

Supplementary Information

Construction of hydrated tungsten trioxide nanosheet films for efficient electrochromic performance

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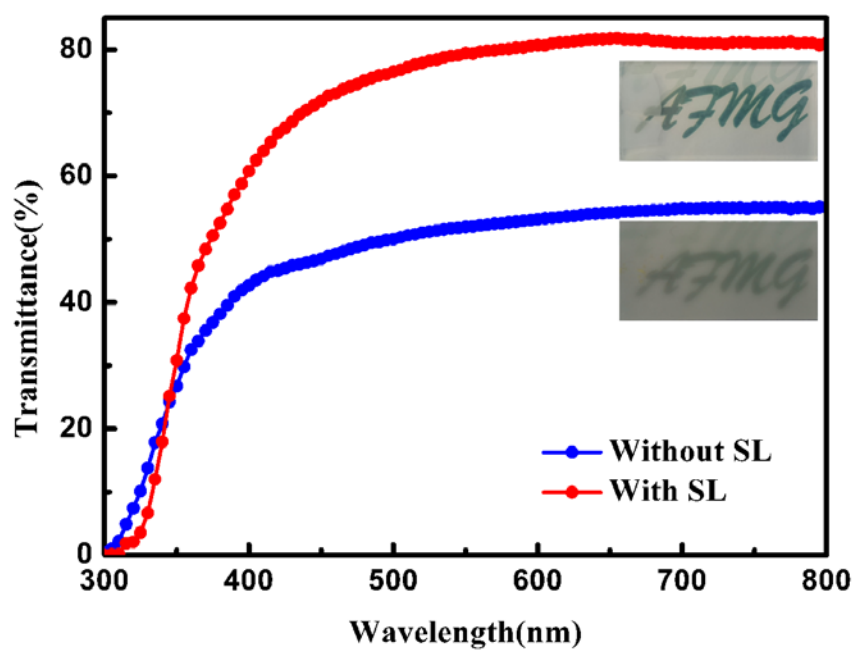


Fig. S1 UV-vis transmittance spectra of the as-prepared $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ films (with urea).

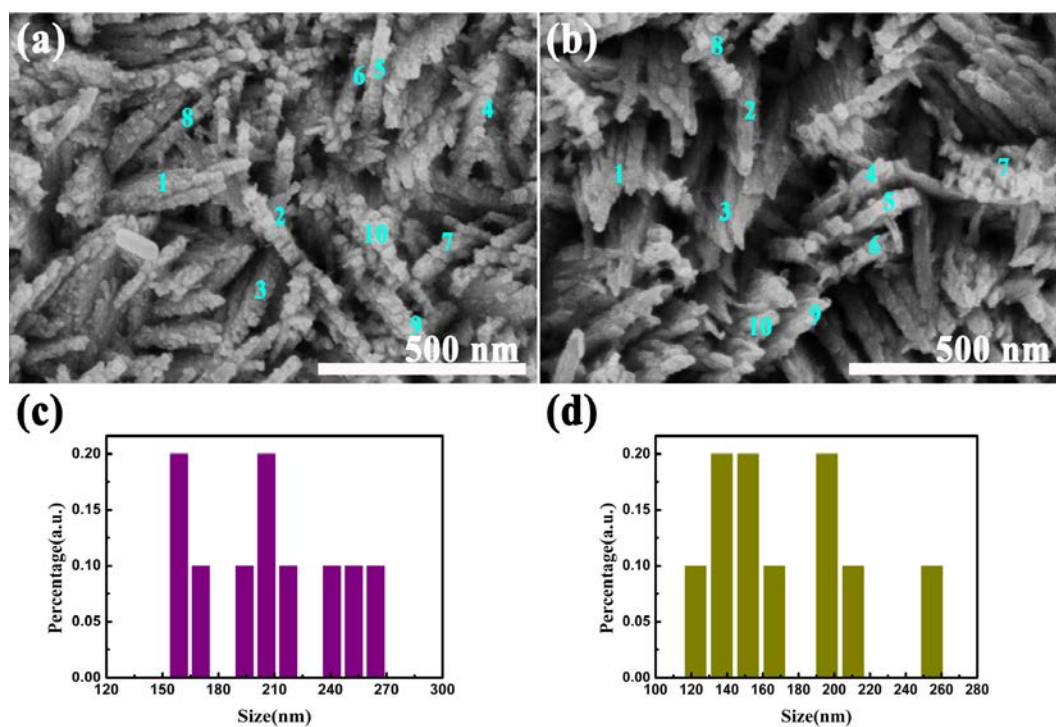


Fig. S2 SEM images of samples prepared with (a) and without (b) urea and (c and d)

corresponding lateral size distribution histogram of the nanosheets films.

