Supporting Information for

Enhanced Ionic Accessibility of Flexible MXene Electrodes Produced by Natural Sedimentation

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Supplementary Tables and Figures

Table S1 2θ for the split (002) peaks and the calculated interlayer distances of the conventional vacuum-filtered MXene film and natural-sedimented MXene films

	high-angle peak		low-angle peak	
	2θ	d (Å)	2θ	d (Å)
Vac-0.5	7.24	12.20	6.28	14.06
Nat-2	7.17	12.32	6.08	14.52
Nat-1	7.10	12.44	6.03	14.64
Nat-0.5	7.03	12.56	5.98	14.76

Table S2 Comparison of lithium storage performance between naturally-sedimented MXene and other reported pure $Ti_3C_2T_x$ MXene anode materials

Electrode material	Li-storage capacity	Cycle performance	Rate performance	Refs.
Free-standing $Ti_3C_2T_x$ MXene film prepared by natural sedimentation	**351 mAh g^{-1} at 30 mA g^{-1}**	**242 mAh g^{-1} at 320 mA g^{-1} over 1000 cycles (no capacity loss)**	**115 mAh g^{-1} at 500 mA g^{-1}**	**This work**
Heteroatom-controlled $Ti_3C_2T_x$ MXene films by annealing	221 mAh g^{-1} at 32 mA g^{-1}	~100 mAh g^{-1} at 320 mA g^{-1} over 500 cycles	124 mAh g^{-1} at 320 mA g^{-1}	[S1]
Free-standing $Ti_3C_2T_x$ electrode prepared by cold pressed	120 mAh g^{-1} at 30 mA g^{-1} (electrode thickness: 220 μm)	28 mAh g^{-1} over 50 cycles		[S2]
Al^{3+} pre-intercalated $Ti_3C_2T_x$ film electrode	157.6 mAh g^{-1} at 1 C	Retaining 85% over 100 cycles	42.5 mAh g^{-1} at 5 C	[S3]
Low-F Ti_3C_2 MXene film prepared by annealing	~123.7 mAh cm^{-3} at 1 C	Retaining 75% over 100 cycles	~50 mAh cm^{-3} at 5 C	[S4]
$Ti_3C_2T_x$ MXene film treated with hydrazine vapor and annealing	~180 mAh g^{-1} at 100 mA g^{-1}	56.4 mAh g^{-1} at 1A g^{-1} over 1000 cycles	80 mAh g^{-1} at 1 A g^{-1}	[S5]
$Ti_3C_2T_x$ paper prepared by intercalation with hydrazine monohydrate	410 mAh g^{-1} at 1 C	—	—	[S6]
Porous $Ti_3C_2T_x$ film	~110 mAh g^{1} at 0.5 C	Retaining ~100% over 100 cycles		[S7]
$Ti_3C_2T_x$/CNT composite films (9:1)	220 mAh g^{1} at 0.5 C	Retaining ~100% over 100 cycles		[S7]
Porous $Ti_3C_2T_x$/CNT composite films (9:1)	650 mAh g^{1} at 0.1 C	Capacity increases over 100 cycles	~230 mAh g^{1} at 10 C	[S7]
Ti_3C_2/CNTs hybrid film (1:1)	403.5 mAh g^{-1} at 0.5 C	428.1 mAh g^{-1} over 300 cycles	218.2 mAh g^{-1} at 2 C	[S8]
Ti_3C_2 intercalated with DMSO	~210 mAh g^{-1} at 26 mA g^{-1}	118 mAh g^{-1} at 260 mA g^{-1} over 75 cycles	123.6 mAh g^{-1} at 260 mA g^{-1}	[S9]
Nitrogen containing Ti_3C_2 prepared by heat treatment in NH_3	~250 mAh g^{-1} at 32 mA g^{-1}		168 mAh g^{-1} at 320 mA g^{-1}	[S10]
Multilayer Ti_3C_2 MXene improved by calcination	254.6 mAh g^{-1} at 0.1 C	147.4 mAh g^{-1} at 1 C over 100 cycles	120 mAh g^{-1} at 4 C	[S11]

