SUPPORTING INFORMATION

Direct-Writing of Circuit Interconnects on Cellulose Paper using Ultra-Long, Silver Nanowires based Conducting Ink

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Table S1. Summary of previous works on conductive silver ink

Method	Material	Ink chemistry	Curing	ρ (μΩ.cm)	References
Direct writing method	Ag NWs	Methanol, Silver acetate	>170 °C. (dried with hot air gun)	6.75	Present work
Inkjet Printing	Ag NWs	isopropyl alcohol	110 °C	1000	1
Screen printing	Ag NWs	Ethanol	Compaction	16.47	2
Direct writing method	Ag	-	200 °C	326	3
Inkjet Printing	Ag NPs	Water/ ethylene glycol	>200 °C	10	4
Brush-painting	Ag NW / ITO	-	ITO:100◦C / Ag: 150 ◦C	1090	5
Inkjet Printing	Custom Ag NP ink (dodecylamine stabilizer)	Methanol	40 to 60 °C	2300	6
Inkjet Printing	Ag	Ethanol	150-300 ◦C	21-25	7
Inkjet Printing	Reactive ink: Diammine silver (I) cations, acetate anions and formate anions.	2,3-butanediol	90 °C.	1.6	8
Screen printing	Reactive ink: Ag_2O + silver 2,2 dimethyl octanoate	-	180 °C (combination with NaCl sintering)	27	9
Inkjet Printing	Silver nitrate–silver nanowire inks	-	200 °C with ethylene glycol	73	10
Inkjet Printing	Ag	$AgNO_3$/Water	Plasma	1.7	11
Screen printing	Custom Ag NP ink (PVP stabilizer), screen printing	NaCl	Immersing into NaCl solution in combination with ultrasound for 5 to 70 min	9.91	12
Vacuum transfer method	Ag NWs (length >500 μm)	Ethanol	250 °C	3.08	13

(* NPs-Nano particles, NWs-Nanowires)

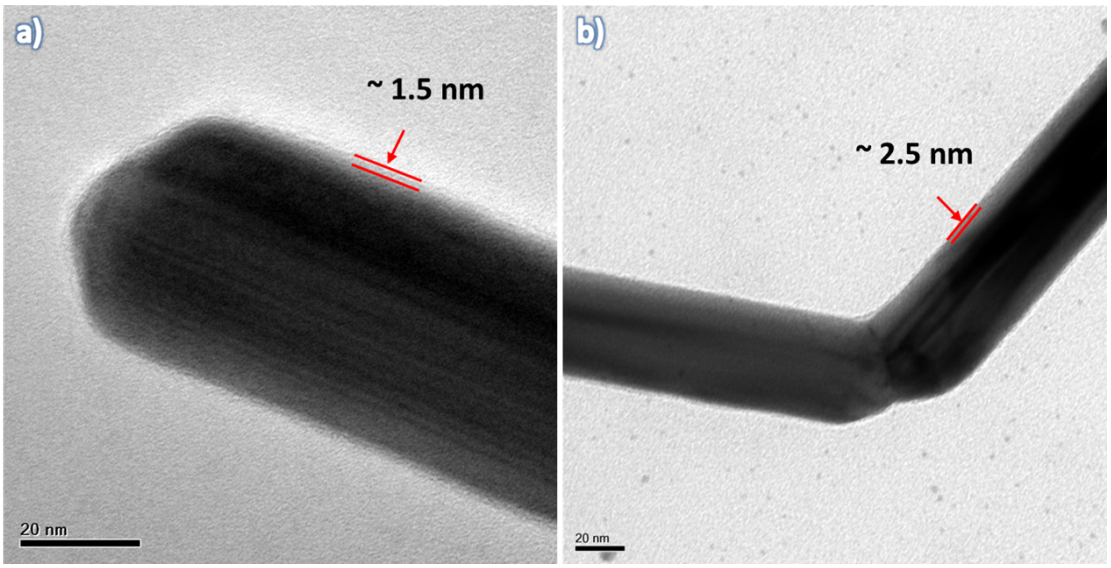

Figure S1. (a-b) TEM images of PVP encapsulated ultra-long Ag nanowires

At the end of synthesis, methanol was added to the PVP capped reduced silver nanowires to induce rapid coagulation. Later, the solution was subjected to centrifugation for removing the excess PVP and EG present in the colloidal solution. TEM images were acquired after several washing of precipitates in methanol. A very few nanometre thick (ranges from 1 to 3 nm) amorphous regions was observed around the Ag NWs as depicted in Fig. S1. This thin amorphous layer confirms the presence of residual PVP molecules.

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