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Supporting Information

Electrochromic WO_3 Thin Films Attain Unprecedented Durability by Potentiostatic Pretreatment

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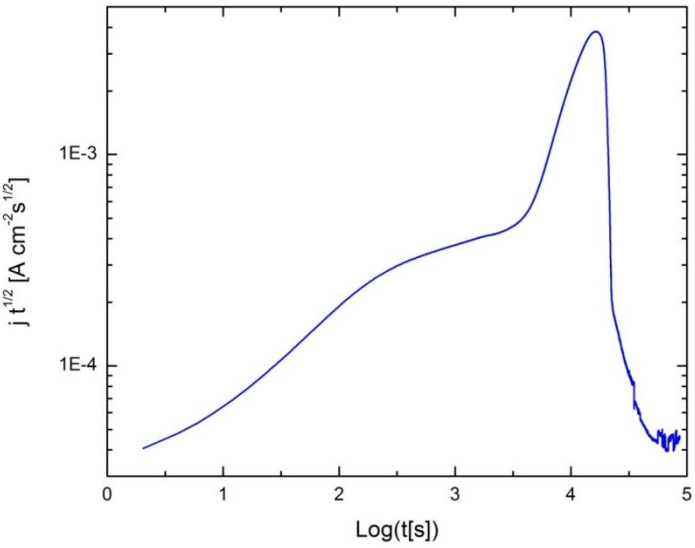

Figure S1. Cottrell plot based on the data in Figure 1, showing current density j multiplied by $t^{1/2}$ *vs*. log(t), where t is time, for a ~300-nm-thick WO_3 film immersed in $LiClO_4$–PC and subjected to potentiostatic treatment at 6.0 V *vs*. Li/Li^+.

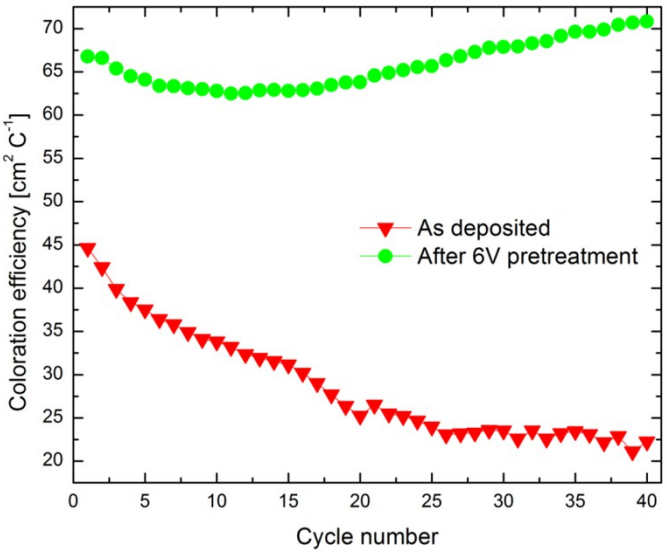

Figure S2. Evolution of coloration efficiency at a wavelength of 550 nm as a function of cycle number for a ~300-nm-thick WO_3 film immersed in $LiClO_4$–PC before and after being subjected to potentiostatic treatment at 6.0 V *vs*. Li/Li^+ for 24 h. The results are based on charge density data in Figures 2b and 2b' and optical transmittance data in Figures 3a and 3a'.

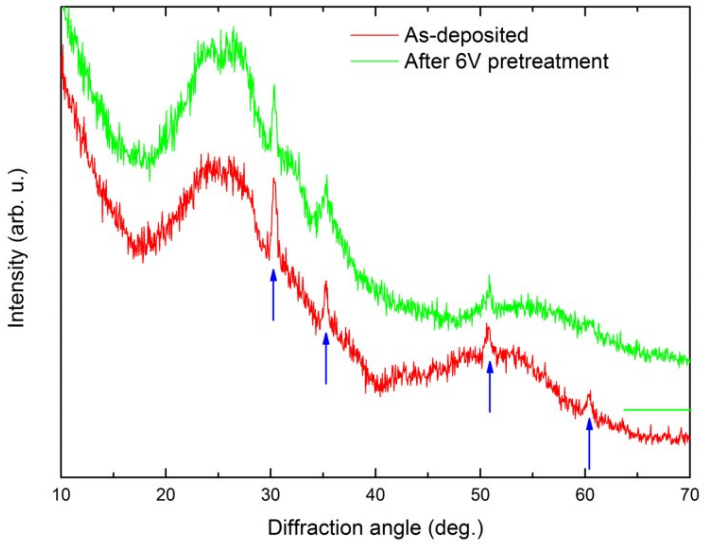

Figure S3. X-ray diffractograms for a ~300-nm-thick WO_3 film, backed by ITO-coated glass, in as-deposited state and after potentiostatic pretreatment in in $LiClO_4$–PC at 6.0 V *vs*. Li/Li^+ for 24 h. Arrows indicate distinct diffraction peaks expected for ITO (JCPDS-ICCD card number 88-0773). The two sets of data are vertically displaced for clarity.

