Supplementary Information

Gated ion transport in layered graphene oxide membranes

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S1. Spin-coated PDMS on GOM

Fig. S1 Photograph (a) and SEM observation on the cross-section (b) of the PDMS-encapsulated GO strip.
S2. Experimental setup

Fig. S2 The photograph of the measured device. Gate voltage ($V_{G}$) was applied separately on one of the electrodes, and the remaining two electrodes were used as reference potential (GND).
**S3. Structural characteristics of GOM**

**Fig. S3** Structural characteristics of GOM. (a) FTIR spectra of GOM. (b) Raman spectra of GOM. The defects or structural disorder was characterized by the intensity ratio of D and G peak ($I_D/I_G$).

Fig. S4 Summary of the position-dependent ionic current.
S5. Schematic diagram of the gate effect of cation distribution within GOM nanochannels.

**Fig. S5** Schematic diagram of the gate effect of cation (brown) distribution in the unipolar GOM nanochannels.