Supporting Information

Nitrogen and sulfur co-doped carbon quantum dot decorated $Ti_3C_2T_x$-MXene as electrode material for high-performance symmetric supercapacitors

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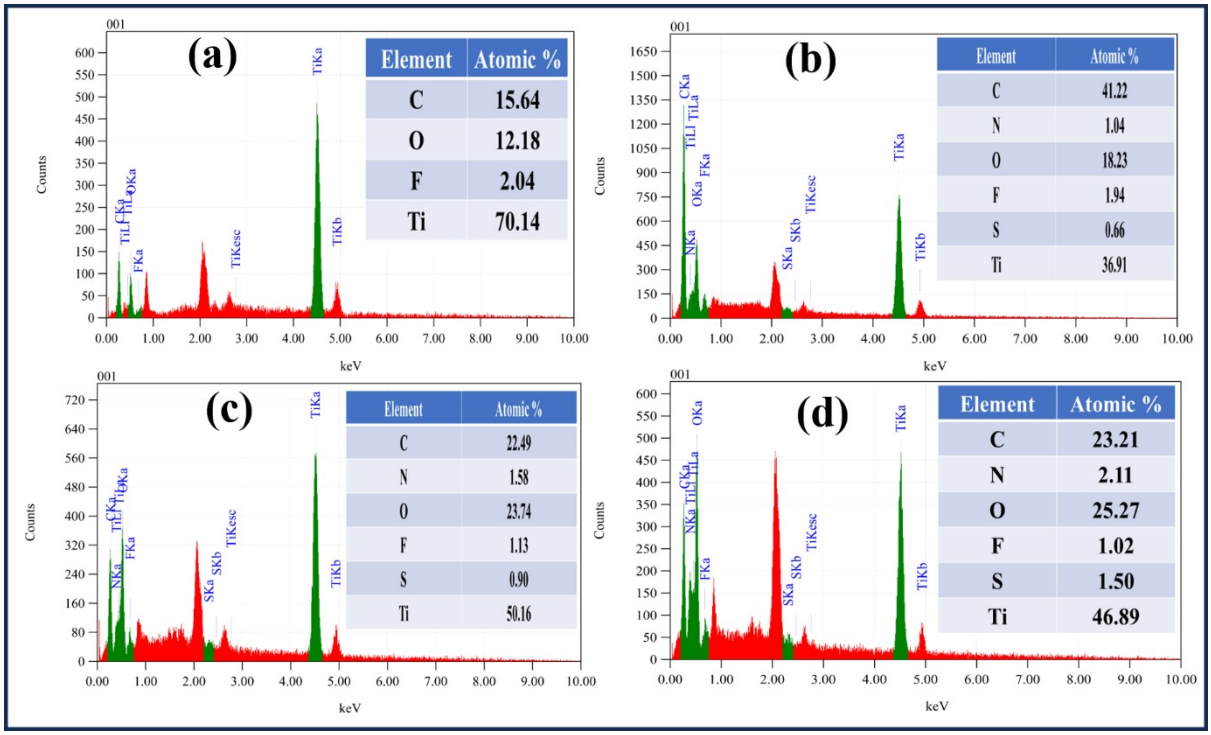

Fig. S1: EDX spectra of (a) $Ti_3C_2T_x$, (b)NS-CQD/M-5, (c) NS-CQD/M-10, and (d) NS-CQD/M-20 with element percentage distribution

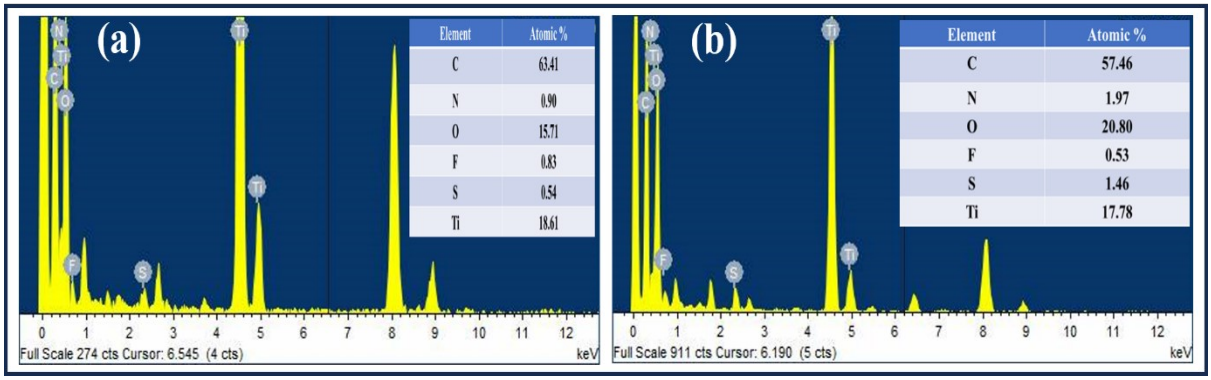

Fig. S2: EDX spectra of (a) NS-CQD/M-5, (b) NS-CQD/M-20 with element percentage distribution

