



Ain Shams University
Faculty of Education
Chemistry Department

**Synthesis and physicochemical studies of metal
complexes of some new Shciff bases containing
1,3-thiazine-2,6(3*H*)-dione**

A Thesis Submitted
By
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Shery Anwar Fahmy Ibrahim

LIST OF ABBREVIATIONS

List of abbreviations

DMF	Dimethylformamide
DMSO	Dimethylsulfoxide
AHTD	5-Acetyl-4-hydroxy-2 <i>H</i> -1,3-thiazine-2,6(3 <i>H</i>)dione
EDTA	Ethylene diamine tetraacetic acid (disodium salt)
H ₂ L _a	6-hydroxy-5-[<i>N</i> -(2-{[(1 <i>E</i>)-1-(6-hydroxy-2,4-dioxo-3,4-dihydro-2 <i>H</i> -1,3-thiazin-5-yl)ethylidene]amino}ethyl)ethanimidoyl]-2 <i>H</i> -1,3-thiazine-2,4(3 <i>H</i>)-dione,
H ₂ L _b	5,5'-{propane-1,3-diylbis[nitrilo(1 <i>E</i>)eth-1-yl-1-ylidene]}bis(4-hydroxy-2 <i>H</i> -1,3-thiazine-2,6(3 <i>H</i>)-dione)
H ₂ L _c	5'-{iminobis[ethane-2,1-diynitrilo(1 <i>E</i>)eth-1-yl-1-ylidene]}bis(4-hydroxy-2 <i>H</i> -1,3-thiazine-2,6(3 <i>H</i>)-dione)
a.m.u	Atomic mass unit
g.f.w	Gram formula weight
μ _{eff}	Magnetic moment
β	Nephelauxetic parameter
DN	Donor number
l.f.s	Ligand field stabilization
Δ _o	Ligand field stabilization energy
TS	Tanabe-Sugano
E _{HOMO}	High occupied Molecular Orbital
E _{LUMO}	Low Unoccupied Molecular Orbital
E _{gap}	= E _{HOMO} – E _{LUMO}
EA	= total energy of free ligand – total energy of complex
TGA	Thermal gravimetric analysis
DrTGA	Derivative thermal gravimetric analysis
ΔG	Free energy change

LIST OF ABBREVIATIONS

ΔH	Enthalpy change
ΔS	Entropy change
α	Weight loss
E_a	Heat of activation
TG	Thermograms
R	Universal gas constant ($8.3144 \text{ J mol}^{-1} \text{ K}^{-1}$)
A	Pre-exponential factor
Φ	Heating rate
r	Correlation coefficient
k	Boltzmann's constant ($1.388 \times 10^{-23} \text{ J K}^{-1}$)
h	Plank's constant ($6.626 \times 10^{-34} \text{ J Hz}^{-1}$)
AN^{M+n}	Acceptor number of metal ions

LIST OF FIGURES

Figure No.	Title	Page
1.1	Structure of the tetradentate Schiff Base ligand	3
1.2	Structure of the tetradentate Schiff Base ligand	3
1.3	Structure of Ni(II), Cu(II) and VO(IV) metal complexes	3
1.4	Cu(II) Schiff base complexes.	
1.5	Molecular structure of dimeric Fe(III) tetradentate Schiff base complexes.	5
1.6	Structure of Ru(II) complex	5
1.7	Structure of the ligands (X = Cl, Br).	6
1.8	Structures of synthesized Schiff bases ligands	6
1.9	Complexes of synthesized Schiff bases ligands	7
1.10	Structure of oxovanadium(IV) complexes	8
1.11.	Structure of the Schiff base ligands.	8
1.12.	Structure of the tetradentate Schiff base ligands	9
1.13.	4,5-bis(salicylidenimino)benzo-15-crown-5, (SALH ₂)-copper (II) complexes, (A) mono and (B) binuclear.	9
1.14.	Structure of Zn(II), Cu(II) and VO(IV) complexes of the ligand H ₂ L.	10
1.15.	Structure of Schiff base ligands (1–4)	11
1.16	Cobalt(II) of unsymmetrical Schiff bases complexes	11
1.17	Synthesis of half units and tetradentate unsymmetrical Schiff bases	12
1.18	Structure of the Schiff base ligand	12
1.19	Structure of Schiff base ligand	13
1.20	Structure of the Schiff base ligands	13
1.21	Molecular structure of the dinuclear complex	14
1.22	Tetradentate nitro-Schiff bases ligand	14
1.23	Schematic representation of reactions of the unsymmetrical tetradentate azomethine Cu(II) complexes.	15
1.24	Structure of the Schiff base ligand H ₂ L	16

