Electronic Supporting Information

Three dimensional molybdenum oxide/polyaniline hybrid nanosheet networks with outstanding optical and electrochemical properties

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Fig. S1 TEM image of 3D MoO₃ nanosheet networks and corresponding EDS mappings.
Fig. S2 (a) XPS Mo 3d spectrum of 3D MoO$_3$ nanosheet networks, (b) XPS O 1s spectrum of 3D MoO$_3$ nanosheet networks, (c) XPS C 1s spectrum of 3D MoO$_3$/PANI hybrid nanosheet networks and (d) XPS O 1s spectrum of 3D MoO$_3$/PANI hybrid nanosheet networks.
Fig. S3 Illustration of the dual electrochromic mechanism of 3D MoO$_3$/PANI hybrid nanosheet networks film.

$$\text{MoO}_3 + x\text{Li}^+ + xe^- \rightarrow \text{Li}_x\text{MoO}_3$$

bleach  colour

$$\text{LS} \leftrightarrow \text{ES}$$

$$\text{PANI} + 2n\text{ClO}_4^- \leftrightarrow (\text{PANI}^{2n^+})(\text{ClO}_4^-)_{2n} + 2ne^-$$

light yellow  green

$$\text{ES} \leftrightarrow \text{PS}$$

$$(\text{PANI}^{2n^+})(\text{ClO}_4^-)_{2n} + 2n\text{ClO}_4^- \leftrightarrow (\text{PANI}^{2n^+})(\text{ClO}_4^-)_{4n} + 2ne^-$$

green  purple
Fig. S4 The main molecular structures of LB, ES, EB, and PS.
Fig. S5 Transmittance spectra for 3D MoO$_3$ nanosheet networks film under different voltages (inset of photos at 0 and -1.0 V).
Fig. S6 Electrochromic response time of 3D MoO$_3$ nanosheet networks film at 671 nm by continuously stepping voltage between -0.6 and 0.2 V.

Fig. S7 Electrochromic response time of PANI film at 592 nm by continuously stepping voltage between -0.2 and 0.8 V.
Fig. S8 The cycling performance and coulombic efficiency of 3D MoO$_3$/PANI hybrid nanosheet networks film at a current density of 1 A g$^{-1}$. 