Electronic Supplementary Information

Fabrication of anodized nanoporous aluminium (AAO/Al) transparent electrode as ITO alternative for PDLC smart windows

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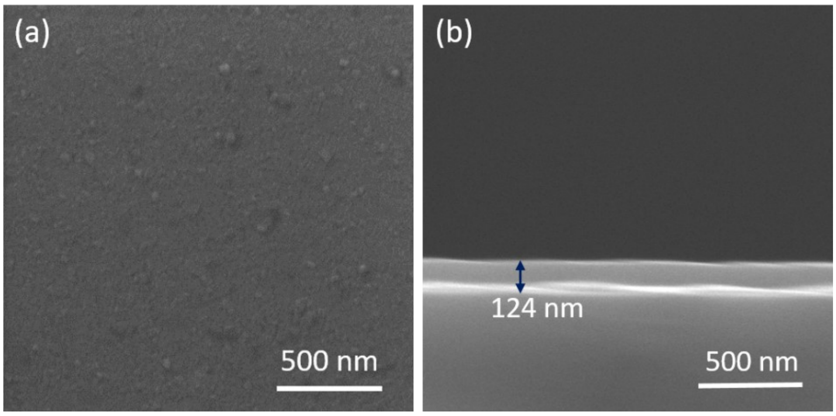

Fig. S1 (a) The FESEM image of as deposited Aluminium film. (b) cross sectional image of the as deposited Aluminium film.

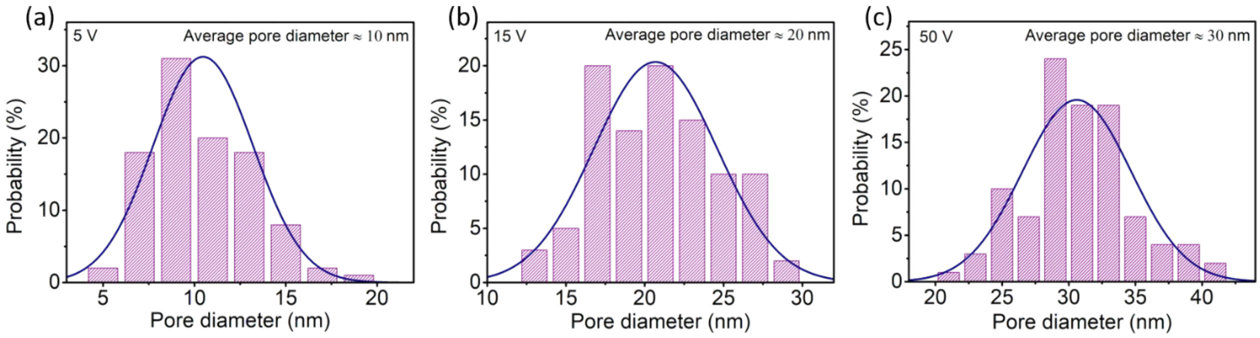

Fig. S2 Pore diameter distribution at different anodization voltage (a) 5V (b) 15 V (c) 50 V.

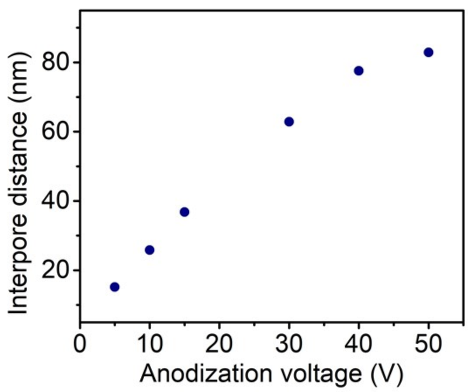

Fig. S3 Interpore distance *vs* anodization voltages.

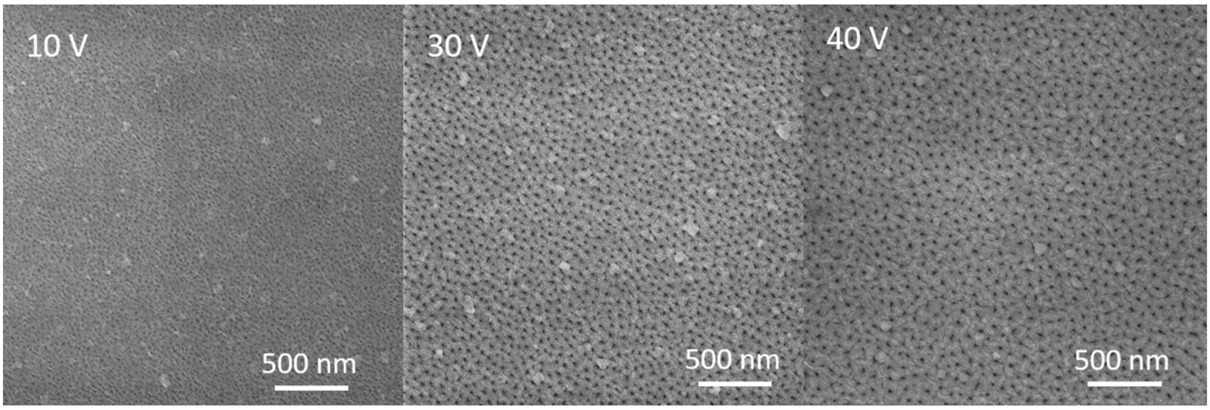

Fig. S4 FESEM images of the anodized nanoporous aluminium electrodes at different anodization voltages (a) 10 V (b) 30 V (c) 40 V.

