Supporting Information

A low temperature and air-sinterable copper-diamine complex-based metal organic decomposition ink for printed electronics

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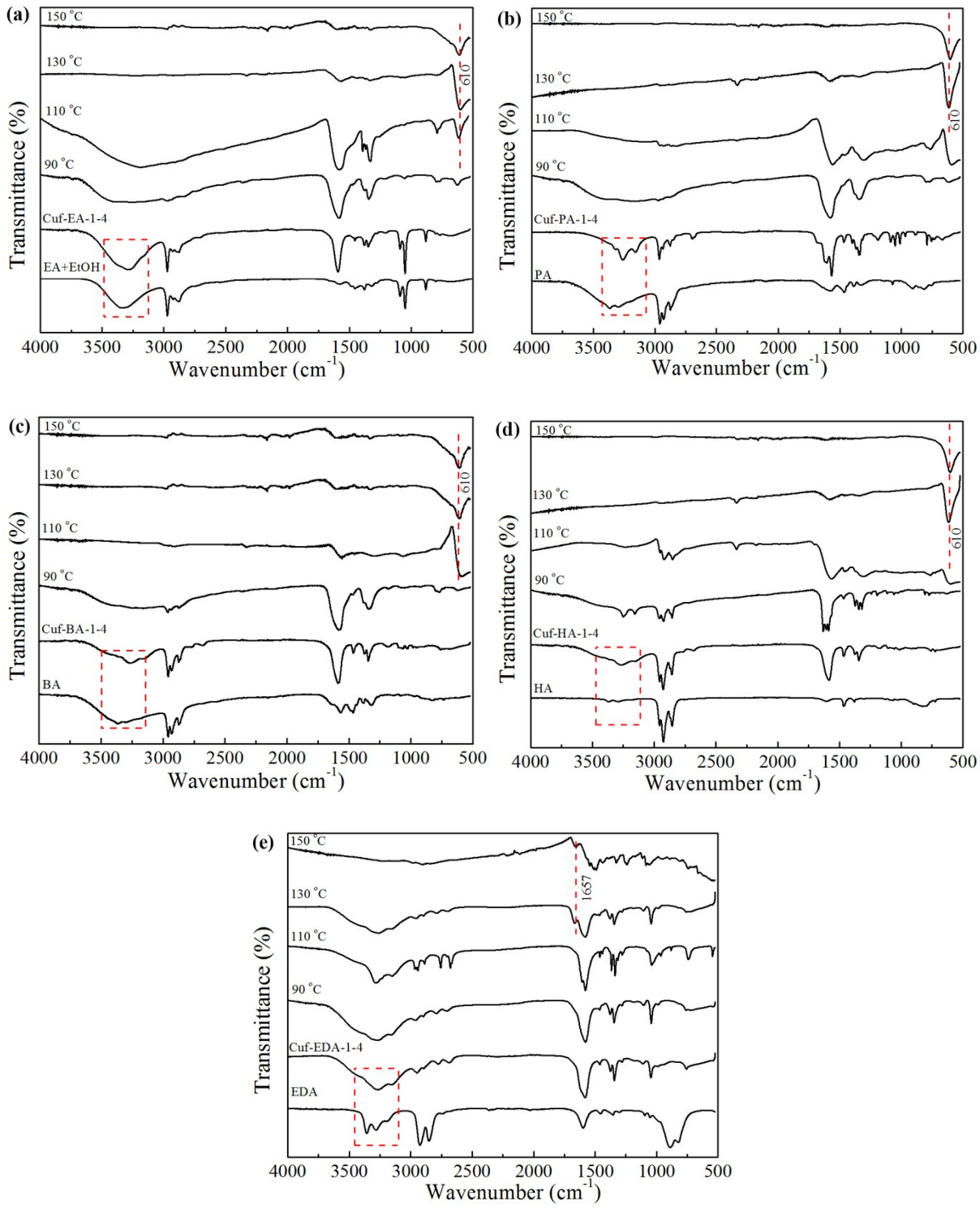

Fig. S1 FTIR speatra of amine, Cuf-amine complex and films heated from 90-150 °C: (a) EA, (b) PA, (c) BA, (d) HA, (e) EDA.