Table S3 The fitting resistance of the obtained MXene films

	Vac-0.5	Nat-2	Nat-1	Nat-0.5
R_e (Ω)	8.9	5.1	4.3	3.1
R_{ct} (Ω)	105.2	89.2	67.5	49.7
R_{Li} (Ω)	595.6	540.9	347.1	325.6

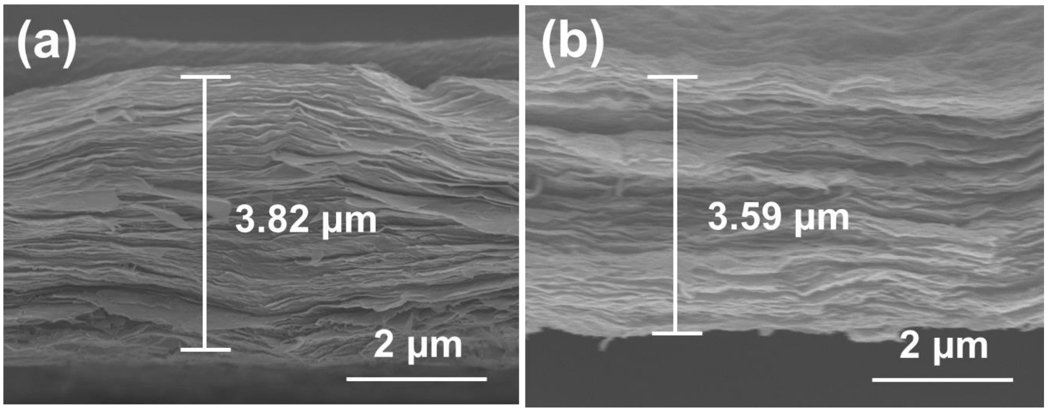

Fig. S1 Cross-sectional SEM images of Nat-1 film (**a**) and Nat-2 film (**b**)

