Supplementary Information (SI) for Dalton Transactions.

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SUPPORTING INFORMATION for:

Synthesis of One-Dimensional Silver Nanowires in Aqueous Using Phloroglucinol as Reducing Reagent

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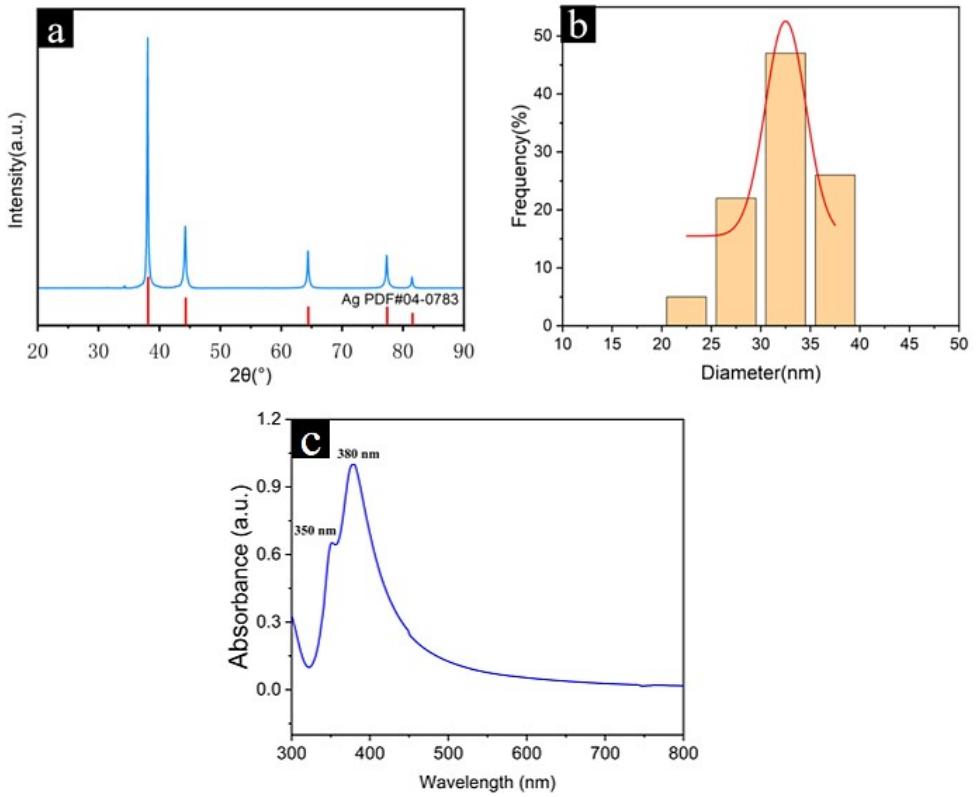

Fig S1. (a) XRD pattern of the AgNWs, (b) Diameter distribution of the AgNWs, (c) the UV-vis spectrum of AgNWs.