LIST OF FIGURES

Figure No.	Title	Page

LIST OF FIGURES

1.25	Structure of the four coordinated Ni(II) complexes.	16
1.26	Structure of the Schiff base ligands	17
1.27	Structure of the tetradentate Schiff base ligands used for syntheses of uranyl complexes	18
1.28	Oxo-vanadium(IV) Salen and oxo-vanadium(IV) SalPn complexes.	18
1.29	Schiff base, H ₂ L, ligand	19
1.30	The Schiff base, H ₄ L ligand	19
1.31	<i>Bis-Schiff</i> bases H ₂ L _a and H ₂ L _b .	20
1.32	The Schiff base, H ₂ L ligand	20
1.33	The Schiff base, H ₂ [habenzil], ligand	21
1.34	The Schiff base, H ₂ [salpnMe ₂] ligand	21
1.35	The Schiff base, H ₂ L, ligand	22
1.36	The Schiff base, L ¹ : X= –NH ₂ , L ² : X= –OH, ligands	22
1.37	Structure of macrocyclic ligands and their complexes, M=Co(II), Ni(II), Cu(II), and Zn(II).	23
1.38	The Schiff base ligands.	24
1.39	The Schiff base, L, ligand	25
1.40	Structures of tetradentate Schiff base ligand.	25
1.41	Structure of the pentadentate Schiff base ligand	26
1.42	Structure of the pentadentate Schiff base ligand	27
1.43	Structure of Zn(II) complexes.	27
1.44	Geometrical isomers of [Fe(saldptm)Cl]. Left: cis-isomer right: trans-isomer	28
1.45	Structure of the pentadentate Schiff Base ligand	29
1.46	Pentadentate ligand derived from 2,6-diacetylpyridine	29
1.47	The thione (1a) and thiol (1b) forms of the Schiff bases	29

LIST OF FIGURES

Figure No.	Title	Page
1.48	The thione (a) and the thiol (b) forms of H ₂ SNNNS.	30
1.49	The thione and thiol forms of H ₂ SNNNS.	31
1.50	Structure of H ₃ L.	31
1.51	Structure of 1,3-Bis (2-hydroxy-1-naphthylideneamino)-2-propanol (L).	32
1.52	Structure of macrocyclic Schiff base ligand (L) and its nickel(II) complexes.	33
1.53	Structure of [Cu ₂ ^{II} (L)(μ ₂ -Cl)].1:5(H ₂ O) (1) and (DMF) (2))[Cu ₂ ^{II} (L)(μ ₂ -OAc)].	33
1.54	Structure of pentadentate Schiff base ligand and Its nickel complex.	35
1.55	Schiff base, H ₃ L ¹ and H ₃ L ² , Ligands	36
1.56	Schiff base of H ₂ L ¹ and H ₂ L ²	36
1.57	Schiff base of macrocyclic, L, ligand	36
1.58	Schiff base of macrocyclic, L, ligand	37
1.59	Schiff base of macrocyclic, L, ligand and its Ni complex.	37
1.60	Schiff base, H ₂ L, ligand	38
1.61	Structure of [Cu(acac) ₂ trien], R= H, [Cu(acac) ₂ Metrien], R= CH ₃ complexes.	39
1.62	A molecular structure of [μ ² -bpy_Fe ^{III} L) ₂] ²⁺ complex	40
1.63	Unsymmetrical tetranucleating, H ₆ L, ligand	40
1.64	Schiff base of N-salicylidene-2-(bis(2-hydroxyethyl) amino)ethylamine ligand	41
1.65	Schiff base of macrocyclic, L, ligand	71
1.66	Schiff base ligands I and II	71
3.1	Infrared spectrum of H ₂ L _a ligand.	72
3.2	Infrared spectrum of H ₂ L _b ligand.	

