

Supporting Material

# High-Stability Silver Nanowire–Al<sub>2</sub>O<sub>3</sub> Composite Flexible Transparent Electrodes Prepared by Electrodeposition

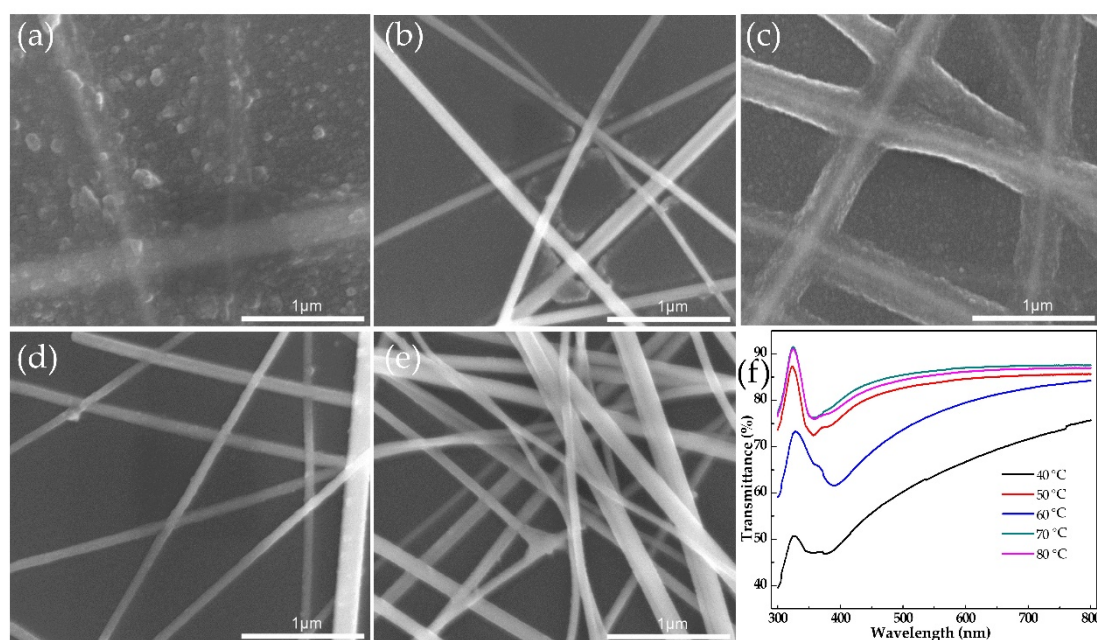
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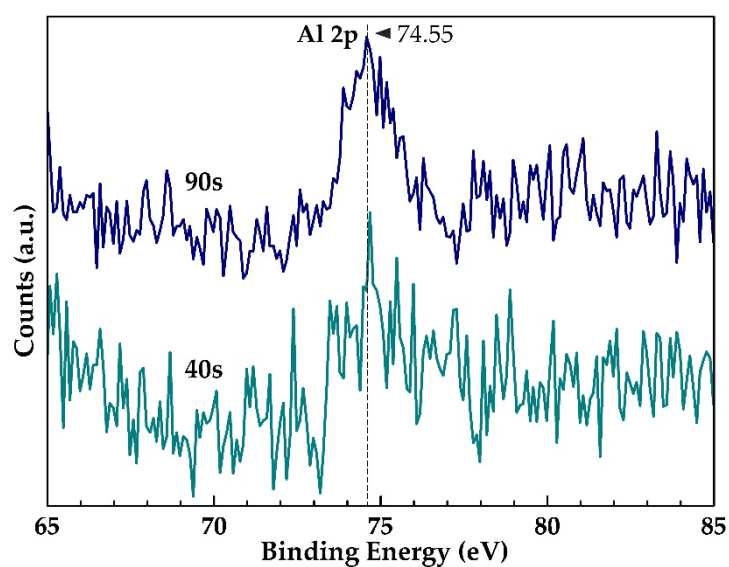
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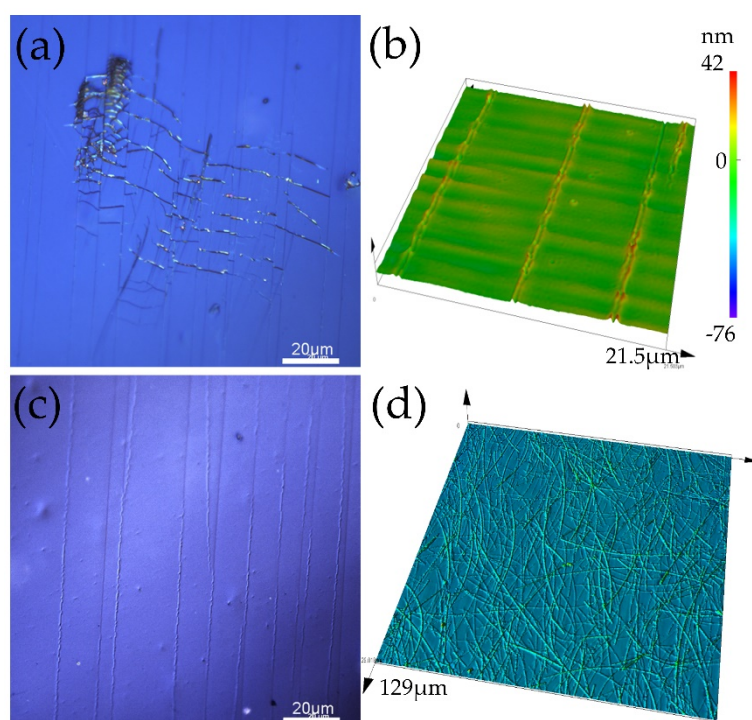
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**Figure S1.** SEM images of electrodeposited Al<sub>2</sub>O<sub>3</sub> at different temperatures for 5 min: (a) 40 °C; (b) 50 °C; (c) 60 °C; (d) 70 °C; (e) 80 °C and (f) UV-Visible transmittance spectra of products at different temperatures.



**Figure S2.** Al2p XPS spectra of films deposited for 40 s and 90 s.



**Figure S3.** CLSM image of films after bending test: (a) reticulated cracks; (b) 3D scanning; (c) transverse cracks of the ITO-PET film after 2000 bending cycles; (d) 3D scanning image of AgNWs-Al<sub>2</sub>O<sub>3</sub> composite film after 250,000 bending cycles.

**Table S1.** Changes in the optical and electrical properties of the films before and after ultrasonic treatment for 5 min.

Sample		Pristine	After electrodeposition
Ultrasonic time/min		5 min	5 min
Before	Transmittance/%	88.10	88.19
	Sheet Resistance/ $\Omega \cdot \text{sq}^{-1}$	16.3	17.0

	FoM	17.28	16.74
	Transmittance/%	98.12	92.40
After	Sheet Resistance/ $\Omega \cdot \text{sq}^{-1}$	—	160.5
	FoM	—	2.83
	FoM Change Rate/%	—	83.12
	$(R-R_0)/R_0$	—	8.44
	Remaining rate/%	15.80	64.35

Table S2. Relationship between sheet resistance change rate and bending cycles.

bending cycles $(R_s-R_0)/R_0$	10	100	1,000	10,000	30,000	70,000	170,000	250,000
Pristine AgNW	−0.17	−0.26	−0.12	0.30	1.56	0.67	0.44	1.38
Before annealing	−0.06	0.16	−0.08	0.28	0.58	1.34	0.91	1.17
After annealing	0.07	−0.16	−0.21	−0.05	0.03	0.02	0.05	0.47
ITO	0.12	0.85	2.09	—	—	—	—	—