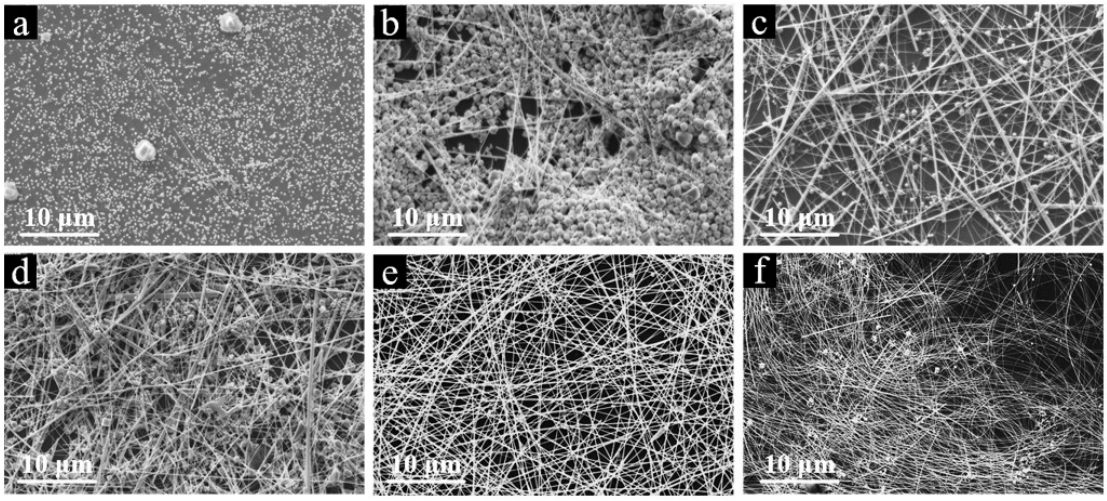

Fig S2. images of the products obtained at different temperatures (a) 80 ºC, (b) 100 ºC, (c) 120 ºC, (d) 140 ºC, (e) 160 ºC, and (f) 180 ºC

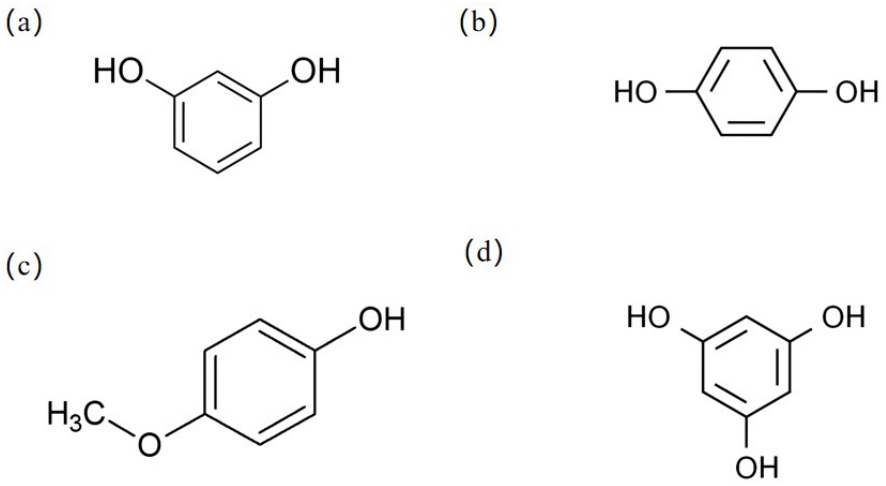

Fig S3. Schematic structures of different phenolic derivatives. (a) Resorcinol, (b) Hydroquinone, (c) 4-methoxyphenol, (d) Phloroglucinol