LIST OF FIGURES

Figure No.	Title	Page
3.3	Infrared spectrum of H ₂ L _c ligand	72
3.4	Correlation of the E _{gap} versus the stretching frequencies of ν_{C-O}/cm^{-1} .	72
3.5	Correlation of the heat of formation H _f versus the stretching frequencies of ν_{C-O}/cm^{-1} .	73
3.6	Correlation of the E _{gap} versus the stretching frequencies of ν_{C-N}/cm^{-1}	73
3.7	Correlation of the E _{LUMO} versus the stretching frequencies of ν_{C-O}/cm^{-1} .	74
3.8	Electronic spectrum of H ₂ L _a ligand in DMF solution.	74
3.9	Electronic spectrum of H ₂ L _b ligand in DMF solution.	75
3.10	Electronic spectrum of H ₂ L _c ligand in DMF solution.	75
3.11	Correlation of the ($\nu_{C=N}$) versus $\pi \rightarrow \pi^*$ transition.	76
3.12	Correlation of the E _{gap} versus $\pi \rightarrow \pi^*$ transition.	76
3.13	Correlation of the E _{gap} versus $n \rightarrow \pi^*$ transition.	77
3.14	The mass spectrum of H ₂ L _a ligand.	77
3.15	The mass spectrum of H ₂ L _b ligand.	78
3.16	The mass spectrum of H ₂ L _c ligand.	78
3.17	¹ H-NMR spectra of H ₂ L _a ligand in (DMSO- <i>d</i> ₆) (A) in absent of D ₂ O and (B) in presence of D ₂ O.	79
3.18	¹ H-NMR spectra of H ₂ L _b ligand in (DMSO- <i>d</i> ₆) (A) in absent of D ₂ O and (B) in presence with D ₂ O.	80
3.19	¹ H-NMR spectra of H ₂ L _c ligand in (DMSO- <i>d</i> ₆) (A) in absent D ₂ O and (B) in presence with D ₂ O.	81
3.20	Correlation of the δ HNMR/ ppm (CH ₃) versus $n \rightarrow \pi^*$ transition.	82
3.21	Molecular modeling of H ₂ L _a .	82
3.22	Molecular modeling of H ₂ L _b .	83
3.23	Molecular modeling of H ₂ L _c	83
4.1	Infrared spectrum of [Cu(L _a)(H ₂ O) ₂] (2).	140
4.2	Infrared spectrum of [Ni(L _a)]·H ₂ O (3).	140
4.3	Infrared spectrum of [Co(HL _a)(H ₂ O)(NO ₃)]·2.5H ₂ O (4).	140
4.4	Infrared spectrum of [VO(H ₂ L _a)(SO ₄)]·4H ₂ O (5).	141
4.5	Infrared spectrum of [Fe(L _a)(H ₂ O)(NO ₃)]·0.5CH ₃ OH·H ₂ O(6).	141
4.6	Infrared spectrum of [Cd(L _a)(H ₂ O) ₂].6H ₂ O(8).	142
4.7	Infrared spectrum of [Zn(L _a)(H ₂ O) ₂].H ₂ O (9).	142
4.8	Infrared spectrum of [UO ₂ (HL _a)(H ₂ O)(NO ₃)]·1.5H ₂ O(10).	142

