

Electronic Supplementary Information (ESI)

**Flexible electrochromic devices based on tungsten oxide  
and Prussian blue nanoparticles for automobile  
applications**

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**Table S1** Properties of the PB- and WO<sub>3</sub>-NP dispersible inks with varying PVA

contents of 10 and 1 wt.%, respectively.

	PB-10 wt%. PVA ink	WO <sub>3</sub> -1 wt%. PVA ink
Surface tension (mN/m)	45.1	52.3
Viscosity (cP)	19.4	7.3
Density (g/cm <sup>3</sup> )	1.08	4.07
pH	6.7	4.9
Contact angle (°) (before UV treatment)	93.6	48.8
Contact angle (°) (after UV treatment)	48.8	46.4

**Table S2** Spin-coating conditions for the preparation of 1 μm-thick WO<sub>3</sub> and PB thin


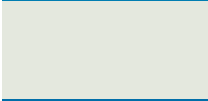

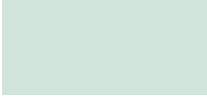
films.

Viscosity (cP)	Revolution (rpm)	Time (s)
1–10	300	600 s
10–14	360	600 s
14–17	400	600 s
17–35	500	10 s
	1000	10 s

**Table S3** Estimated thicknesses of the WO<sub>3</sub> and PB thin films.

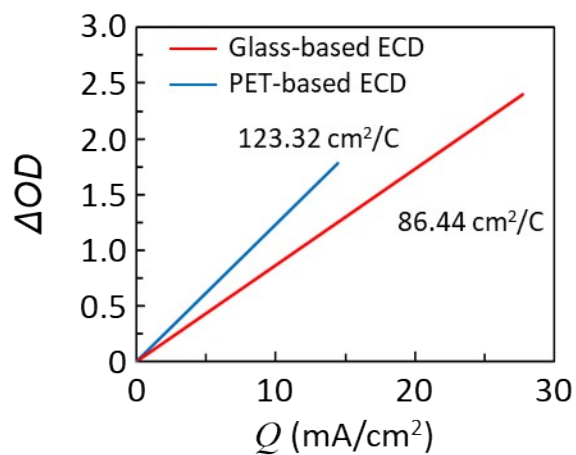
Substrate	Sample	substrate area (cm <sup>2</sup> )	substrate before spin coating (g)	substrate after spin coating (g) (evaporated suspension)	Amount of coated (g)	Estimated film thickness (μm)
ITO/PET	WO <sub>3</sub>	25	0.3722	0.3823	0.0101	1.24
	PB	25	0.3740	0.3770	0.0031	1.11
ITO/glass	WO <sub>3</sub>	25	4.4302	4.4394	0.0092	1.13
	PB	25	4.3854	4.3882	0.0028	1.04

**Table S4** Details of the haze and chromaticity of PET-based and glass-based ECDs in the coloured and transparent states.

Substrate	colour states	Estimate colour	Haze	L*	a*	b*
PET	Coloured		3.61	47.67	-18.28	-38.89
	Transparent		2.93	91.35	-2.63	3.6
Glass	Coloured		3.06	41.99	-15.51	-42.96
	Transparent		4.19	88.94	-7.58	1.65

**Table S5** Transmittance (T), optical density (OD), coloration efficiency (CE), and optical switching time at a wavelength of 633 nm for ECDs fabricated under different light aging conditions in their colored and bleached states.

Wavelength (nm)	Substrate	ECD area (cm <sup>2</sup> )	$T_{\text{bleached}}$ (%)	$T_{\text{colored}}$ (%)	Charge (C)	Current density (C/cm <sup>2</sup> )	$A_{\text{bleached}}$	$A_{\text{colored}}$	Optical density ( $\Delta\text{OD}$ )	CE (cm <sup>2</sup> /C)
633	PET	16	79.89	1.31	0.23	0.01	0.10	1.88	1.78	123.32
	Glass	16	80.00	0.32	0.44	0.03	0.10	2.50	2.40	86.44



**Figure S1** The *in situ* optical density change with respect to the charge density of PET-based and glass-based ECDs.