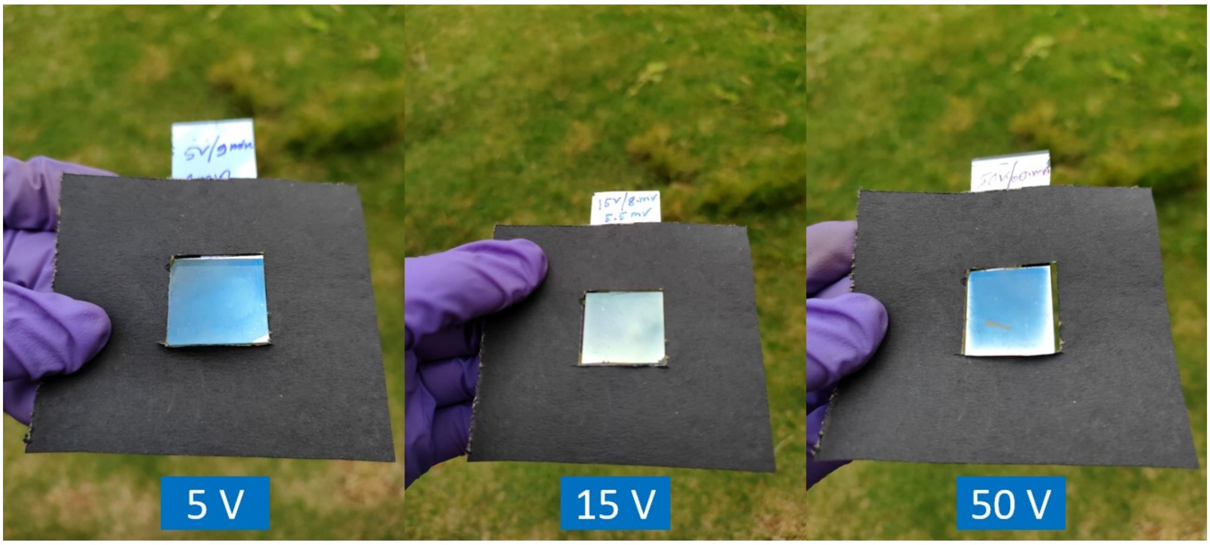

Fig. S5 Photographs of the anodized AAO/Al electrodes to capture the reflection from the electrode surface.

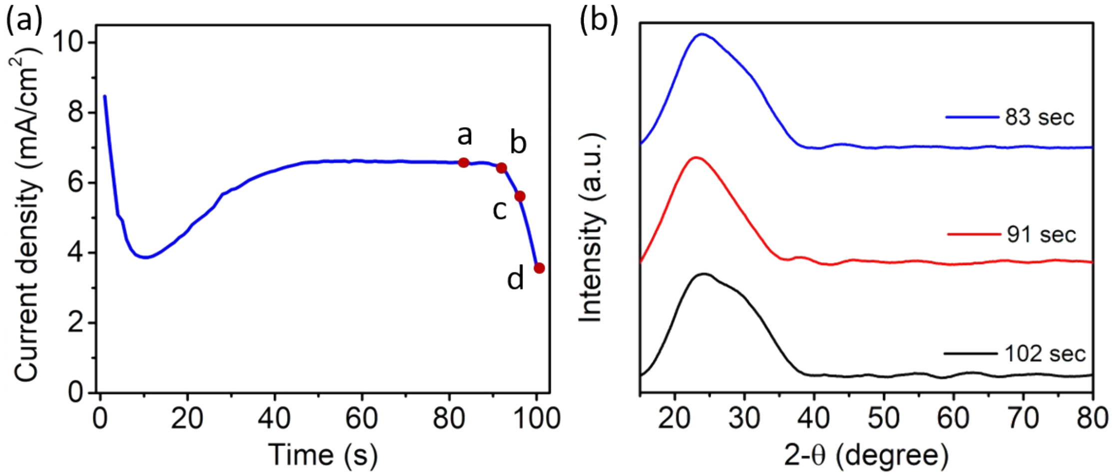

Fig. S6 (a) Current *vs* Time response for the anodization voltage 15 V. Points a, b, c, d corresponds to the anodization time of 83 sec, 91 sec, 96 sec and 102 sec, respectively. (b) XRD pattern of the anodized nanoporous films at anodization time 83 sec, 91 sec and 102 sec.