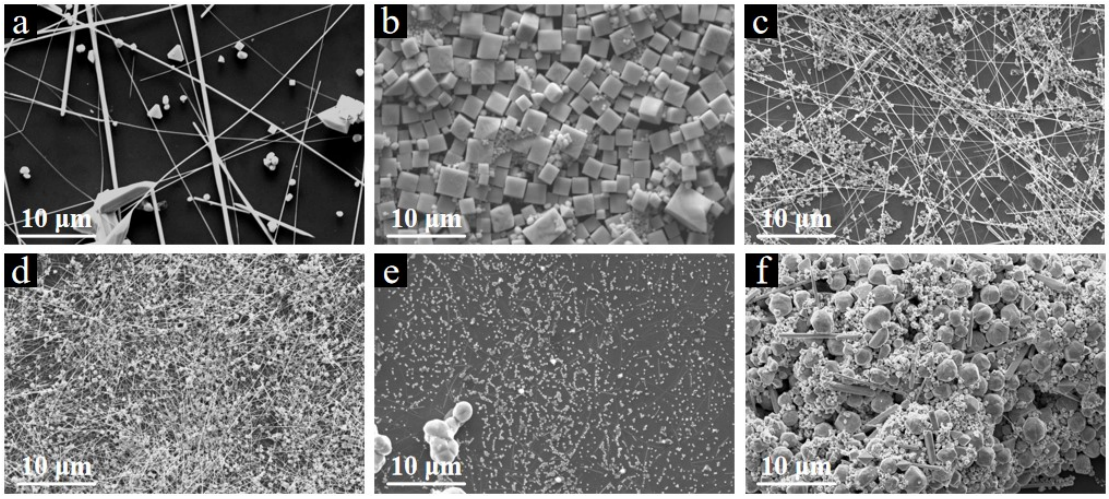

Fig S4. SEM images of AgNWs prepared in the presence of different kinds of chlorides: (a) NH_4Cl, (b) $NiCl_2$, (c) $FeCl_3$, (d) KCl, (e) $MnCl_2$, and (f) $CuCl_2$

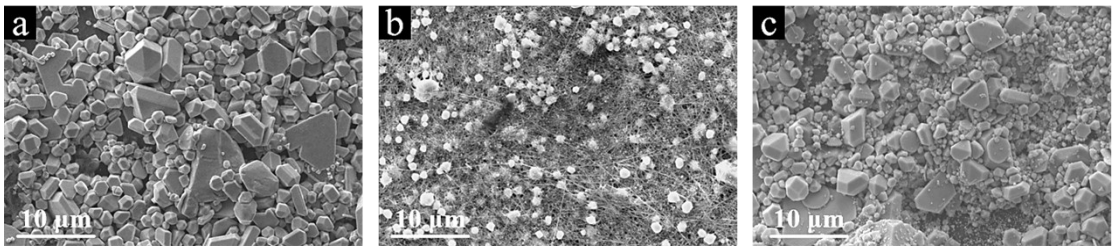

Fig S5. SEM images of AgNWs obtained at different molar ratio of Cl^-/Br^-: (a) 1:1, (b) 2:1, (c) 3:1

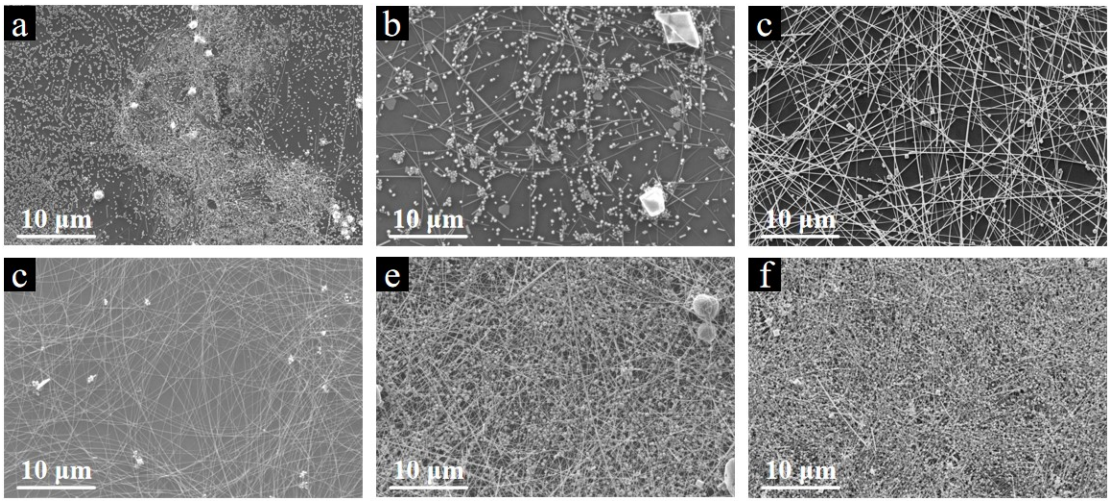

Fig S6. SEM images of the products obtained at different concentration of PVP (a) 70, (b) 80, (c) 90, (d) 100, (e) 110, and (f) 120 mM