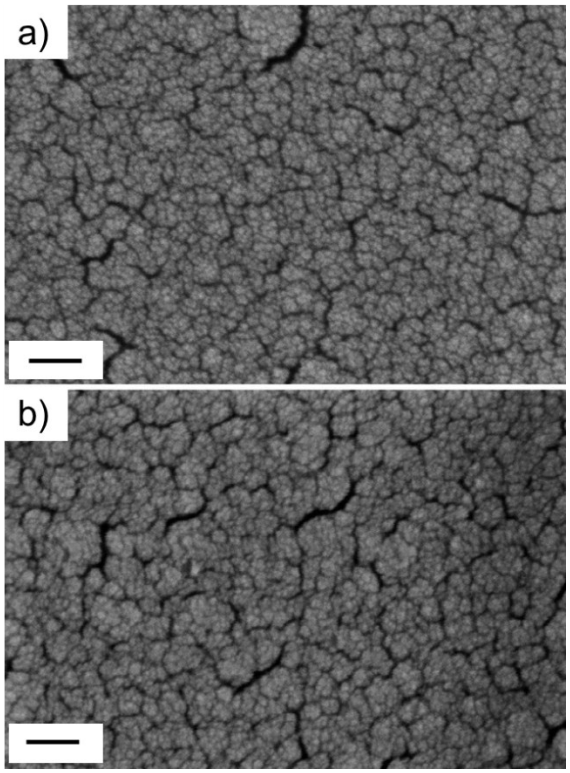

Figure S4. SEM images of a ~300-nm-thick WO_3 film (a) in as-deposited state and (b) after potentiostatic pretreatment in $LiClO_4$–PC at 6.0 V *vs*. Li/Li^+ for 24 h. Scale bars are 100 nm.

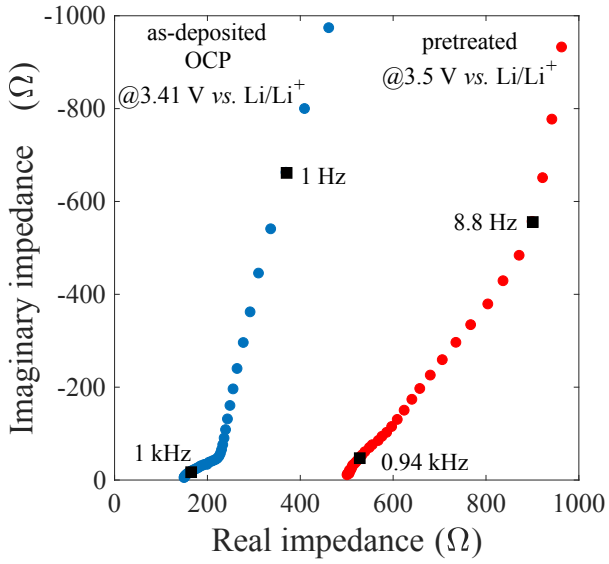

Figure S5. Electrochemical impedance data for a ~300-nm-thick WO_3 film, backed by ITO-coated glass, in as-deposited state and after potentiostatic pretreatment in in $LiClO_4$–PC at 6.0 V *vs*. Li/Li^+ for 24 h. Data are plotted in the complex impedance plane. Spectra were taken at the equilibrium potentials given in the figure, and OCP stands for open circuit potential. A few frequencies are marked in the figure. High-frequency resistances are obtained from the intersection of the curves with the real axis; they are dominated by the resistance of ITO but also include a contribution from the electrolyte.

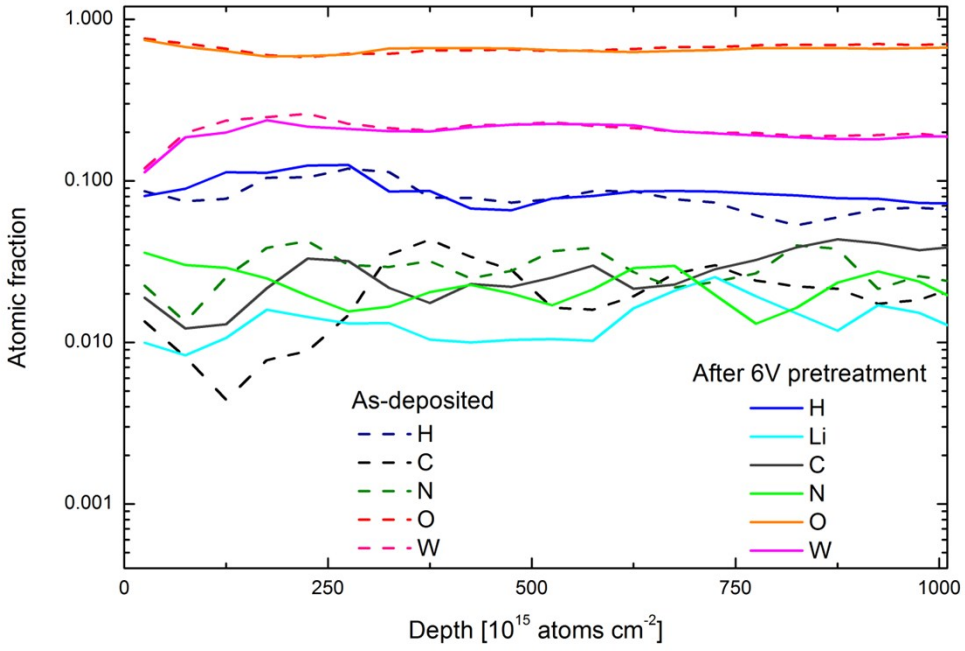

Figure S6. Depth profiling of the stated elements, obtained with ToF-ERDA, of a ~300-nm-thick WO_3 film in as-deposited state and after potentiostatic pretreatment in $LiClO_4$–PC at 6.0 V *vs*. Li/Li^+ for 24 h.