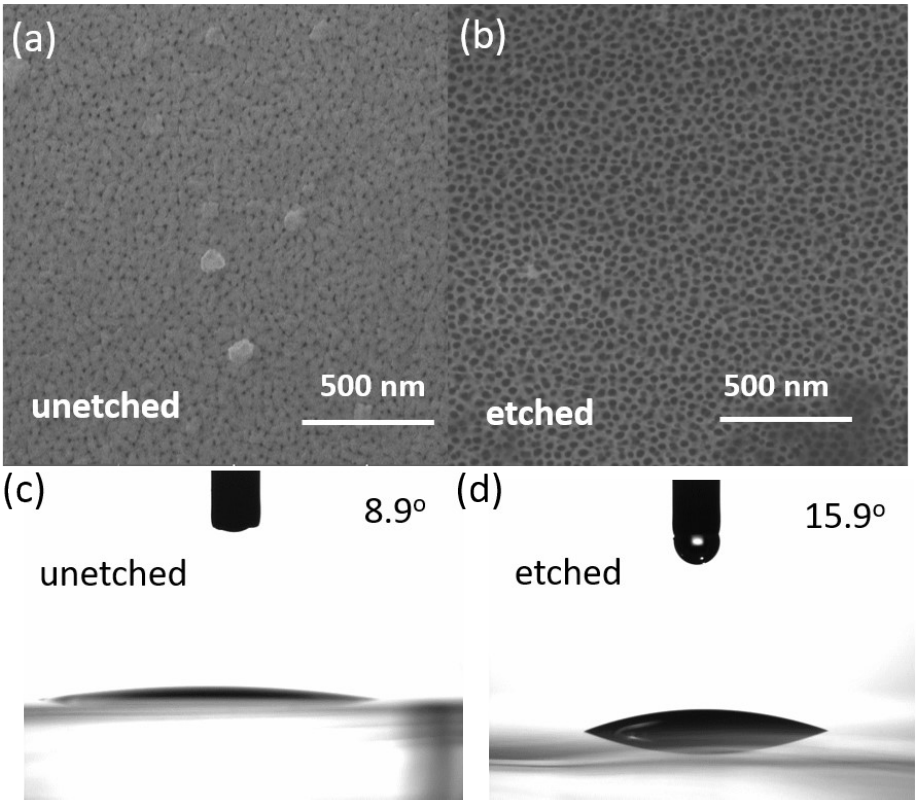

Fig. S7 FESEM images of the nanoporous Al electrodes at 15 V anodization voltage with unetched (a), etched (b). Water contact angle measurements (WCA) for the (c) unetched, (d) etched.

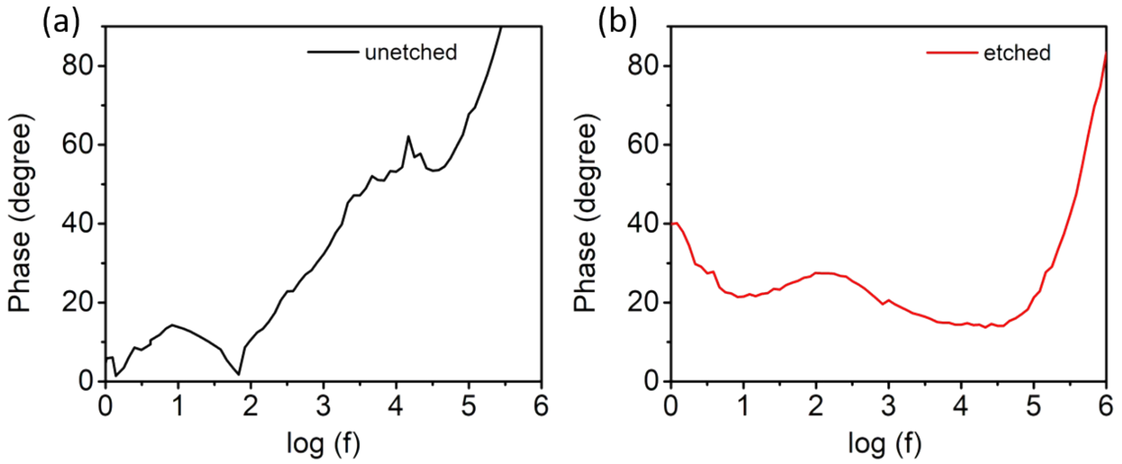

Fig. S8 Bode plot of the electrochemical impedance spectroscopy data for the nanoporous AAO/Al electrodes. (a) Change in phase angle with the change in frequency for unetched electrode, (b) change in phase angle with the change in frequency for etched electrode.

Table S1 Comparison of present work parameters with existing literature

Material	Method	Sheet Resistance (Ω/□)	Transmittance (%)	Reference
Al metal nanomesh	Lithography	Na	55	[1]
SnO_2	Spray pyrolysis	38.2	80	[2]
Single wall carbon nanotube	CVD	6K	88	[3]
$In_4Sn_3O_{12}$	DC magnetron sputtering	400	80	[4]
PEDOT/PSS	Chemical process	400	86.5	[5]
RGO-SWCNT	Solution process	254	58	[6]
Cu nanowire	Solution process	100	95	[7]
Graphene	Solution process	800	82	[8]
ITO	RF sputtering	73.2	94	[9]
Graphene	CVD	219	96	[10]
PANI	Spin coating	1.3K	72	[11]
Anodized nanoporous aluminium (AAO/Al)	Electrochemical one step	128	70	This Work

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