LIST OF FIGURES

4.9	Infrared spectrum of $[\text{Cu}(\text{L}_b)(\text{H}_2\text{O})_2].0.5\text{CH}_3\text{OH}$ (11).	143
4.10	Infrared spectrum of $[\text{Ni}(\text{L}_b)(\text{H}_2\text{O})_2].2\text{H}_2\text{O}$ (12).	143
4.11	Infrared spectrum of $[\text{Fe}(\text{L}_b)(\text{NO}_3)(\text{H}_2\text{O})].0.5\text{CH}_3\text{OH}$ (14).	143
4.12	Infrared spectrum of $[\text{Cr}(\text{L}_b)(\text{H}_2\text{O})_2].(\text{NO}_3).0.5\text{CH}_3\text{OH}$ (15).	144
4.13	Infrared spectrum of $[\text{Ce}(\text{L}_b)(\text{H}_2\text{O})_3].(\text{NO}_3).\text{CH}_3\text{OH}$ (16).	144
4.14	Infrared spectrum of $[\text{Cd}(\text{L}_b)(\text{H}_2\text{O})_2].\text{H}_2\text{O}$ (17).	145
4.15	Infrared spectrum of $[\text{Zn}(\text{L}_b)(\text{H}_2\text{O})_2]$ (18).	145
4.16	Infrared spectrum of $[\text{UO}_2(\text{L}_b)(\text{H}_2\text{O})_2]$ (19).	146
4.17	Infrared spectrum of $[\text{Cu}(\text{L}_c)(\text{H}_2\text{O})]$ (20).	146
4.18	Infrared spectrum of $[\text{Fe}(\text{L}_c)(\text{NO}_3)].0.5\text{CH}_3\text{OH}$ (24).	146
4.19	Infrared spectrum of $[\text{Cr}(\text{L}_c)(\text{H}_2\text{O})].\text{NO}_3.0.5\text{CH}_3\text{OH}$ (25).	147
4.20	Infrared spectrum of $[\text{Ce}(\text{L}_c)(\text{H}_2\text{O})(\text{NO}_3)].0.5\text{CH}_3\text{OH}$ (26).	147
4.21	Visible spectrum of $[\text{Cu}(\text{L}_a)\text{H}_2\text{O}]$ (1).	148
4.22	Visible spectrum of $[\text{Cu}(\text{L}_a)(\text{H}_2\text{O})_2]$ (2).	148
4.23	Visible spectrum of $[\text{Ni}(\text{L}_a)].\text{H}_2\text{O}$ (3).	149
4.24	Visible spectrum of $[\text{Co}(\text{HL}_a)(\text{H}_2\text{O})(\text{NO}_3)].2.5\text{H}_2\text{O}$ (4).	149
4.25	Visible spectrum of $[\text{Ce}(\text{L}_a)(\text{H}_2\text{O})_4].\text{NO}_3.0.5\text{CH}_3\text{OH}$ (5).	150
4.26	Visible spectrum of $[\text{Cr}(\text{L}_b)(\text{H}_2\text{O})_2].(\text{NO}_3).0.5\text{CH}_3\text{OH}$ (15).	150
4.27	Visible spectrum of $[\text{Ni}(\text{L}_c)(\text{H}_2\text{O})].1.5\text{H}_2\text{O}$ (21).	151
4.28	Visible spectrum of $[\text{VO}(\text{HL}_c)].\text{SO}_4.0.5\text{CH}_3\text{OH}$ (23).	151
4.29	Visible spectrum of $[\text{Fe}(\text{L}_c)(\text{NO}_3)].0.5\text{CH}_3\text{OH}$ (24).	152
4.30	Visible spectrum of $[\text{Cr}(\text{L}_c)(\text{H}_2\text{O})].\text{NO}_3.0.5\text{CH}_3\text{OH}$ (25).	152
4.31	ESR spectrum of $[\text{Cu}(\text{L}_a)(\text{H}_2\text{O})_2]$ (2).	153
4.32	ESR spectrum of $[\text{Cu}(\text{L}_b)(\text{H}_2\text{O})_2].0.5\text{CH}_3\text{OH}$ (11).	154
4.33	ESR spectrum of $[\text{Cu}(\text{L}_c)(\text{H}_2\text{O})]$ (20).	155
4.34	The mass spectrum of $[\text{Cu}(\text{L}_c)(\text{H}_2\text{O})]$ (20).	156
4.35	Molecular molding of $[\text{Cu}(\text{L}_a)\text{H}_2\text{O}]$ (1).	156
4.36	Molecular molding of $[\text{Cu}(\text{L}_a)(\text{H}_2\text{O})_2]$ (2).	157
4.37	Molecular molding of $[\text{Cu}(\text{L}_b)(\text{H}_2\text{O})_2].0.5\text{CH}_3\text{OH}$ (11).	157
4.38	Molecular molding of $[\text{Cu}(\text{L}_c)(\text{H}_2\text{O})]$ (20).	158
4.39	Correlation of $E_{\text{LUMO}}/\text{eV}(\text{lig})$ versus $E_{\text{gap}}/\text{eV}(\text{Cu-L})$.	158
4.40	Correlation of $EA/\text{kcal/mol}$ versus $\nu_{\text{C=N}}/\text{cm}^{-1}$ (Cu-L).	159
4.41	Correlation of $\text{Cu-N}/\text{\AA}$ versus $\nu_{\text{C=N}}/\text{cm}^{-1}$ (Cu-L).	159
4.41	Correlation of $\text{Cu-O}/\text{\AA}$ versus $\delta \text{HNMR OH/ppm (Lig)}$.	159

