

## Electronic Supplementary Information (ESI)

### Low-Voltage, Simple WO<sub>3</sub>-based Electrochromic Devices by Incorporating Anodic Species into the Electrolyte

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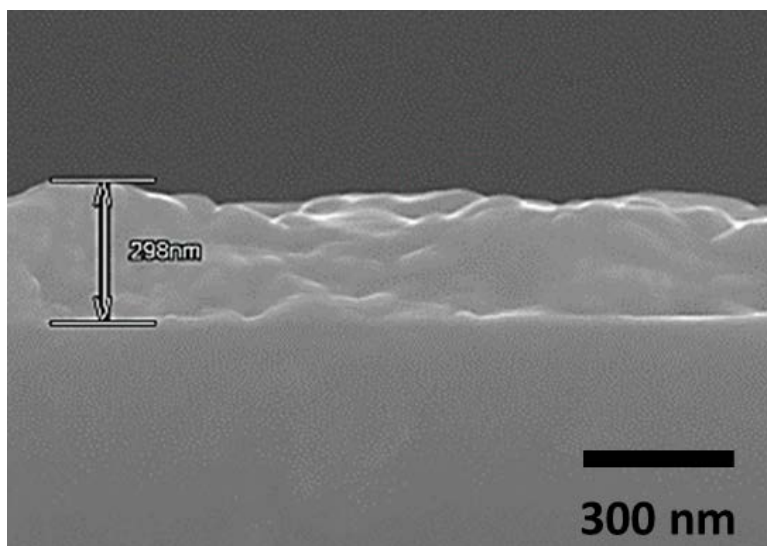
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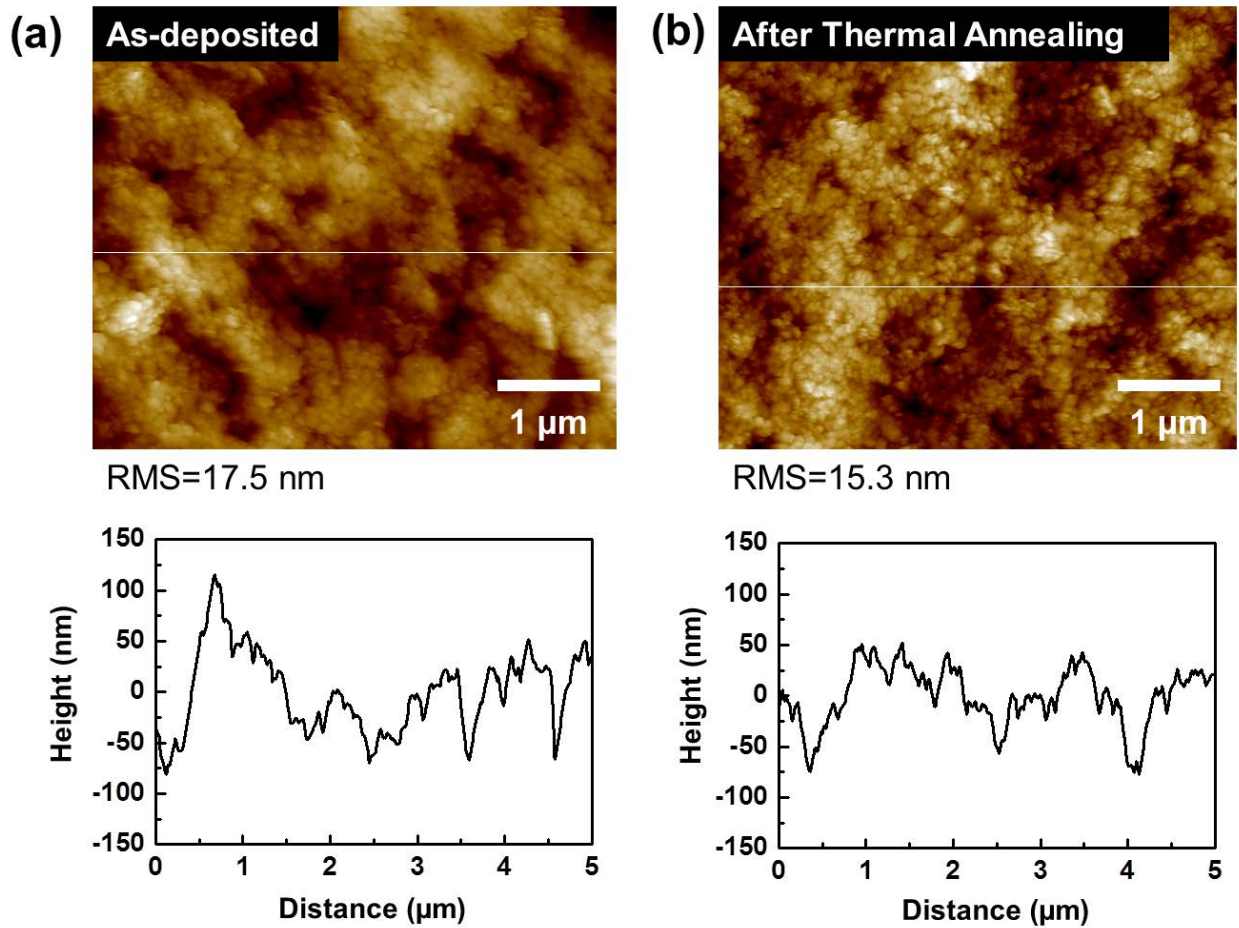
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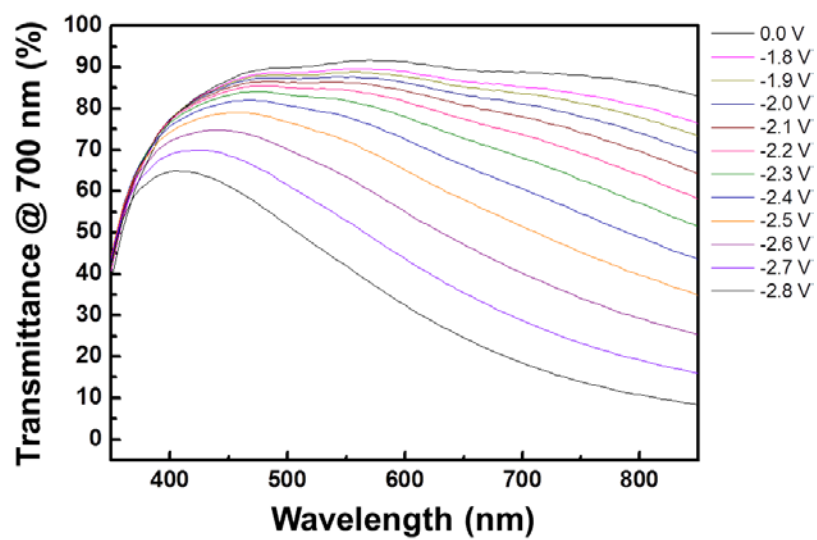
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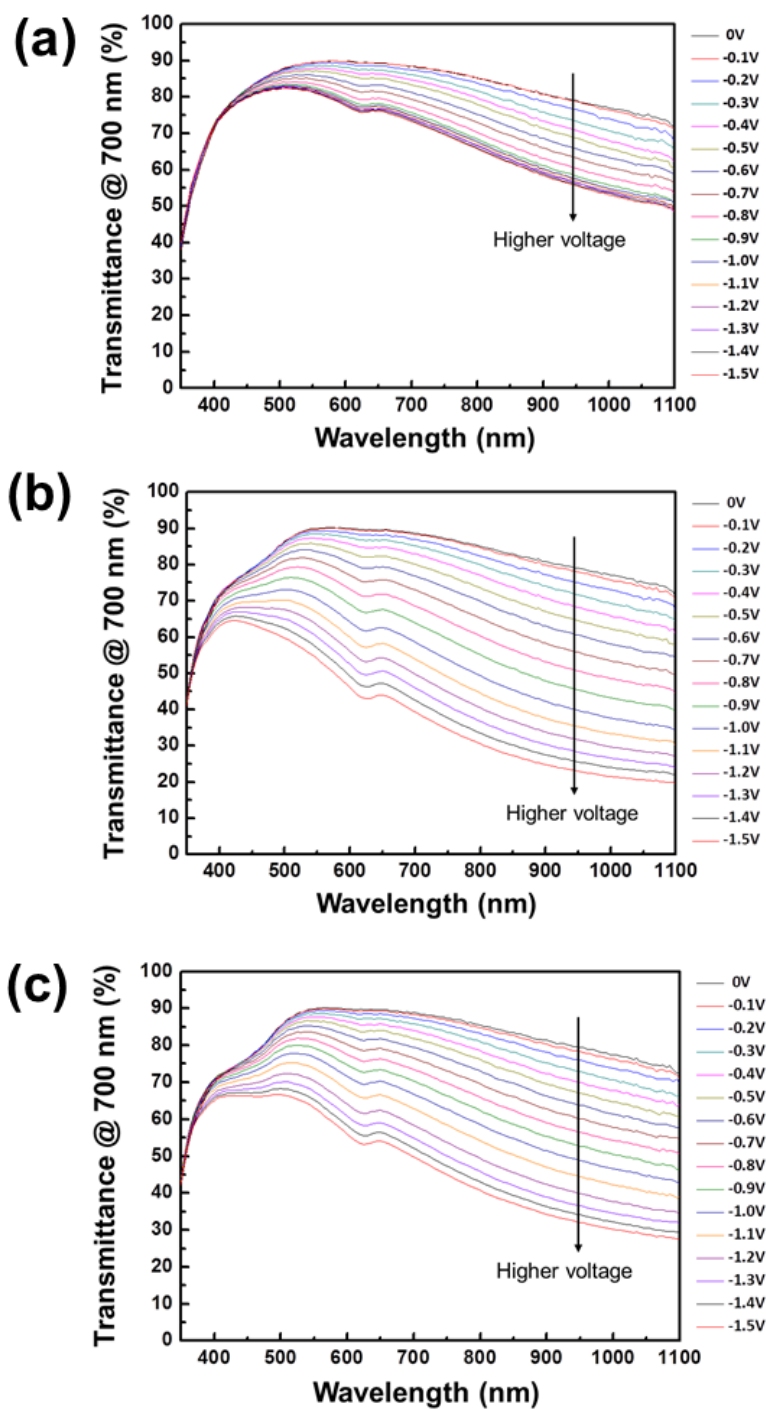
**Fig. S1** A cross-sectional SEM image of the prepared WO<sub>3</sub> film, in which a thickness of the film was determined as ~300 nm.



**Fig. S2** Tapping mode AFM images of the prepared  $\text{WO}_3$  film: (a) as-deposited, and (b) after thermal annealing at 60 °C in vacuum. The root-mean-square (rms) roughness of the film was characterized as 17.5 nm and 15.3 nm for the as-deposited and thermally treated film, respectively. Height profiles correspond to the white lines shown in AFM images.



**Fig. S3** UV-vis spectra of the WO<sub>3</sub>-based ECD without Fc at various applied voltages, showing the absence of ferrocene resulted in higher coloration voltages.



**Fig. S4** UV-vis spectra changes as a function of applied voltages at different Fc concentrations of (a) 0.01 M, (b) 0.05 M, and (c) 0.10 M. The lithium perchlorate ( $\text{LiClO}_4$ ) concentration was fixed at 0.50 M.