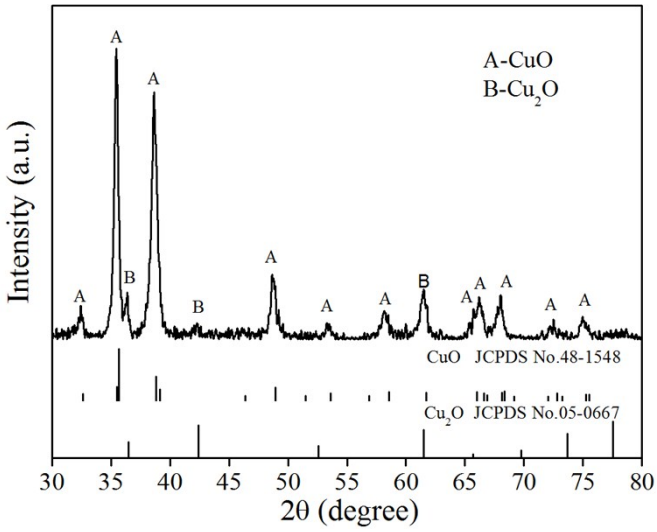

Fig. S2 XRD patterns of Cuf·4H_2O powder heated at 300 °C for 1 min.

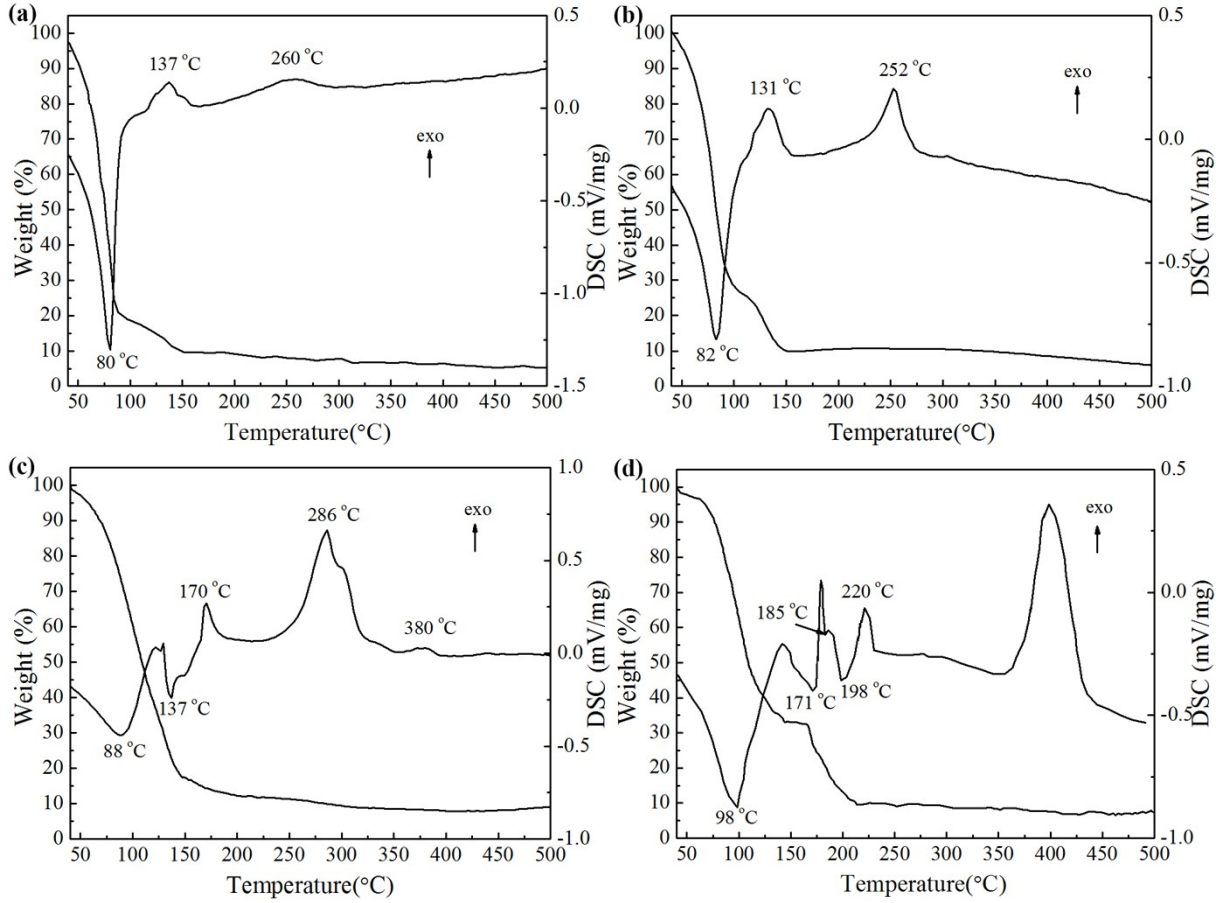

Fig. S3 TG and DSC curves of ink complex with (a) EA, (b) PA, (c) HA and (d) EDA.