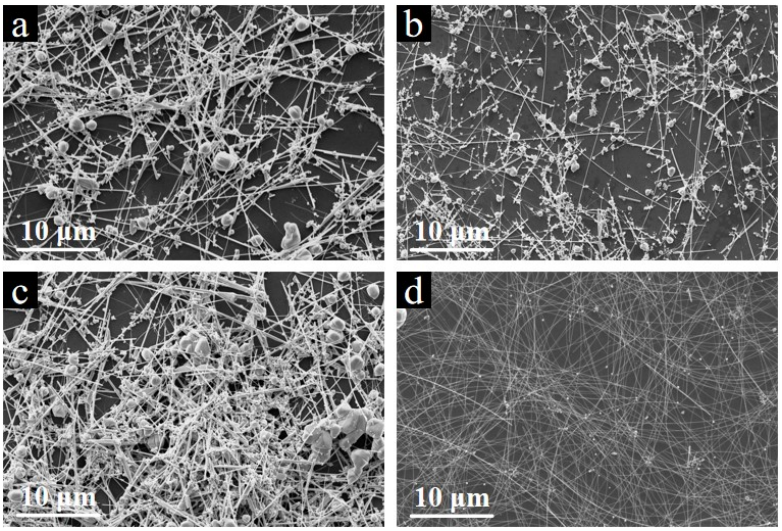

Fig S7. SEM images of the products obtained at different molecular weight of PVP (a) K23-27, (b) K30, (c) K60, (d) K90

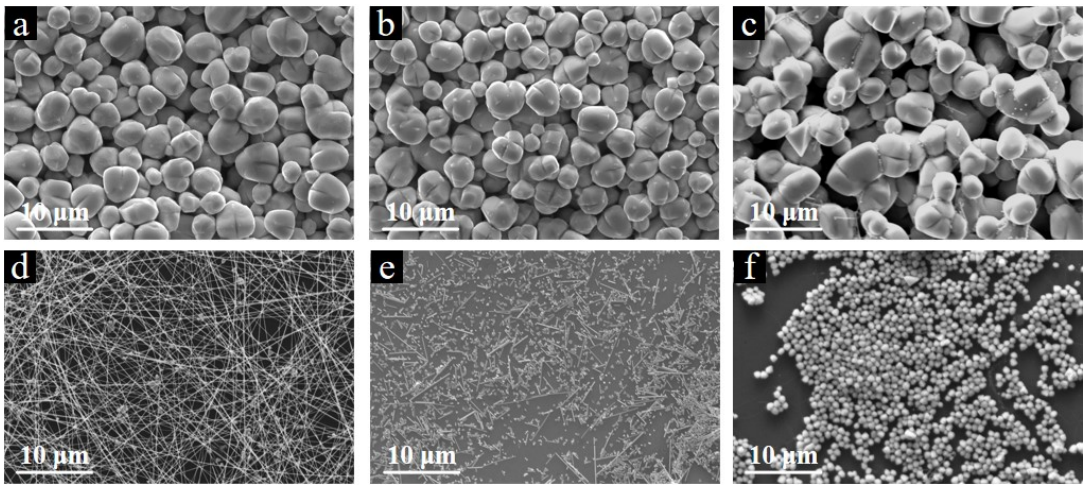

Fig S8. SEM images of the products obtained at different PH (a) 4.0, (b) 5.0, (c) 6.0, (d) 7.0, (e) 8.0, and (f) 9.0

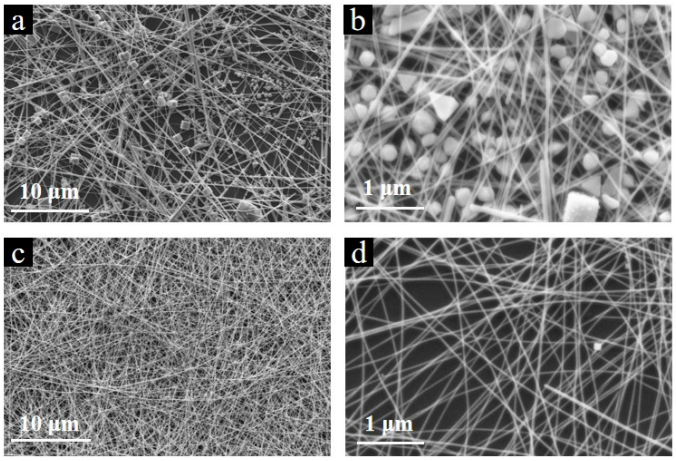

Fig S9. SEM images of AgNWs samples (a, b) before purification and (c, d) after purification.