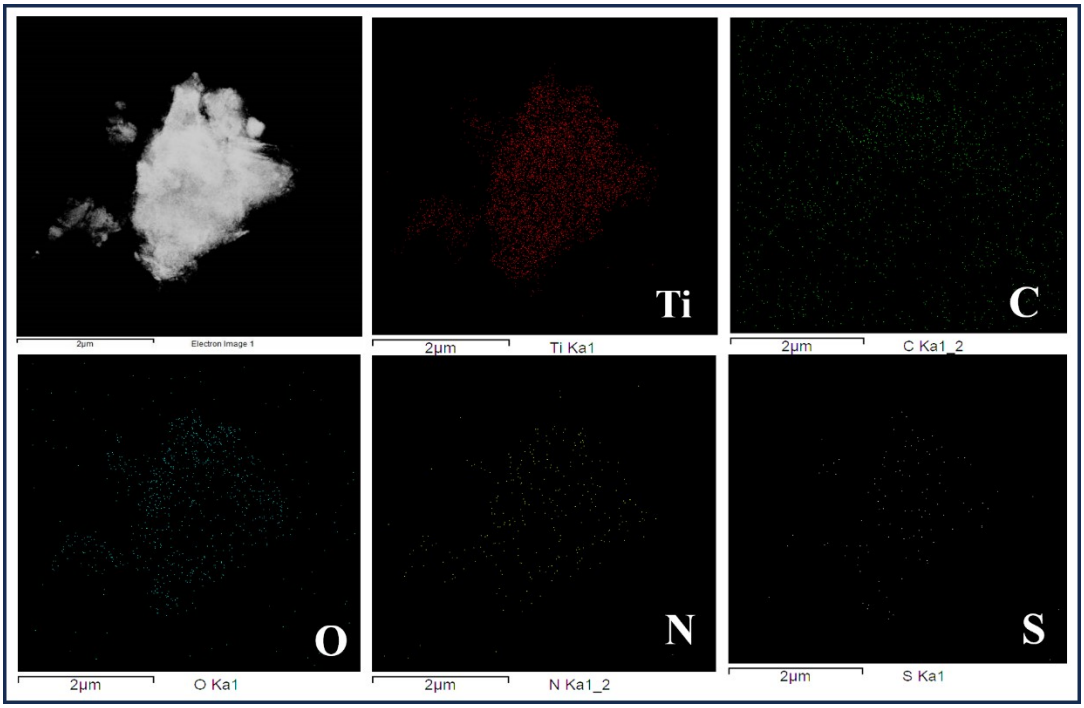

Fig. S3: EDS elemental mapping images of NS-CQD/M-10

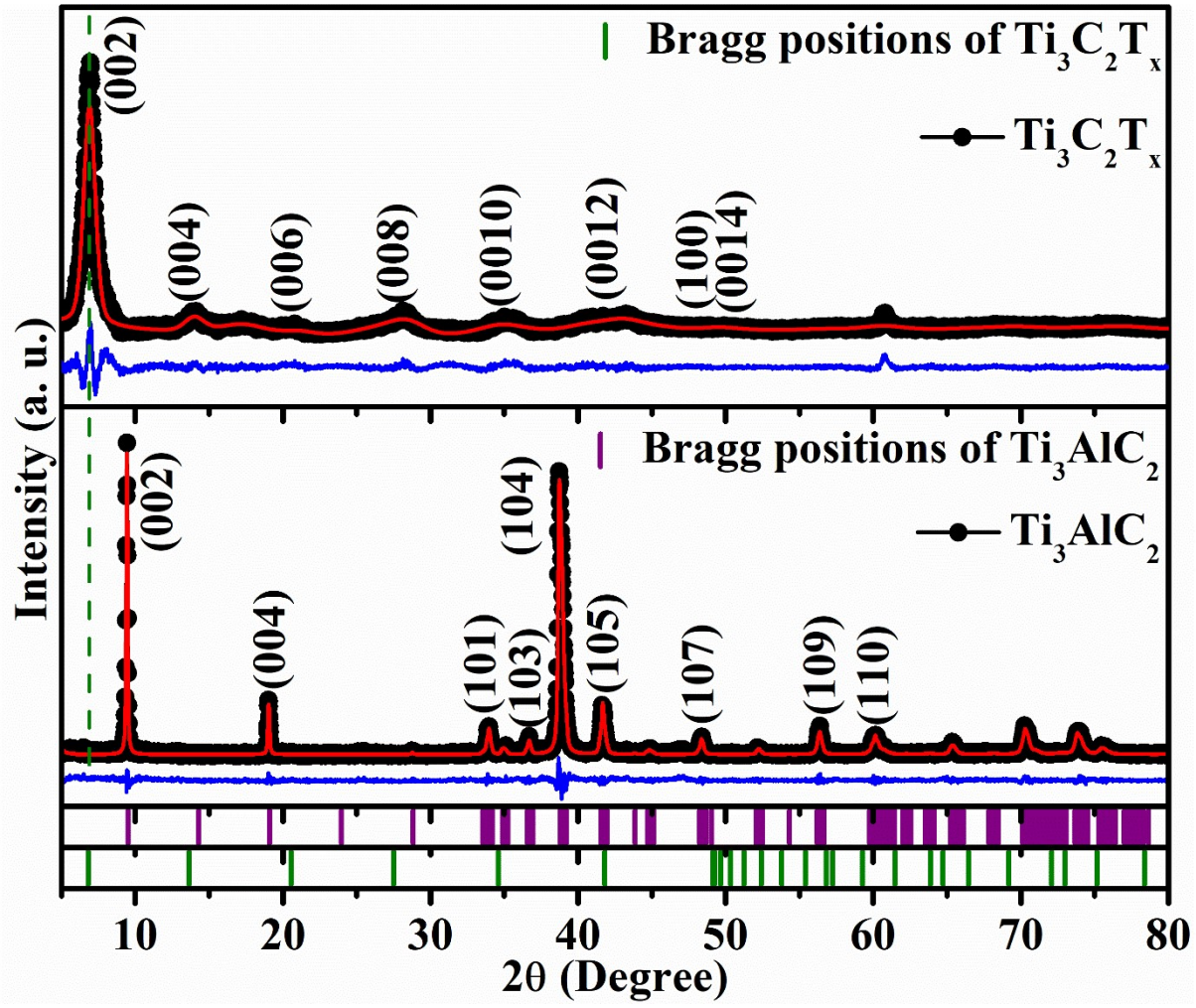

Fig. S4: XRD patterns of bare $Ti_3C_2T_x$ in comparison with Ti_3AlC_2 (MAX phase)

