

## *Contents*

---

---

## CONTENTS

CHAPTER NO.	TITLE	PAGE NO.
<b>1</b>	<b>Introduction</b> 1.1 Corrosion 1.2 Corrosion inhibitors 1.3 Corrosion monitoring techniques <b>Objectives of the Present Study</b>	 1 8 13 19
<b>2</b>	<b>Review of literature</b>	<b>20</b>
<b>3</b>	<b>Experimental Methods</b> 3.1 Materials 3.2 Synthesis of Inhibitors 3.3 Evaluation of corrosion inhibition efficiency	 35 36 39
<b>Results and Discussion</b>		
<b>4</b>	<b>Corrosion inhibition performance of benzodiazepines for mild steel in 1M Sulphuric acid</b> 4.1 Introduction 4.2 Weight loss method 4.3 Effect of temperature 4.4 Adsorption isotherm 4.5 Electrochemical impedance spectroscopy (EIS) 4.6 Potentiodynamic polarization measurements 4.7 Surface morphology analysis 4.8 FTIR spectra 4.9 Chemical structure of the inhibitors and corrosion inhibition performance	 45 47 47 49 50 52 53 54 54

<b>CHAPTER NO.</b>	<b>TITLE</b>	<b>PAGE NO.</b>
<b>5</b>	<b>Comparison of corrosion inhibitive performance of benzothiazepines, benzoxazepines and benzodiazepines</b> 5.1 Introduction 5.2 Weight loss studies 5.3 Effects of temperature and thermodynamic parameters 5.4 Electrochemical impedance studies (EIS) 5.5 Potentiodynamic polarization studies 5.6 SEM and EDX spectra 5.7 Comparison of inhibition performance of benzothiazepines, benzoxazepines and benzodiazepines	 59 60 61 62 63 64 64
<b>6</b>	<b>Comparison of corrosion inhibition performance of some selected benzodiazepines for mild steel, copper and aluminium</b> 6.1 Introduction 6.2 Results and Discussion 6.2.1 Weight loss measurements 6.2.2 Electrochemical AC impedance measurements 6.2.3 Polarization measurements 6.2.4 Scanning electron microscope (SEM) 6.2.5 Atomic force microscopy (AFM) 6.3 Comparison of corrosion inhibition performance of benzodiazepines for mild steel, copper and aluminium	 68 69 69 72 72 73 74 74
<b>7</b>	<b>Synergistic influence of surfactants on the corrosion inhibition performance of benzodiazepines for mild steel in 1M H<sub>2</sub>SO<sub>4</sub></b> 7.1 Introduction 7.2 Review of literature 7.3 Results 7.4 Adsorption isotherms 7.5 Effect of immersion time, temperature and concentration of acid 7.6 Discussion	 77 78 79 80 81 81
<b>8</b>	<b>Quantum Chemical Studies</b> 8.1 Introduction 8.2 Review of literature 8.3 Results and discussion	 84 84 88
<b>9</b>	<b>Summary and Conclusion</b>	<b>96</b>
<b>10</b>	<b>Scope for Further Work</b>	<b>98</b>