Supporting Information

2D MXene interfaces preserve the basal electrophysiology of targeted neural circuits

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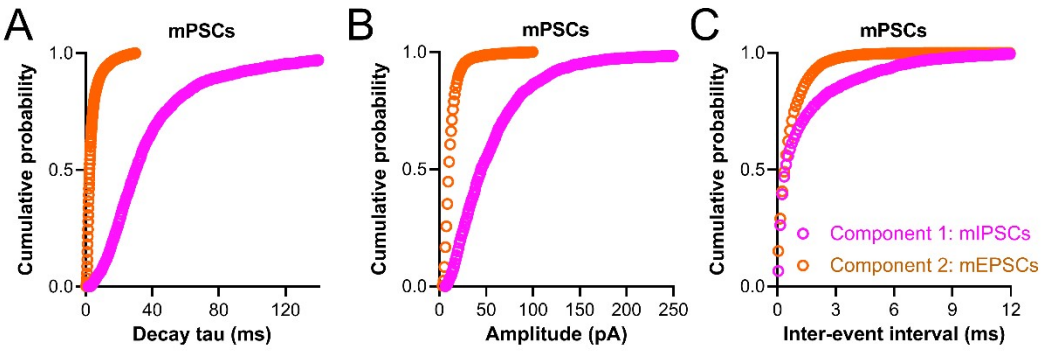
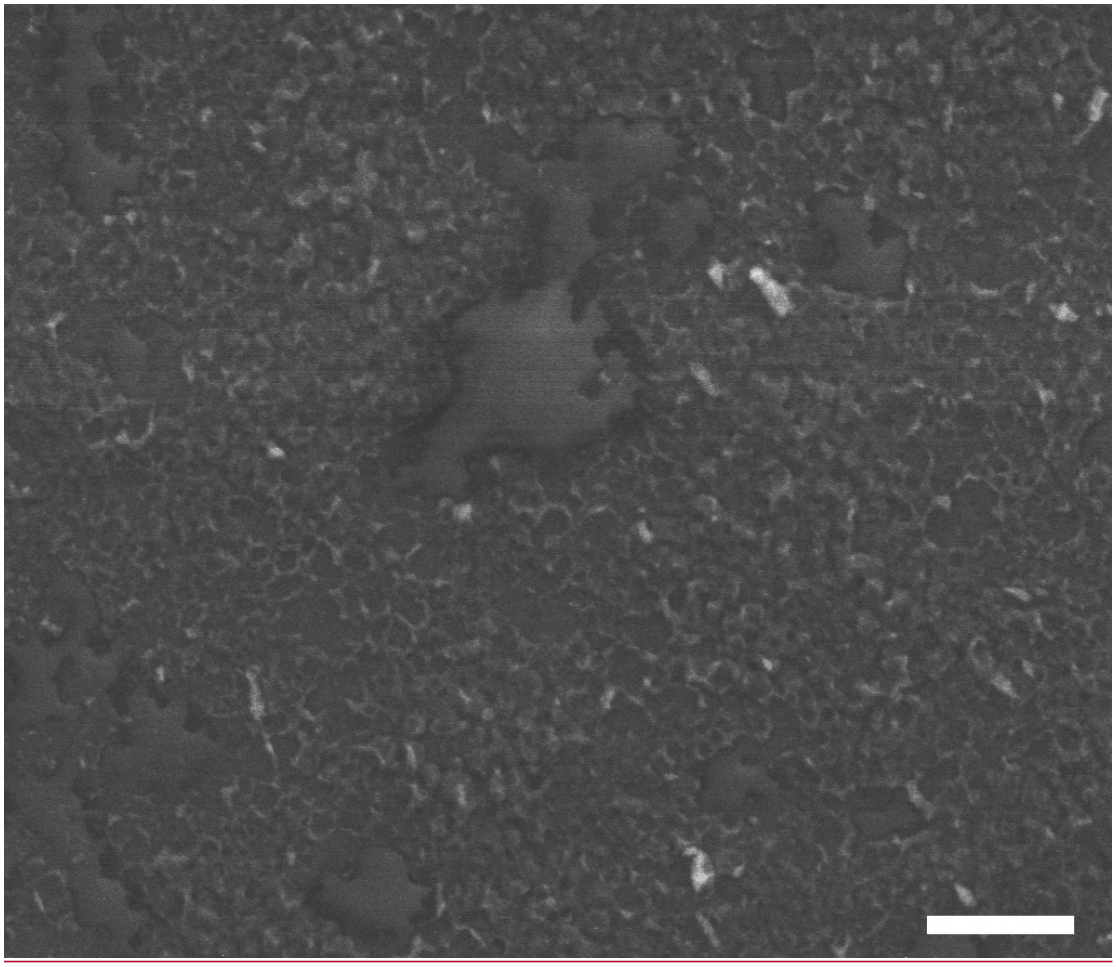
Supplementary Videos

Supplementary Video_Coverslip_001. Representative Fluo-4 AM fluorescence calcium imaging of 9 hippocampal neuron cultures on coverslip for 8 days *in vitro*.

Supplementary Video_MXene_001. Representative Fluo-4 AM fluorescence calcium imaging of 9 hippocampal neuron cultures on uncoated $Ti_3C_2T_x$ MXene film for 8 days *in vitro*.



Supplementary Figure 1. Two types of events from mPSCs which was recorded from a voltage-clamped hippocampal neuron (at holding potential of -50 mV) grown on the poly-L-ornithine coated coverslip control were identified. A slow decay component and a fast decay component were extracted from the mPSCs. These components differ in decay time (A, KS = 0.15, P = 0.001, Kolmogorov Smirnov test), amplitude (B, KS = 0.18, P = 0.009, Kolmogorov Smirnov test), and inter-event interval (C, KS = 0.55, P = 0.000). Slow (component 1) and fast (component 2) components, respectively referred to mIPSCs and mEPSCs.



Supplementary Figure 2. Representative SEM image of the Ti3C2Tx MXene film with enlarged higher-magnification. Scale bar = 5 μm.