LIST OF FIGURES

4.42	¹ H-NMR spectrum of [Ni(L _a)].H ₂ O (3).	160
4.43	The mass spectrum of [Ni(L _b)(H ₂ O) ₂].2H ₂ O (12).	160
4.44	Molecular molding of [Ni(L _a)].H ₂ O.	161
4.45	Molecular molding of [Ni(L _b)(H ₂ O) ₂].2H ₂ O (12).	161
4.46	Molecular molding of [Ni(L _c)(H ₂ O)].1.5H ₂ O (21).	162
4.47	Correlation of ΔH _f (L)/kcal.mol ⁻¹ versus EA/kcalmol ⁻¹ (Ni-L).	162
4.48	Molecular molding of [Co(HL _a)(H ₂ O)(NO ₃)].2.5H ₂ O (4).	163
4.49	Molecular molding of [Co(L _b)(H ₂ O) ₂].0.5CH ₃ OH (13).	163
4.50	Molecular molding of [Co(L _c)(H ₂ O)].2H ₂ O (22).	164
4.51	Correlation of EA/kcalmol ⁻¹ (Co-L) versus ν _{Co-N} cm ⁻¹ .	
4.52	Correlation of E _{LUMO} /eV (lig) versus EA/kcal.mol ⁻¹ (Co-L).	165
4.53	Correlation of E _{HOMO} /eV (lig) versus E _{LUMO} /eV (Co-L).	166
4.54	ESR spectrum of [VO(HL _a)(SO ₄)].4H ₂ O (5).	166
4.55	ESR spectrum of [VO(HL _c)].SO ₄ .0.5CH ₃ OH (15).	
4.56	The mass spectrum of [Fe(L _c)(NO ₃)].0.5CH ₃ OH (25).	167
4.57	Molecular molding of [Cr(L _b)(H ₂ O) ₂].(NO ₃).0.5CH ₃ OH (15).	167
4.58	Molecular molding of [Cr(L _c)(H ₂ O)].NO ₃ .0.5 CH ₃ OH (25).	168
4.59	¹ H-NMR spectra of [Cd(L _b)(H ₂ O) ₂].H ₂ O(17)	169
4.60	¹ H-NMR spectrum of [Zn(L _a)(H ₂ O) ₂].H ₂ O (9).	169
4.61	Molecular molding of [Zn(L _a)(H ₂ O) ₂].H ₂ O(9).	170
4.62	Molecular molding of [Zn(L _b)(H ₂ O) ₂] (18).	171
4.63	Molecular molding of [Zn(L _c)(H ₂ O)].0.5CH ₃ OH (18).	171
4.64	¹ H-NMR spectrum of [UO ₂ (L _b)(H ₂ O) ₂] (19).	
4.65	The mass spectrum of [UO ₂ (HL _a)(H ₂ O)(NO ₃)].1.5H ₂ O (10).	172
4.66	Correlation of E _{LUMO} /eV (lig) versus E _{HOMO} /eV (lig).	172
4.67	The TGA-DrTGA curves of [Cu(L _a)H ₂ O] (1)	193
5.1	The TGA-DrTGA curves of [Ni(L _a)].H ₂ O(3)	193
5.2	The TGA-DrTGA curves of [Fe(L _a)(H ₂ O)(NO ₃)].0.5CH ₃ OH.H ₂ O(6)	194
5.3	The TGA-DrTGA curves of [Cu(L _b)(H ₂ O) ₂].0.5CH ₃ OH (11).	194
5.4	The TGA-DrTGA curves of [Co(L _b)(H ₂ O) ₂].0.5CH ₃ OH (13).	195
5.5	The TGA-DrTGA curves of [Fe(L _b)(NO ₃)(H ₂ O)].0.5CH ₃ OH (14).	195
5.6		

