Supporting information

A Novel MnO_2/MXene Composite Prepared by Electrostatic Self-assembly and Its Electrode for Enhanced Supercapacitive Performance

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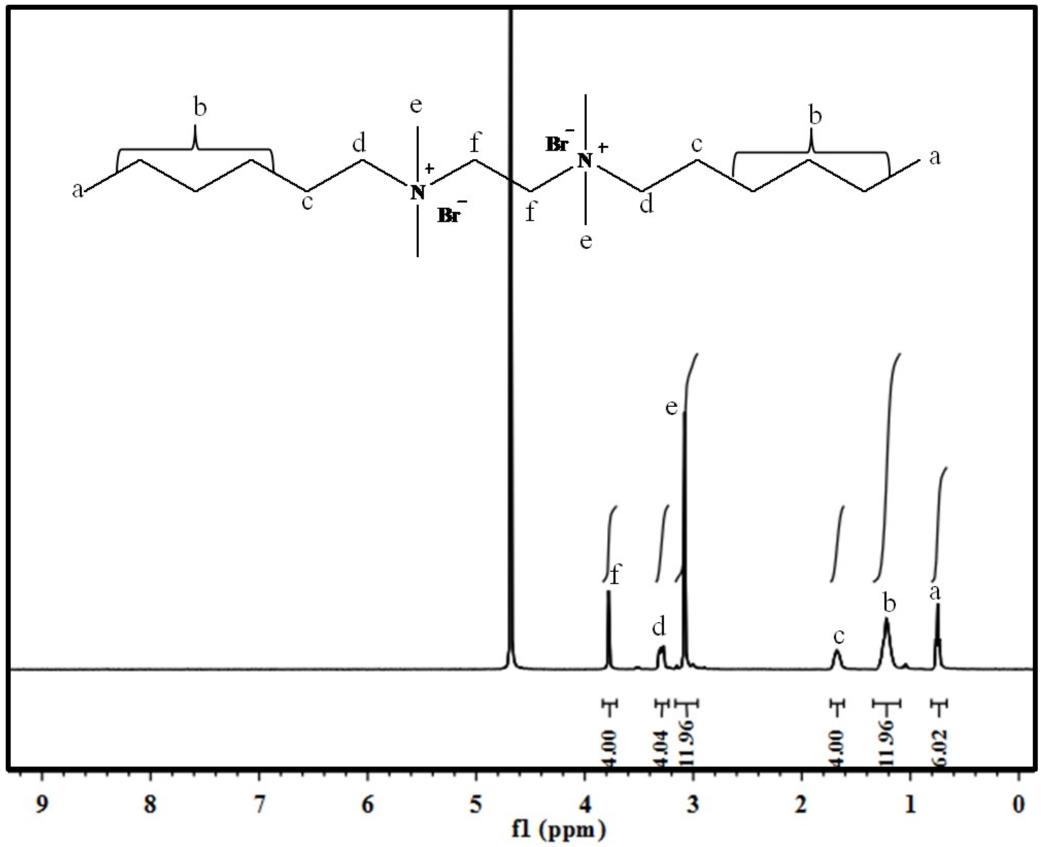

Figure (S1) ^{1}H NMR of Gem (D_2O). ^{1}H NMR (D_2O): δ 0.60–0.80 (6H, CCH_3), δ 1.00-1.35 (12H, C$CH_2CH_2CH_2$C), δ 1.55-1.75 (4H, NCCH_2), δ 2.95.00-3.15 (12H, NCH_3), δ 3.2.00-3.4 (4H, NCH_2C), and δ 3.70-3.85 (4H, NCH_2CN).