As shown in Fig. S2, the average lateral size of the nanosheets prepared with urea is 207.5 nm, while that of sample prepared without urea is 172.2 nm. The thick of the nanosheets are about 35 nm.

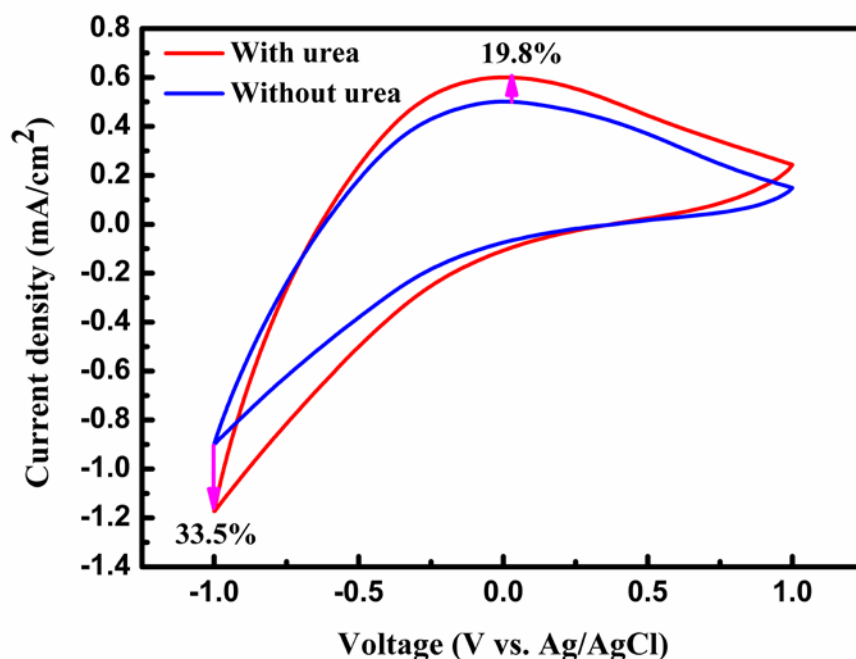


Fig. S3 Cyclic voltammetry curves of the $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ film prepared with urea and $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ film prepared without urea, measured in 1.0 M lithium perchlorate-PC solution between -1.0 and +1.0 V at a sweep rate of 50 mV s^{-1} .

Cyclic voltammetry curves were recorded for the electrode prepared with urea and electrode prepared without urea at room temperature via a three-electrode configuration in 1 M lithium perchlorate (LiClO_4)–propylene carbonate (PC) electrolyte solution, employing the as-prepared electrode as working electrode and a Pt wire (0.5 mm diameter) as the counter electrode together with an Ag/AgCl (3 M KCl) reference electrode. These curves are shown in Fig. S3.

It can be seen that the anodic peak of $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ film prepared with urea

is 19.8% higher than that of the $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ film prepared without urea, and the cathodic peak has risen by 33.5%. This indicates the improvement of Li-ion intercalation capacity of the $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ film prepared with urea, which reflecting the increased electrochemical available surface area. The larger electrochemical available surface area of the as-prepared $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ film makes the electrode could get more inserted Li-ion under the same condition.

