Electronic Supplementary Information (ESI)

Low-Voltage, Simple WO$_3$-based Electrochromic Devices by Incorporating Anodic Species into the Electrolyte

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**Fig. S1** A cross-sectional SEM image of the prepared WO$_3$ film, in which a thickness of the film was determined as ~300 nm.
Fig. S2 Tapping mode AFM images of the prepared 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 WO₃-based ECD without Fe 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 (LiClO₄) concentration was fixed at 0.50 M.