Supplementary Information

Nano-engineered PEDOT(MXene)/PVDF(HFP) bilayer membranes for dual-mode flexible sensing and machine learning-guided signal recognition

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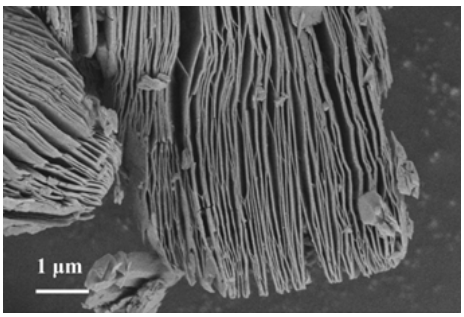

Fig. S1 The accordion-like $Ti_3C_2T_x$ MXene nanosheets.

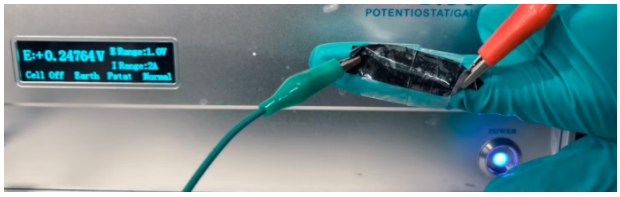

Fig. S2 The photo of the used setup.

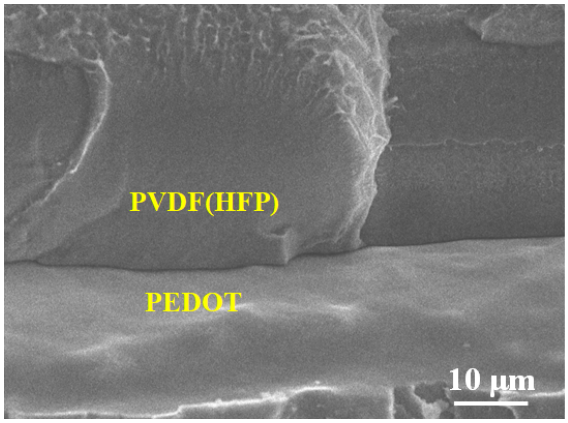

Fig. S3 Cross-sectional SEM image of the PMPH membrane.

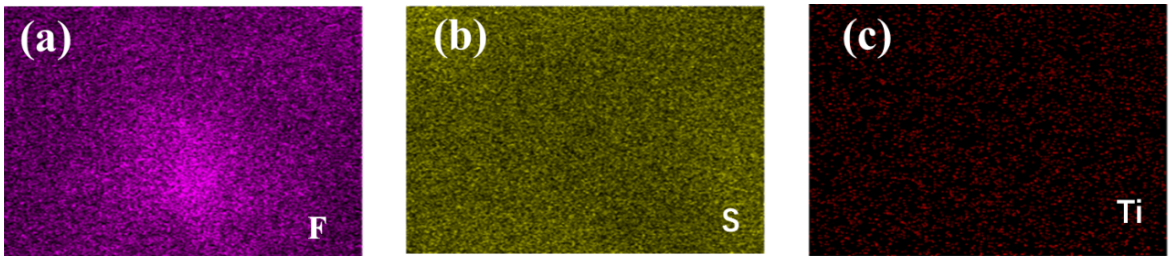

Fig. S4 Energy dispersive spectra of the PMPH membrane. (a) F, (b) S, (c) Ti.