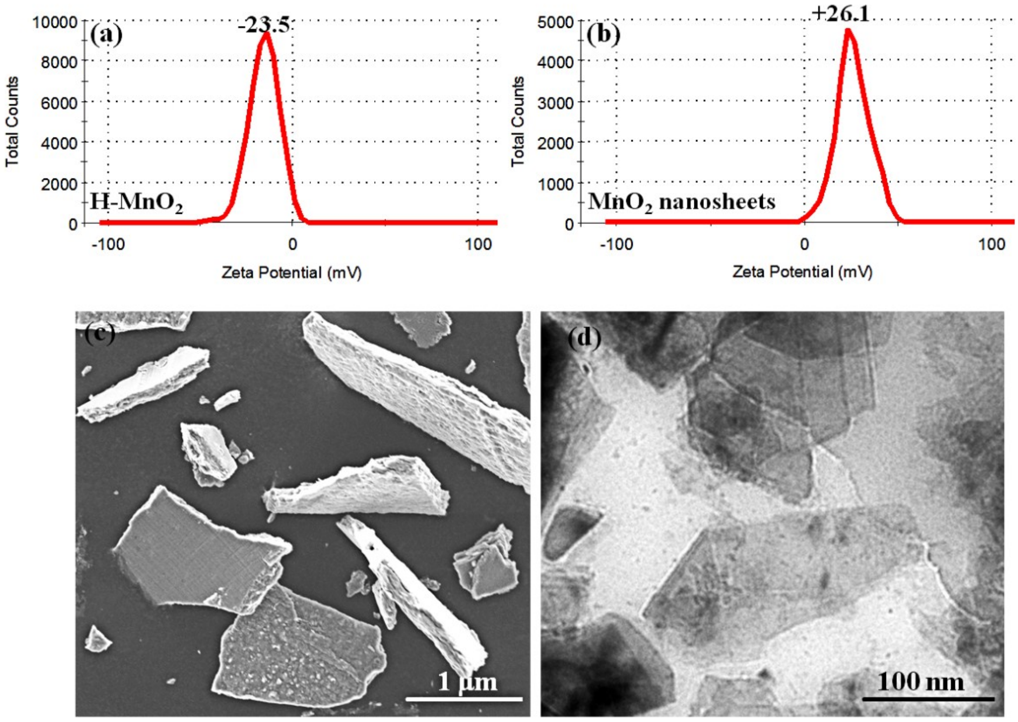

Figure (S2) Zeta potentials of (a) H-MnO_2 and (b) MnO_2 nanosheets; (c) SEM and (d) TEM images of MnO_2 nanosheets

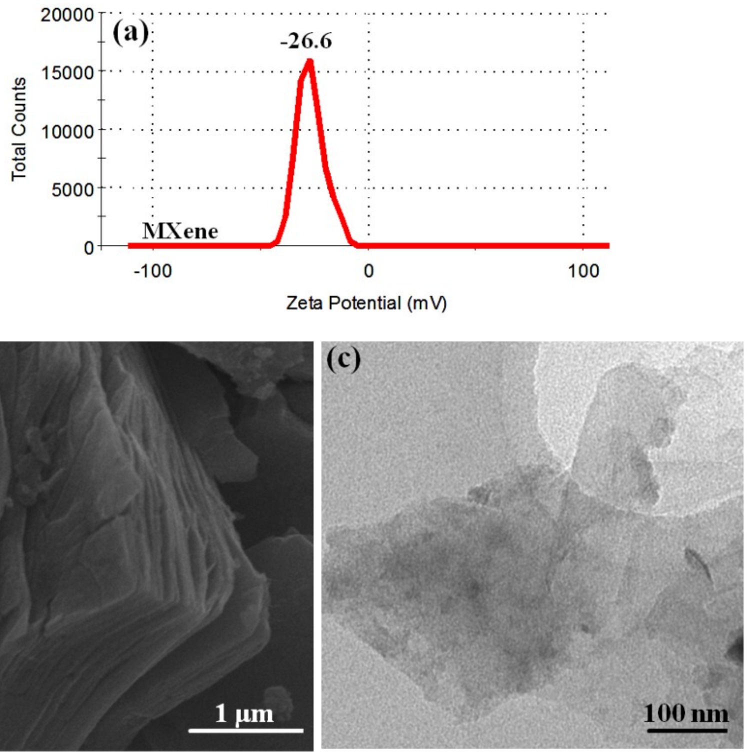

Figure (S3) (a) Zeta potential of MXene; (b) SEM and (c) TEM images of MXene

Table S1 Binding energies and atomic ratios for various elements in MnO_2/MXene by XPS

Sample	C1s		N1s		Ti2p		Mn2p		O1s		F1s	
	BE (eV)	Atom %[a]	BE (eV)	Atom %[a]	BE (eV)	Atom %[a]	BE (eV)	Atom %[a]	BE (eV)	Atom %[a]	BE (eV)	Atom %[a]
MnO_2/MXene	284.8	25.09	402.2	3.61	458.2	9.62	641.9	10.45	529.5	47.55	683.9	3.68

[a] The atomic percent (atom %) of each element was determined using XPS high-resolution data and normalization by the following sensitivity factors (RSF).