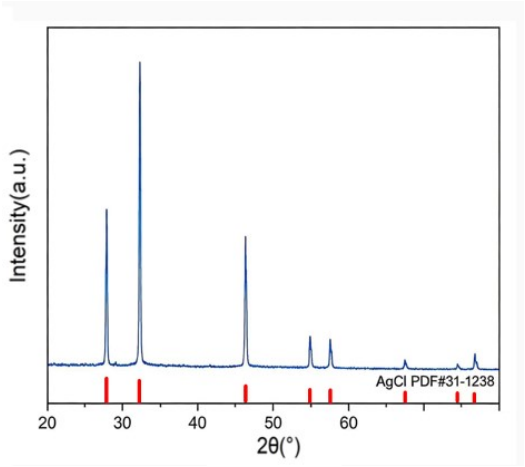

Fig S10. XRD pattern of the product after 6 h.

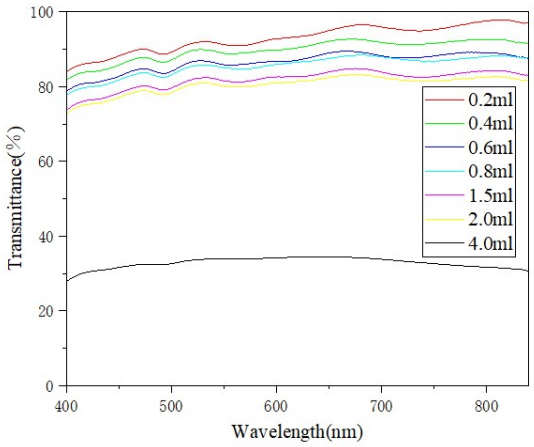

Fig S11. Optical Transmittance of Silver Nanowire TCFs under Different Spraying Volumes

