

**Sonochemical synthesis, characterization and electrical properties of three
new nano sized Cu(II), Co(II) and Ni(II) chelates based on tridentate NOO
imine ligand as precursors for metal oxides**

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Supplementary data

Table S1: Infrared spectral bands of Schiff base ligand and its complexes.

Compound	ν (OH/ H ₂ O)	ν (CH _{ar})	ν (C=N)	ν (C-O) ph	ν (H ₂ O) Coordinat	ν (M-O)	ν (M-N)
L ₁ H	3447(w)	3060(w)	1613(s)	1307(m)	-	-	-
[CuL ₁ H ₂ O].H ₂ O	3450(w)	3047(w)	1608(s)	1298(m)	975(m)	736(m)	535(m)
[CoL ₁ (H ₂ O) ₃].H ₂ O	3510(w)	3053(w)	1600(s)	1299(m)	968(m)	732(s)	528(m)
[NiL ₁ (H ₂ O) ₃].H ₂ O	3450(w)	3051(w)	1601(s)	1272(m)	976(m)	733(s)	527(m)

s=Strong, m= medium, w= weak.ph=phenolic.

Table S2: Thermal analysis data for metal complexes.

Complex	Degradation temperature °C	Lost fragment	Weight Loss%	
			theoretical	found
[CuL ₁ H ₂ O].H ₂ O	36-155	H ₂ O	5.27	5.11
	155-391	H ₂ O + C ₅ H ₃ N	27.81	27.54
	391-501	C ₈ H ₇ NO ₃	48.31	48.41
	>501	Cu	18.61	18.94
[CoL ₁ (H ₂ O) ₃].H ₂ O	14-153	H ₂ O	4.82	4.85
	153-304	3H ₂ O,OCH ₃	22.79	22.82
	304-420	C ₆ H ₃ O	24.40	24.03
	420-522	C ₆ H ₄ N ₂ O	32.18	32.39
	>522	Residue Co	15.81	15.91
[NiL ₁ (H ₂ O) ₃].H ₂ O	14-166	H ₂ O	4.82	4.78
	166-325	3H ₂ O,OCH ₃	22.80	22.91
	325-398	C ₇ H ₄ ON	31.66	31.51
	398-479	C ₅ H ₃ NO	24.95	24.83
	>479	Residue Ni	15.77	15.97

Table S3: Kinetic parameters of the prepared metal complexes.

Complex	T (°C)	H* (kJ.mol⁻¹)	S* (Jmol⁻¹K⁻¹)	G* (kJ.mol⁻¹)
ahpvCu	145	0.52	-234.34	21.55
	265	1.77	- 242.67	41.98
	411	3.09	- 244.65	56,99
	640	3.59	-248.76	71.66
ahpvCo	143	0.46	- 235.43	17.56
	218	1.88	- 245.52	35.55
	376	2.41	- 248.42	55.87
	498	3.45	-251.78	69.42
ahpvNi	157	0.50	-233.54	11.55
	266	1.56	- 245.50	29.65
	342	2.39	- 249.55	42.89
	468	-3.33	-234.34	63.86

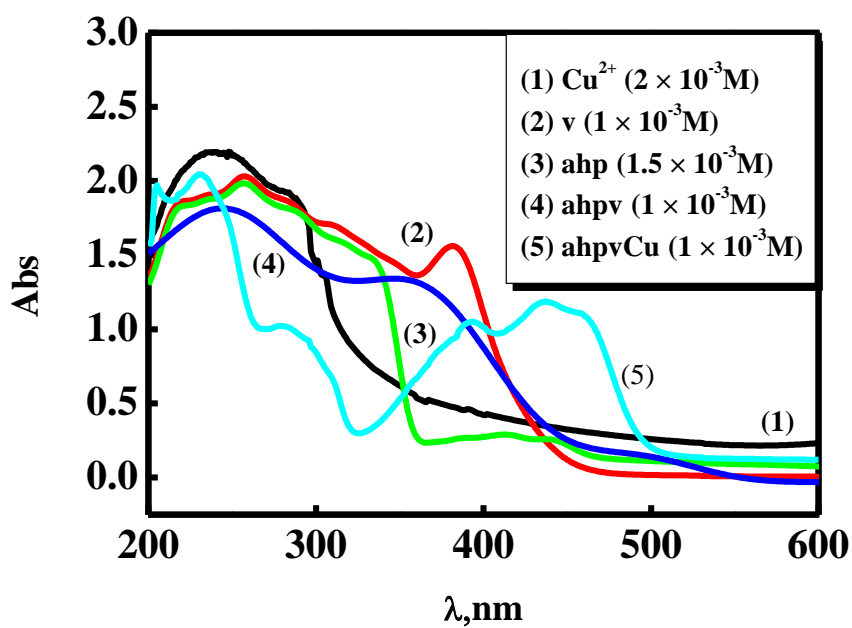


Fig. S1: Electronic spectra plots for ahpvCu complex and its components in DMF at 298 K.

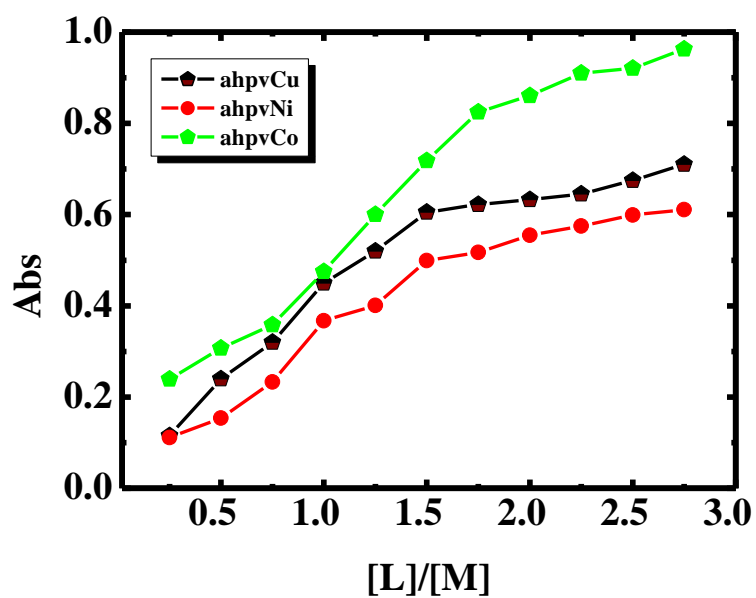


Fig. S2: Molar ratio plots for the studied complexes in aqueous- alcoholic mixtures $[M] = [L] = 1 \times 10^{-3}$ and 298 K.