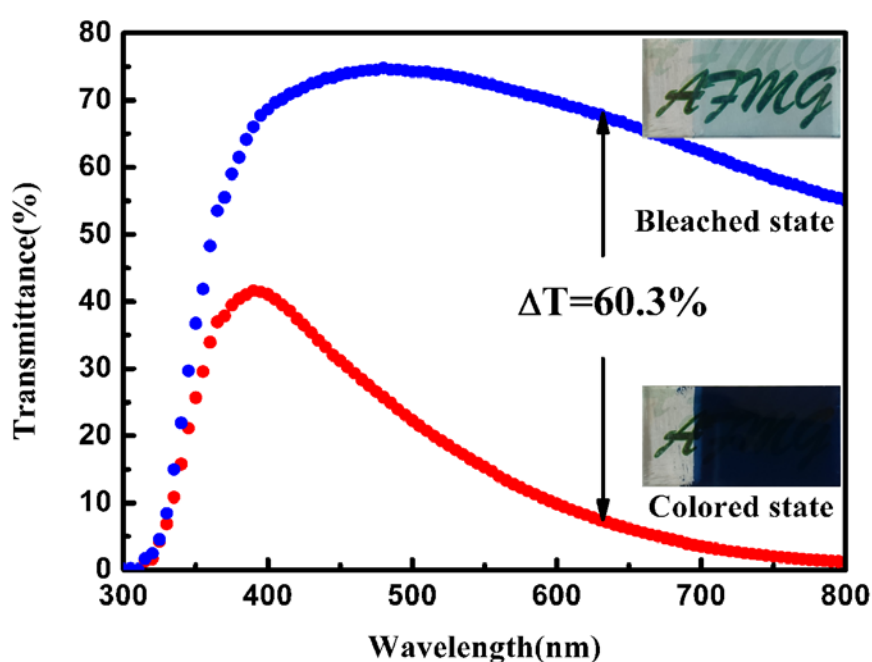


Fig. S4 UV-vis transmittance spectra of the $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ electrode prepared without urea (with SL) at its colored and bleached state.

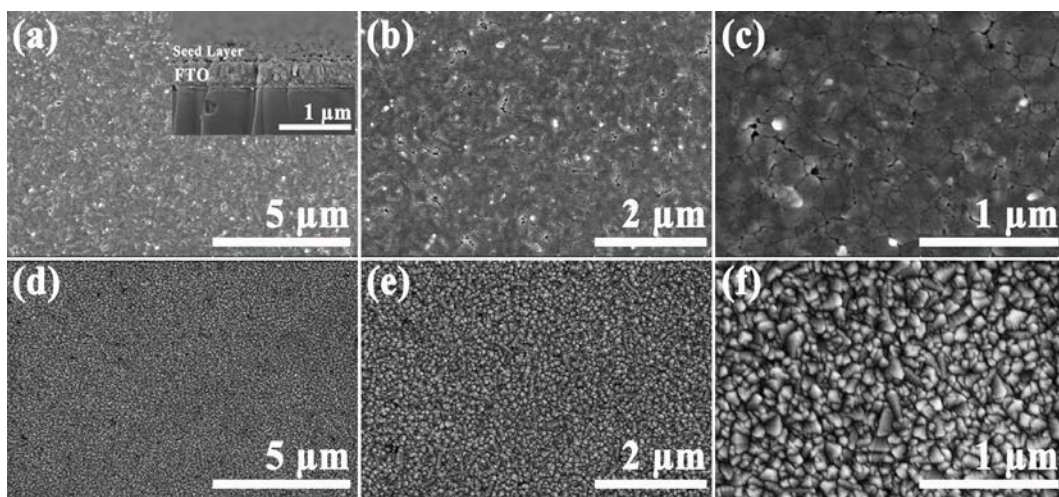


Fig. S5 FE-SEM images of seed layer (a-c) and bare FTO glass (d-f). The inset shown in (a) is the cross-sectional view of seed layer.

The thickness of the dense seed layer is about 80 nm.

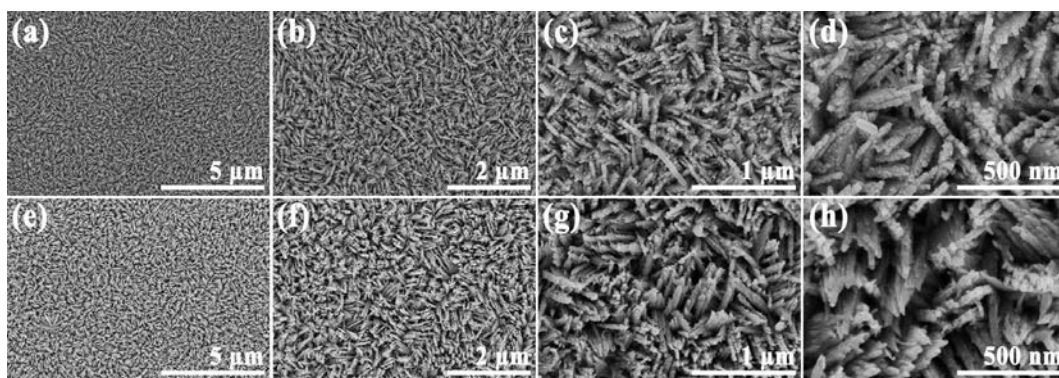


Fig. S6 FE-SEM images of as-prepared $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ electrodes. (a-d) The as-prepared $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ electrode prepared with urea. (e-h) The as-prepared $\text{WO}_3 \cdot 0.33\text{H}_2\text{O}$ electrode prepared without urea.