FT-IR)	21
3.3.2 UV-Visible (UV-Vis)	22

3.3.3	Melting Point	22
3.3.4	Elemental Analysis (CHNS)	22
3.3.5	Molar Conductivity	23
3.3.6	Gravimetric Analysis	23
3.4	Corrosion Inhibition Study	23
3.4.1	Preparation of Solutions	23
3.4.2	Weight Loss Method	24

#### **CHAPTER 4 RESULTS AND DISCUSSION**

4.1	Synthesis of Zn Complex	25
4.2	Physico-Chemical Analysis	26
4.3	Infrared Spectra Data	29
4.4	UV-Visible	32
4.5	Gravimetric Analysis	35
4.6	Molar Conductivity	36
4.7	Corrosion Inhibition Study	36

#### **CHAPTER 5 CONCLUSION AND RECOMMENDATIONS**

5.1	Conclusion	44
5.2	Recommendations	46

<b>CITED REFERENCES</b>	47
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<b>APPENDICES</b>	52
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<b><i>CURRICULUM VITAE</i></b>	56
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## ABSTRACT

### SYNTHESIS, CHARACTERIZATION AND ANTI-CORROSION SCREENING OF Zn(II) THIACTAZONE COMPLEX

Reaction between 4-formylacetanilidethiosemicarbazone with  $ZnCl_2$  in acetonitrile were produced 4-formylacetanilidethiosemicarbazone Zinc(II) chloride,  $[Zn(TAC)]Cl$  with ratio 1:1 (ligand:metal). The synthesized complex were characterized by elemental analysis (C, H, N and S), FT-IR, UV-Visible, molar conductance, gravimetric analysis and melting point. The shifting in infrared spectra and electronic transition showed that the ligand coordinated to metal ion through azomethine N, carbonyl O and sulfur thus produced tridentate manner of complex. The stretching of  $\nu(C=S)$  in the spectrum of the ligand is shifted in the spectrum of complex indicating that the sulfur atom involve in the complexation. The elemental analysis along with the molar conductance confirmed the 1:1 electrolyte behavior of the complex, thus producing chemical formula  $[Zn(TAC)]Cl$  with percentage yield 86.34 %. For gravimetric analysis, the product formed was metal oxide, ZnO with the percentage calculated of Zn(II) in the complex was 13.66 %. The solid residue of ZnO was formed after the decomposition was completed. The corrosion inhibitors efficiency of ligand and its metal complex in 1 M  $H_2SO_4$  and 1 M HCl were determined by using weight loss method. The 0.1 M concentration of the inhibitors portrayed the good inhibition efficiency. The result showed that  $[Zn(TAC)]Cl$  has better inhibitory action against corrosion of mild steel compare to ligand.