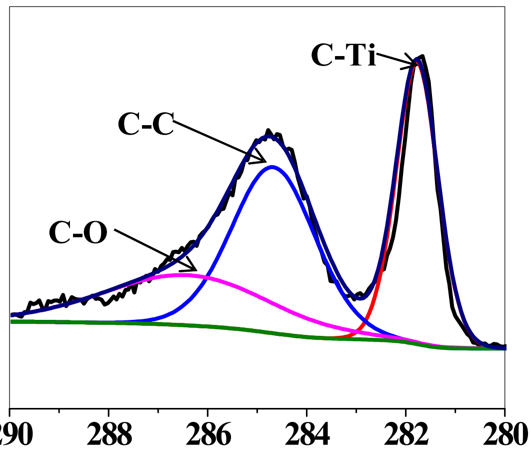

Figure (S4) The high-resolution XPS of C1s for MXene

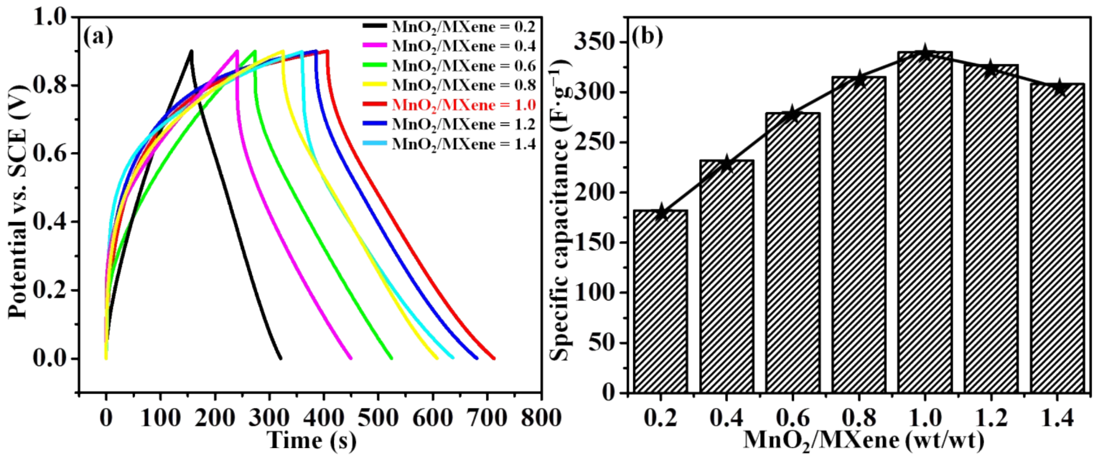

Figure (S5) (a) GCD curves and (b) specific capacitances of the MnO_2/MXene composites with different wt ratio between MnO_2 nanosheets and MXene nanosheets at a current density of 1 $A{\cdot}g^{-1}$

Table S2 Specific capacitance (F·g^{-1}) of electrodes as measured with different measurement techiques

Electrodes	GCD, current density (A·g^{-1})				CV, scan rate (mV·s^{-1})			
	1	2	4	6	25	50	75	100
MnO_2/MXene	340	335	328	320	347	342	336	332
MXene	109	106	101	95	117	113	107	100
MnO_2 nanosheets	137	135	132	128	145	141	138	135

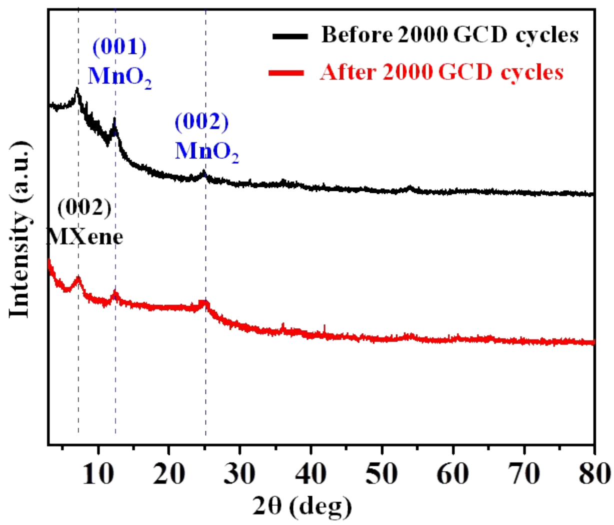

Figure (S6) XRD of MnO_2/MXene before and after 2000 GCD cycles