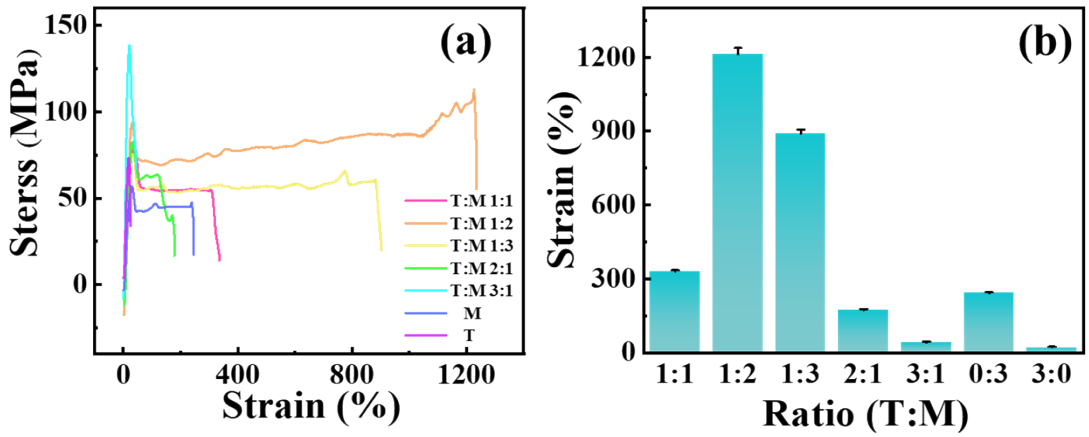

Fig. S5 Stress-strain curves of the PMPH membrane with different MXene doping contents.

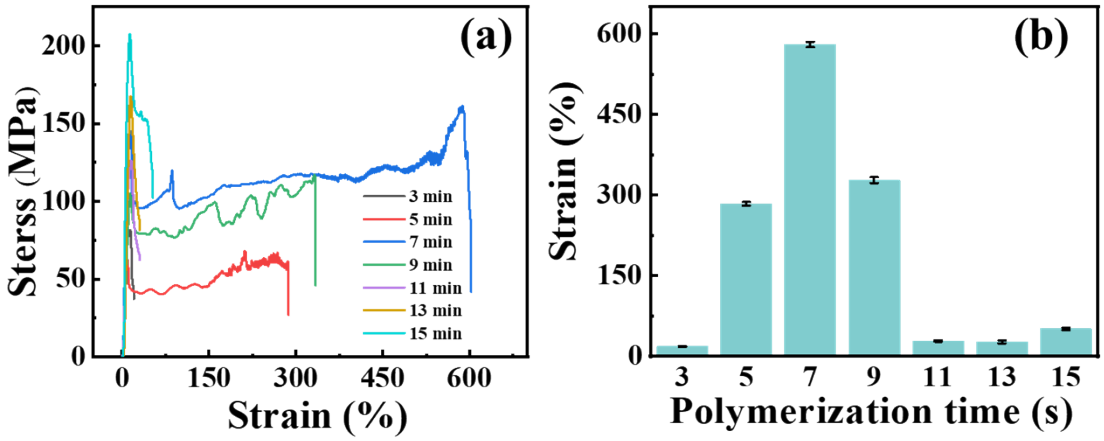

Fig. S6 Stress-strain curves of the PMPH membrane with different polymerization times of the PEDOT membrane.

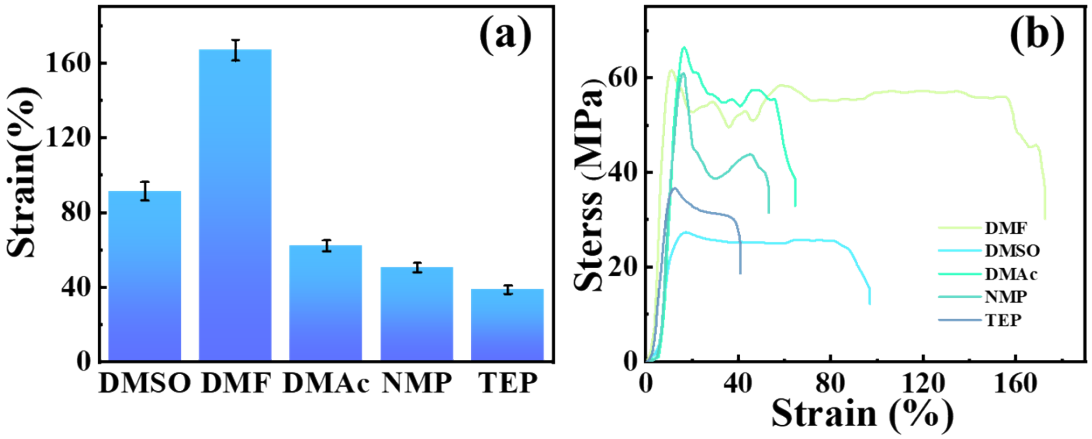

Fig. S7 Stress-strain curves of the PMPH membrane with different solvents for dissolving PVDF(HFP).