LIST OF FIGURES

5.7	The TGA-DrTGA curves of [Cr(L _b)(H ₂ O) ₂].(NO ₃).0.5CH ₃ OH(15).	196
5.8	The TGA-DrTGA curves of [Ce(L _b)(H ₂ O) ₃].(NO ₃).CH ₃ OH(16)	196
5.9	The TGA-DrTGA curves of [Fe(L _c)(NO ₃)].0.5CH ₃ OH (24).	197
5.10	The TGA-DrTGA curves of [Zn(L _c)(H ₂ O)].0.5 CH ₃ OH (28).	197
5.11	Coats-Redfern plots for Ni(II) 1 , $Y = \ln[-\ln(1-\alpha)/T^2]$, α = weight loss.	200
5.12	Coats-Redfern plots for Co(II) 4 , $Y = \ln[-\ln(1-\alpha)/T^2]$, α = weight loss.	201
5.13	Coats-Redfern plots for Zn(II) 8 , $Y = \ln[-\ln(1-\alpha)/T^2]$, α = weight loss	202
5.14	Coats-Redfern plots for Cu(II) 11 , $Y = \ln[-\ln(1-\alpha)/T^2]$, α = weight loss.	203
5.15	Coats-Redfern plots for Co(II) 13 , $Y = \ln[-\ln(1-\alpha)/T^2]$, α = weight loss	204
5.16	Coats-Redfern plots for VO(IV), $Y = \ln[-\ln(1-\alpha)/T^2]$, α = weight loss.	205
5.17	Coats-Redfern plots for Cr(III) 21 , $Y = \ln[-\ln(1-\alpha)/T^2]$, α = weight loss.	206
6.1	Correlation of gram positive bacteria G^+_2 versus the $E_{\text{gap}}/\text{kcal.mol}^{-1}$.	224
6.2	Correlation of gram negative bacteria G^-_1 versus $E_{\text{HOMO}}/\text{eV}$.	224
6.3	Correlation of Yeast 1 versus bond length M-O/Å.	225
6.4	Correlation of gram negative bacteria G^-_1 versus $\nu(\text{C}=\text{N})/\text{cm}^{-1}$	226
6.5a	Correlation of gram portative bacteria G^+_2 versus $\nu(\text{M}-\text{N})/\text{cm}^{-1}$.	226
6.5b	Correlation of Yeast 1 versus $\nu(\text{M}-\text{N})/\text{cm}^{-1}$.	226
6.6	Correlation of Yeast 1 versus dipole moment (M-L _a).	227
6.7	Correlation of E_{HOMO} (M-L _b) versus ANMn ⁺ .	227
6.8	Correlation of E_{HOMO} (M-L _b) versus gram portative bacteria G^+_1 .	228
6.9	Correlation of E_{LUMO} (M-L _b) versus gram portative bacteria G^+_2 .	228
6.10	Correlation of gram negative bacteria G^-_1 versus $\nu_{\text{M-O}}$ cm^{-1} (M-L _b).	229
6.11	Correlation of gram negative bacteria G^-_2 versus the $E_{\text{gap}}/\text{kcal.mol}^{-1}$	229

LIST OF FIGURES