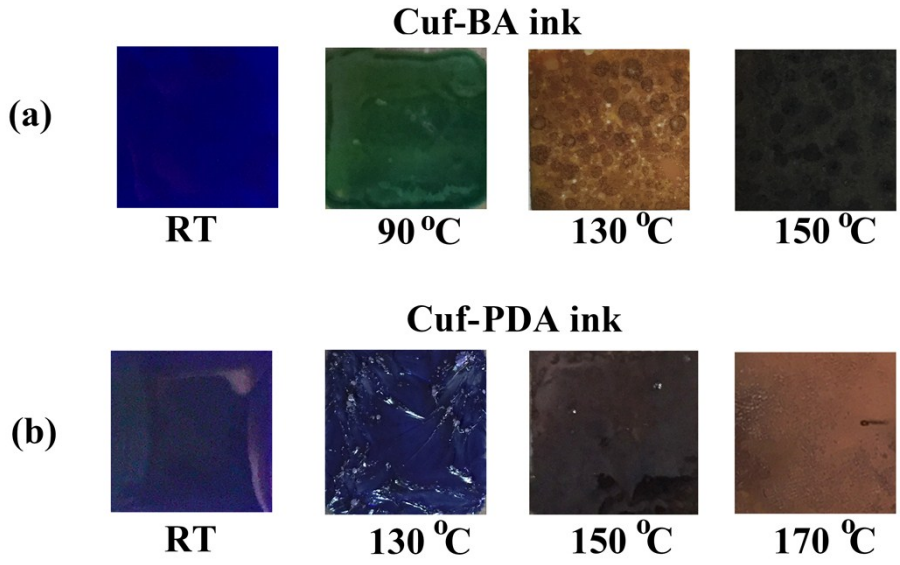

Fig. S4 Photos of films heated at various temperatures from (a) Cuf-BA ink, (b) Cuf-PDA ink.

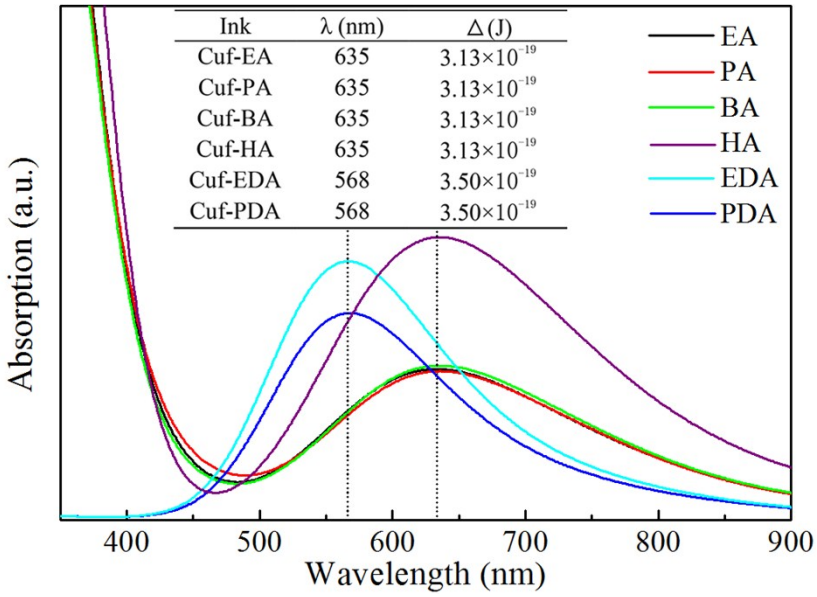

Fig. S5 UV-vis spectra of Cuf-amine complex with various amines.

Table S1. The sheet resistance, thickness and resistivity of films heated at various temperatures for different time.

Temperature (°C)	Time (min)	Sheet resistance (Ω/sq)	Thickness (μm)	Resistivity (Ω·cm)
130	1	3.361	1.22	4.1×10^{-4}
	5	1.186	1.18	1.4×10^{-4}
	10	1.024	1.27	1.3×10^{-4}
	20	0.968	1.24	1.2×10^{-4}
	30	0.728	1.14	8.3×10^{-5}
	40	0.712	1.11	7.9×10^{-5}
	60	0.542	1.31	7.1×10^{-5}
150	1	0.778	1.26	9.8×10^{-5}
	5	0.398	1.18	4.7×10^{-5}
	10	0.556	1.15	6.4×10^{-5}
	20	0.696	1.25	8.7×10^{-5}
	30	0.722	1.26	9.1×10^{-5}
	40	0.736	1.29	9.5×10^{-5}
	60	1.034	1.16	1.2×10^{-4}
180	1	0.162	1.11	1.8×10^{-5}
	5	0.333	1.23	4.1×10^{-5}
	10	0.556	1.26	7.0×10^{-5}
	20	0.846	1.30	1.1×10^{-4}
	30	0.945	1.27	1.2×10^{-4}
	40	1.167	1.20	1.4×10^{-4}
	60	1.270	1.26	1.6×10^{-4}
200	1	0.432	1.18	5.1×10^{-5}
	5	0.765	1.15	8.8×10^{-5}
	10	1.322	1.21	1.6×10^{-4}
	20	1.550	1.29	2.0×10^{-4}
	30	2.203	1.18	2.6×10^{-4}
	40	2.541	1.22	3.1×10^{-4}