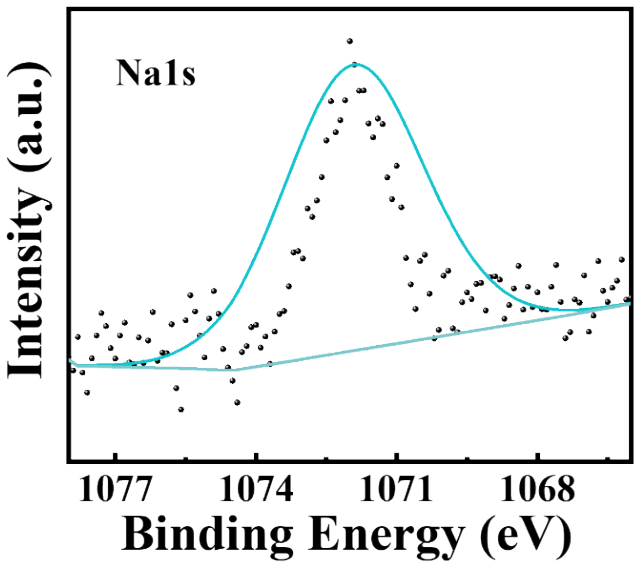

Fig. S8 XPS spectra of Na element of PEDOT membrane after treatment with DMSO.

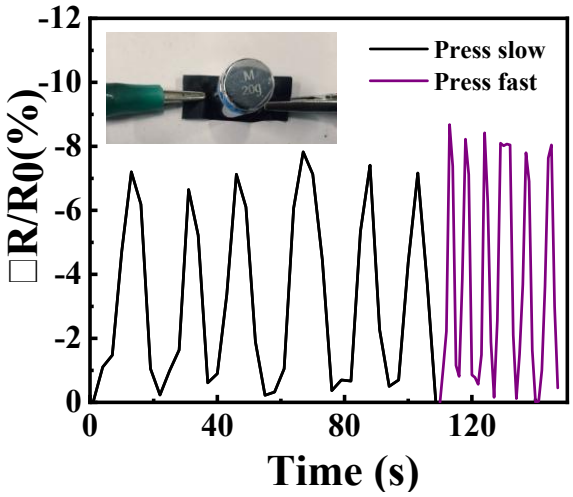

Fig. S9 Response speed under different frequencies with controllable pressure.

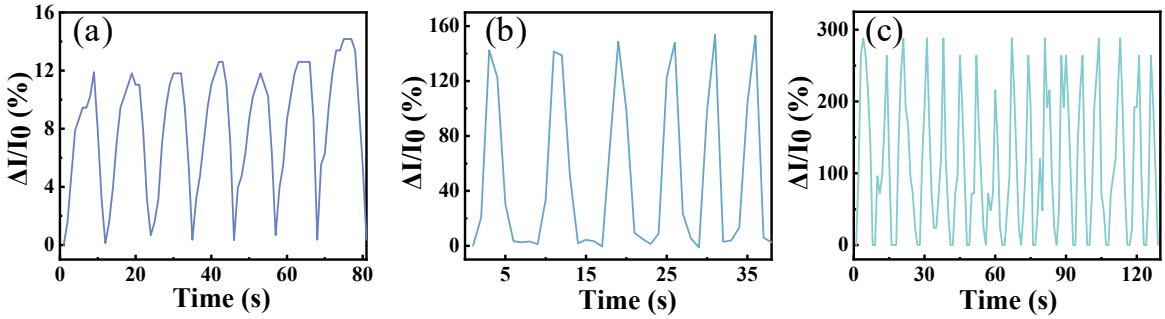

Fig. S10 Response of the PMPH membrane under different pressures.

Fig. S11 Drawing patterns and writing letters on the PMPH membrane using a touchpad.

Fig. S12 Stretching of the PMPH membrane under a heavy load.