

Supporting information

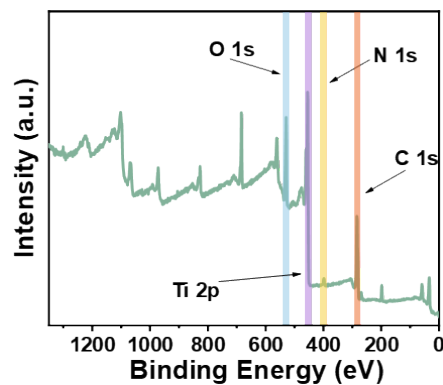


Figure S1. XPS survey spectra of PANI@MXene/cotton.

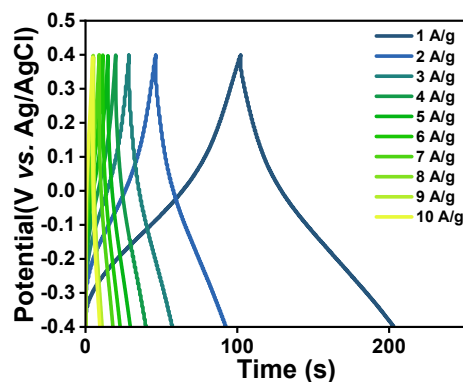


Figure S2. GCD curves of MXene/cotton textile electrode.

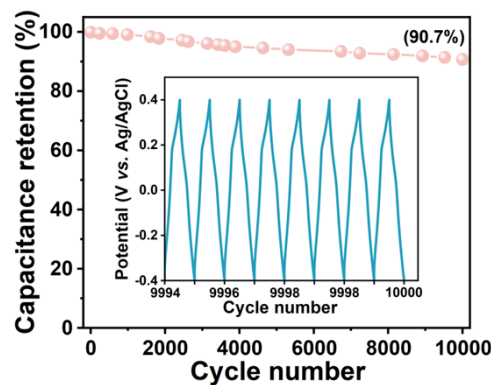


Figure S3. The long-term cycle of PANI@MXene/cotton textile electrode.

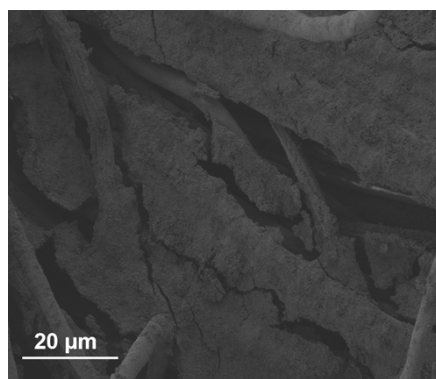


Figure S4. The SEM image of PANI@MXene/cotton textile after 10,000 times cycles.

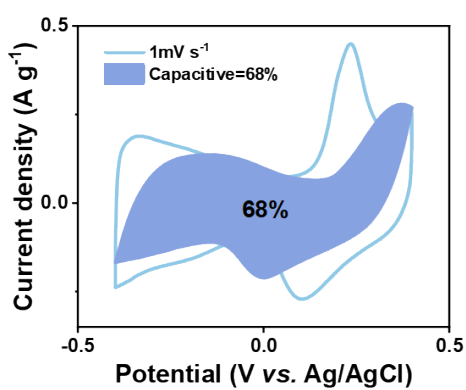


Figure S5. CV curve of PANI@MXene/cotton electrode at 1 mV s⁻¹ with the shadowed area representing the surface capacitive contribution.

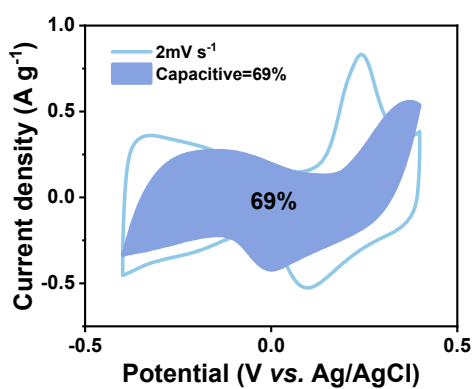


Figure S6. CV curve of PANI@MXene/cotton electrode at 2 mV s⁻¹ with the shadowed area representing the surface capacitive contribution.

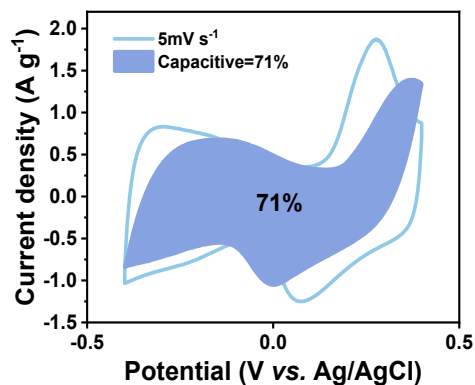


Figure S7. CV curve of PANI@MXene/cotton electrode at 5 mV s⁻¹ with the shadowed area representing the surface capacitive contribution.

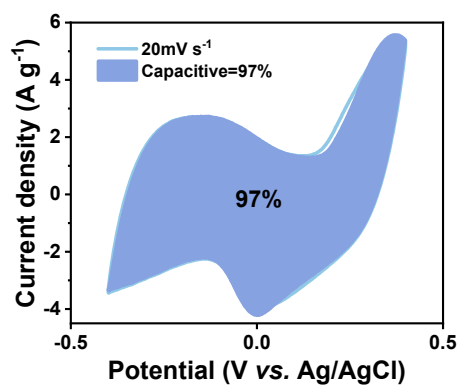


Figure S8. CV curve of PANI@MXene/cotton electrode at 20 mV s⁻¹ with the shadowed area representing the surface capacitive contribution.

Table S1. Comparison the capacitance with previously reported literatures

Sample	Capacitance (F g ⁻¹)	Reference
A-MWCNT/PANI	201	[1]
PAni/PMo12	120	[2]
PANI/CNTs	250	[3]
Cu-MOF/PANI	160	[4]
CNFs/MWCNTs/PANI	249	[5]
3D rGO-PANI	219	[6]
PANI@MXene/cotton textile	288	This work

References

[1] S.-Y. Lee, J.-I. Kim, S.-J. Park, Activated carbon nanotubes/polyaniline composites as supercapacitor electrodes, *Energy* 78 (2014) 298-303.

- [2] A.K. Cuentas-Gallegos, M. Lira-Cantú, N. Casañ-Pastor, P. Gómez-Romero, Nanocomposite Hybrid Molecular Materials for Application in Solid-State Electrochemical Supercapacitors, *Adv. Funct. Mater.* 15(7) (2005) 1125-1133.
- [3] E. Frackowiak, V. Khomenko, K. Jurewicz, K. Lota, F. Béguin, Supercapacitors based on conducting polymers/nanotubes composites, *J. Power Sources* 153(2) (2006) 413-418.
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- [5] C. Yang, D. Li, Flexible and foldable supercapacitor electrodes from the porous 3D network of cellulose nanofibers, carbon nanotubes and polyaniline, *Mater. Lett.* 155 (2015) 78-81.
- [6] C. Lai, Y. Guo, H. Zhao, H. Song, X. Qu, M. Huang, S.W. Hong, K. Lee, High-performance double “ion-buffering reservoirs” of asymmetric supercapacitors enabled by battery-type hierarchical porous sandwich-like Co_3O_4 and 3D graphene aerogels, *Adv. Compos. Hybrid Mater.* 5(3) (2022) 2557-2574.