Ultrafast switching of electrochromic device based on layered double hydroxide/Prussian blue multilayer films

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Supplementary Figures

Fig. S1 XRD patterns of the MgAl(CO$_3$)-LDH and MgAl(NO$_3$)-LDH.
**Fig. S2** UV-vis absorption spectrum of PB aqueous solution.

**Fig. S3** The zeta potential of a) LDH nanosheets suspension and b) PB NPs colloid.

**Fig. S4** TEM images of the (LDH/PB)$_n$ film scratched from the substrate.
**Fig. S5** Morphology of the (LDH/PB)$_n$ ($n=20$–100) films: (a) top-view SEM images (inset: side-view images); (b) tapping-mode AFM topographical images (2 μm×2 μm). From 1 to 5: $n=20$, 40, 60, 80, 100, respectively.

**Fig. S6** XPS spectra of Fe 2p for: a) (LDH/PB)$_n$ film after applying 0.6 and –0.2 V voltage; b) K$_4$[Fe$^{II}$(CN)$_6$] and K$_3$[Fe$^{III}$(CN)$_6$] as reference compounds.
Fig. S7 FT-IR spectra of the (LDH/PB)$_n$ film applying a bias voltage of 0.6 and –0.2 V, respectively.

Fig. S8 Optical transmittance spectra of the (LDH/PB)$_{100}$ and (LDH/PB)$_{120}$ films at the colored and bleached states, respectively.

Fig. S9 Cyclic voltammograms of the LBL assembled (LDH/PB)$_{20}$ film, LBL assembled (PDDA/PB)$_{60}$ film and spin-coated PB film.
**Fig. S10** SEM image of the (LDH/PB)$_{60}$ film after 400 switching cycles.

**Fig. S11** The optical transmittance change of the (LDH/PB)$_{60}$ film within 1000 switching cycles.

**Fig. S12** Optical transmittance of the (LDH/PB)$_{60}$-ITO/0.1 M KCl electrolyte/ITO-glass ECD after withdrawing applied potential for 24 h.