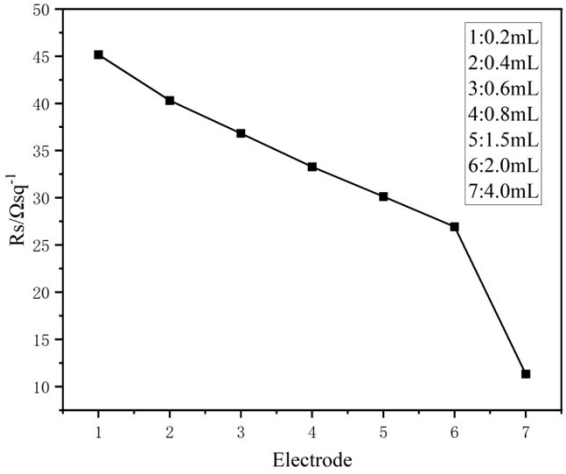

Fig S12. Sheet Resistance of TCFs Under Varying Spray Amounts

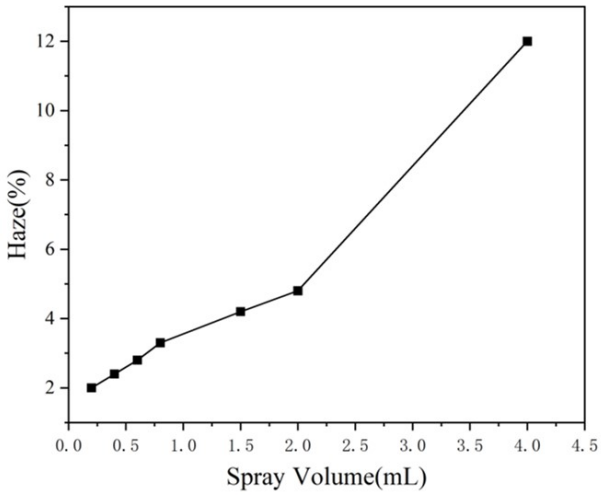

Fig S13. The haze of the TCF

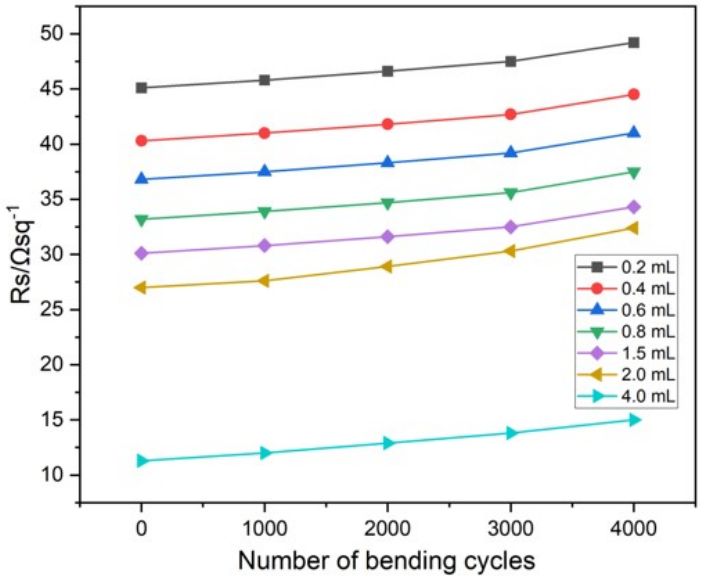

Fig S14. Sheet Resistance of AgNW-TCFs under Different Bending Cycles

Table S1 Synthesis of high aspect ratio AgNWs via different preparation methods.

Synthetic Method	Reducing Agent	Diameter /nm	Length/ μm	α	Ref.
Polyol Method	EG	72		4000	1
	EG	80-100	10-15	-	2
	EG	56	12		3
	H_2O_2	100	160	-	4
Hydrothermal Method	Glucose	15	-	1000	5
	Ascorbic acid	17	-	1000	6
	EG	15-40	110	3200	7
This work	Phloroglucinol	32	100	3000	

Table S2 Synthesis of AgNWs and AgNW-TCFs with different methods.

Synthetic Method	Solvent	Reaction temperature /time	Resistance/ transmittance	Haze	Ref.
Polyol Method	EG	150 ℃ 150 min	22.4 Ω/sq 87.71%	4.15%	[1]
Polyol Method	EG	160 ℃ 120 min	0.091 Ω/sq 45-46%	-	[2]
Polyol Method	EG	160 ℃ 120 min	6.82 Ω/sq	-	[3]
Hydrothermal Method	H_2O	165 ℃ 24 h	-		[4]
Hydrothermal Method	H_2O	170 ℃ 6 h	20 Ω/sq 94.5%	≤1.0%	[5]
Hydrothermal Method	H_2O	90 ℃	-		[6]
Hydrothermal Method	H_2O	130 ℃ 6 h	16.5 Ω/sq 88%	4.2%	[7]
This work	H_2O	160℃ 24 h	11.33 Ω/sq 90%	2.0-4.8%	

Table S3 Optical and electrical properties of AgNW-TCFs.

Spraying amount of AgNWs	Transmittance (%)	Resistance (Ω/sq)	FOM (T^{10}/R_S)
0.2 mL	~89.9	~45.2	~7.63×10^{-3}
0.4 mL	~87.8	~40.2	~6.77×10^{-3}
0.6 mL	~85.8	~36.8	~5.88×10^{-3}
0.8 mL	~84.0	~33.3	~5.25×10^{-3}
1.5 mL	~82.2	~30.1	~4.68×10^{-3}
2.0 mL	~81.2	~27.0	~4.62×10^{-3}
4.0 mL	~34.0	~11.3	~1.83×10^{-6}

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