

LIST OF CONTENTS

PART I		
SYNTHESIS AND CHARACTERIZATION		
CHAPTER 1	INTRODUCTION AND REVIEW	1
	Schiff bases	1
	Transition metal complexes of Schiff bases – a review	4
	Complexes of Schiff bases derived from thiophene-2-carbaldehyde - a review	10
	Scope of present investigation	12
CHAPTER 2	MATERIALS AND METHODS	14
CHAPTER 3	STUDIES ON SCHIFF BASE, 3-(1H-INDOL-3-YL)-2-[(E)-(THIOPHEN-2-YLMETHYLIDENE)AMINO]PROPANOIC ACID AND ITS TRANSITION METAL COMPLEXES	18
	Synthesis of ligand	18
	Characterization of ligand	18
	Synthesis of complexes	22
	Characterization of complexes	22
CHAPTER 4	STUDIES ON SCHIFF BASE, 3-[THIOPHEN-2-YLMETHYLENEAMINO] BENZOIC ACID AND ITS TRANSITION METAL COMPLEXES	29
	Synthesis of ligand	29
	Characterization of ligand	29
	Synthesis of complexes	33
	Characterization of complexes	33
CHAPTER 5	STUDIES ON SCHIFF BASE, 4-(5-[(2-CARBAMO THIOYLHYDRAZONO)METHYL]THIOPHEN-2-YL) BENZOIC ACID AND ITS TRANSITION METAL COMPLEXES	40
	Synthesis of ligand	41
	Characterization of ligand	41
	Synthesis of complexes	45
	Characterization of complexes	46

CHAPTER 6	STUDIES ON SCHIFF BASE, 4-(5-[(2-PHENYL HYDRAZONO)METHYL] THIOPHEN-2-YL)BENZOIC ACID AND ITS TRANSITION METAL COMPLEXES	52
	Synthesis of ligand	52
	Characterization of ligand	53
	Synthesis of complexes	56
	Characterization of complexes	57
CHAPTER 7	STUDIES ON SCHIFF BASE, 4-(5-[(2-CARBAMO THIOYLHYDRAZONO)METHYL]FURAN-2-L)BENZOIC ACID AND ITS TRANSITION METAL	63
	Synthesis of ligand	63
	Characterization of ligand	63
	Synthesis of complexes	67
	Characterization of complexes	68
	SUMMARY	74
	REFERENCES	78
PART II		
THERMOANALYTICAL STUDIES		
CHAPTER 1	INTRODUCTION AND REVIEW	83
	Thermogravimetric analysis (TGA)	83
	Differential thermal analysis (DTA)	88
	Scope of present investigation	90
CHAPTER 2	MATERIALS AND METHODS	91
CHAPTER 3	THERMAL DECOMPOSITION KINETICS OF Cr(III) COMPLEXES OF T2YMABA, PHMT2YBA, CTHMT2YBA AND CTHMF2YBA	93
	Kinetics of decomposition	95
CHAPTER 4	THERMAL DECOMPOSITION KINETICS OF Ni(II) COMPLEXES OF T2YMABA, PHMT2YBA, CTHMT2YBA, CTHMF2YBA AND I3YT2YMAPA	110
	Kinetics of decomposition	112
	SUMMARY	127
	REFERENCES	129

PART III		
CORROSION INHIBITION STUDIES		
CHAPTER 1	INTRODUCTION AND REVIEW	132
	Schiff bases as corrosion inhibitors	137
	Schiff bases as corrosion inhibitors on mild steel	139
	Scope of present investigation	143
CHAPTER 2	MATERIALS AND METHODS	145
CHAPTER 3	CORROSION INHIBITION INVESTIGATIONS ON SCHIFF BASE INHIBITORS I3YT2YMAPA, T2YMABA, PHMT2YBA, CTHMT2YBA AND CTHMF2YBA ON MILD STEEL IN ACIDIC MEDIA	157
SECTION I	CORROSION INHIBITION STUDIES OF SCHIFF BASE INHIBITORS I3YT2YMAPA, T2YMABA, PHMT2YBA, CTHMT2YBA AND CTHMF2YBA ON MILD STEEL IN 1.0M HCl	158
	Weight loss studies	158
	Comparison of corrosion inhibition efficiencies of Schiff base inhibitors with their parent amines	164
	Adsorption isotherms	165
	Effect of temperature	168
	Surface morphological studies	172
	Electrochemical impedance spectroscopic studies	173
	Potentiodynamic polarization studies	178
SECTION II	CORROSION INHIBITION STUDIES OF SCHIFF BASE INHIBITORS I3YT2YMAPA, T2YMABA, PHMT2YBA, CTHMT2YBA AND CTHMF2YBA ON MILD STEEL IN 0.5M H₂SO₄	184
	Weight loss studies	184
	Adsorption isotherms	187
	Surface morphological studies	189
	Corrosion inhibition studies on parent compounds	190
	Electrochemical impedance spectroscopic studies	191
	Potentiodynamic polarization studies	196
	SUMMARY	202
	REFERENCES	205

PART IV		
ANTITUMOUR STUDIES		
CHAPTER 1	INTRODUCTION AND REVIEW	211
	Coordination complexes as antitumour drugs – a review	220
	Scope of present investigation	225
CHAPTER 2	MATERIALS AND METHODS	227
CHAPTER 3	ANTITUMOUR STUDIES ON COPPER(II) COMPLEXES OF SCHIFF BASES, I3YT2YMAPA, T2YMABA, CTHMT2YBA, PHMT2YBA, CTHMF2YBA, P3YEHCTA, PHEP, A9Y3APA, A9Y3IMPA AND A9Y3PPA	236
	<i>In vitro</i> cytotoxicity studies	238
	Toxicity studies of the copper(II) complexes on Swiss albino mice	24324
	Tumour reduction effect of Cu(II) complex of 3-(1H-indol-3-yl)-2-[(thiophen-2-ylmethylidene)amino]propanoic acid (I3YT2YMAPA)	245
	Tumour reduction effect of Cu(II) complex of 3-[thiophen-2-ylmethyleneamino] benzoic acid (T2YMABA)	247
	Tumour reduction effect of Cu(II) complex of 4-(5-[(2-carbamothioylhydrazono) methyl]thiophen-2-yl)benzoic acid (CTHMT2YBA)	248
	Mechanism of action	250
	SUMMARY	254
	REFERENCES	257
LIST OF PUBLICATIONS		261