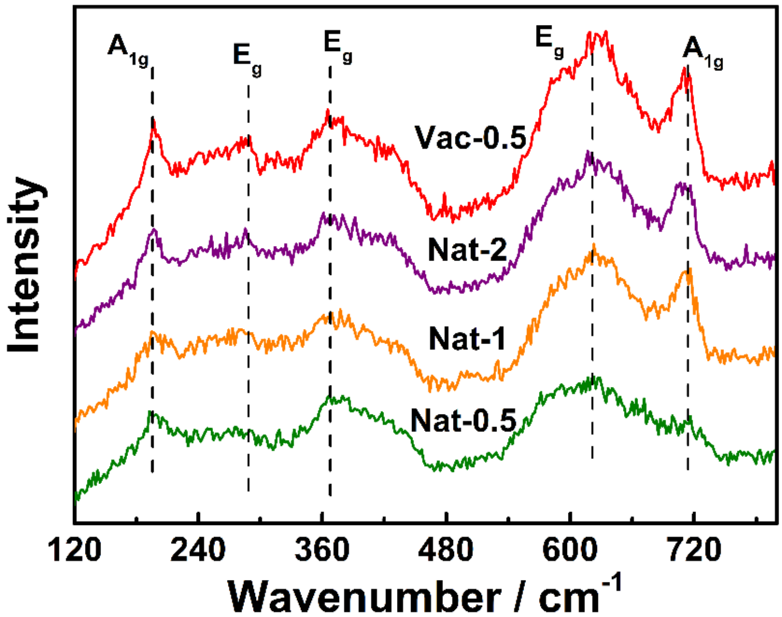

Fig. S2 Raman spectra of the as-prepared MXene films

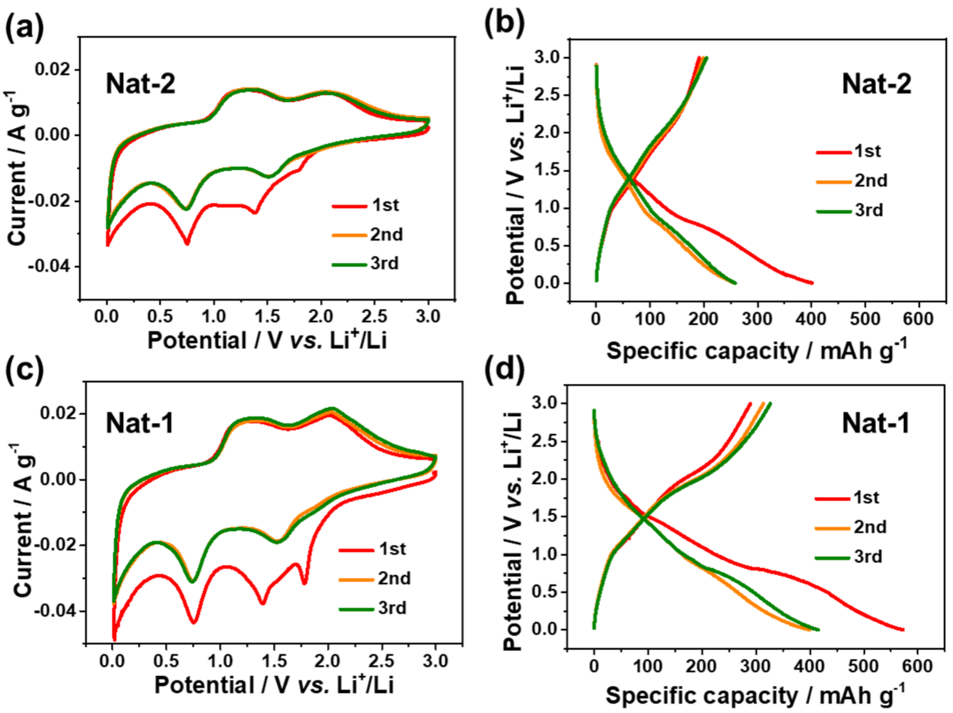

Fig. S3 CV profiles at 0.1 mV s^{-1} and galvanostatic charge/discharge curves at 30 mA g^{-1} for the initial three cycles of Nat-2 film (**a, b**) and Nat-1 film (**c, d**)

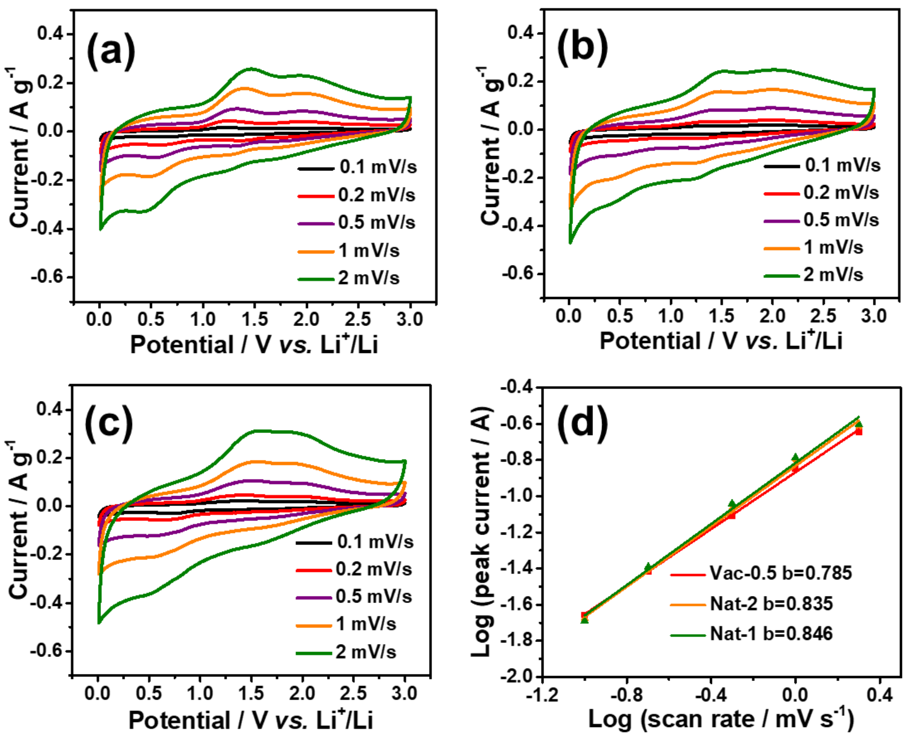

Fig. S4 CV curves at various scan rates ranging from 0.1 to 2 mV s^{-1} of Vac-0.5 (**a**), Nat-2 (**b**) and Nat-1 (**c**) and the relationships between the peak current and scan rate for the anodic peak at ~2.0 V of the prepared MXene films (**d**)

Supplementary References

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