	60	3.047	1.28	3.9×10^{-4}
	1	6.807	1.19	8.1×10^{-4}
	5	35.200	1.25	4.4×10^{-3}
	10	93.023	1.29	1.2×10^{-2}
250	20	1092.437	1.19	1.3×10^{-1}
	30	1282.051	1.17	1.5×10^{-1}
	40	1382.114	1.23	1.7×10^{-1}
	60	1417.323	1.27	1.8×10^{-1}
	1	24793.388	1.21	3.0
	5	44067.797	1.18	5.2
	10	48412.698	1.26	6.1
300	20	59689.922	1.29	7.7
	30	80645.161	1.24	10.0
	40	81102.362	1.27	10.3
	60	88983.051	1.18	10.5

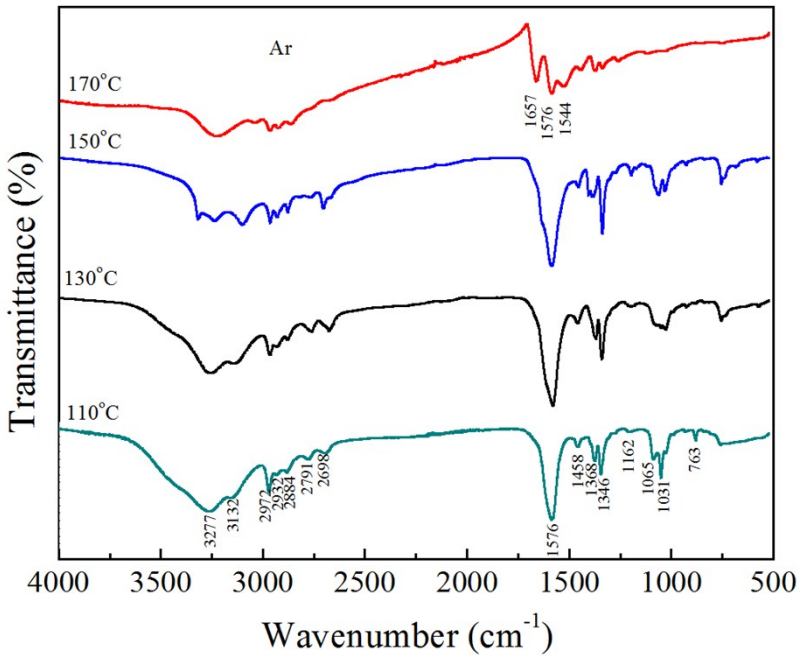

Fig. S6 FTIR spectra of films heated from various temperatures from Cuf-PDA ink in Ar.

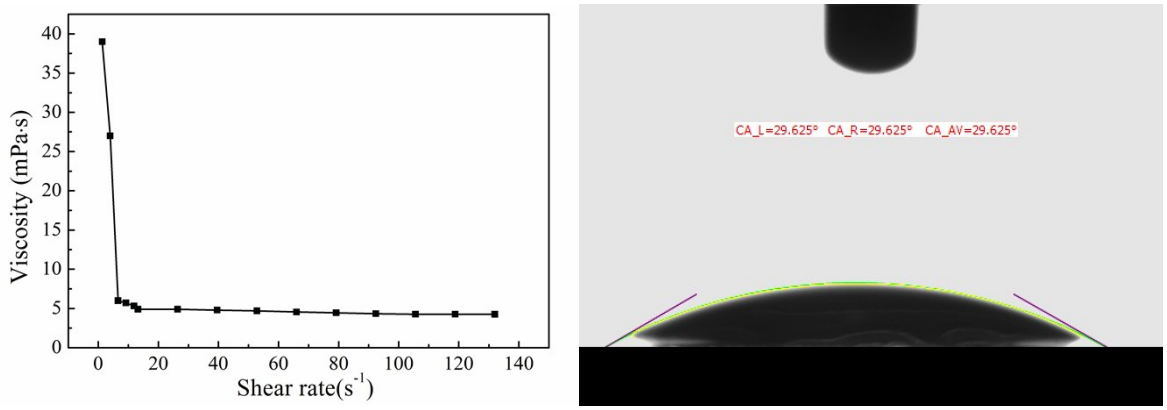

Fig. S7 Viscosity and contact angle of Cuf-PDA.