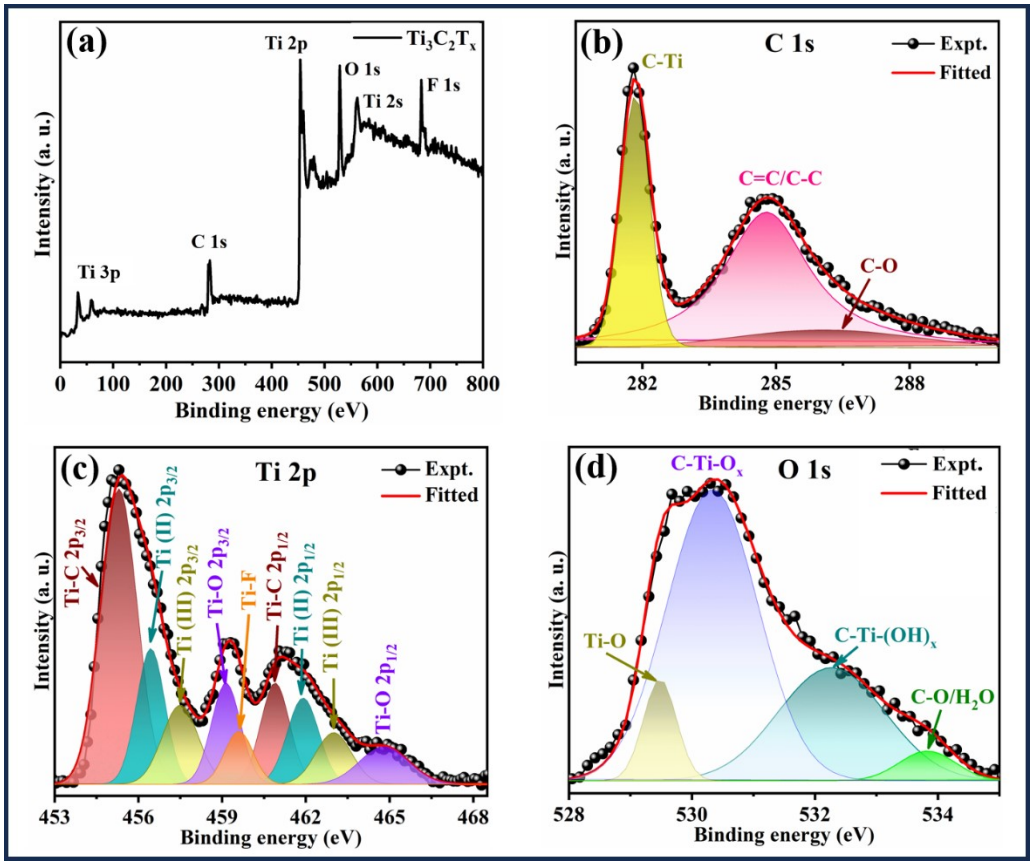

Fig. S5: (a) Full range XPS spectrum; High resolution XPS spectrum of (b) C 1s, (c) Ti 2p, and (d) O 1s of pristine $Ti_3C_2T_x$.

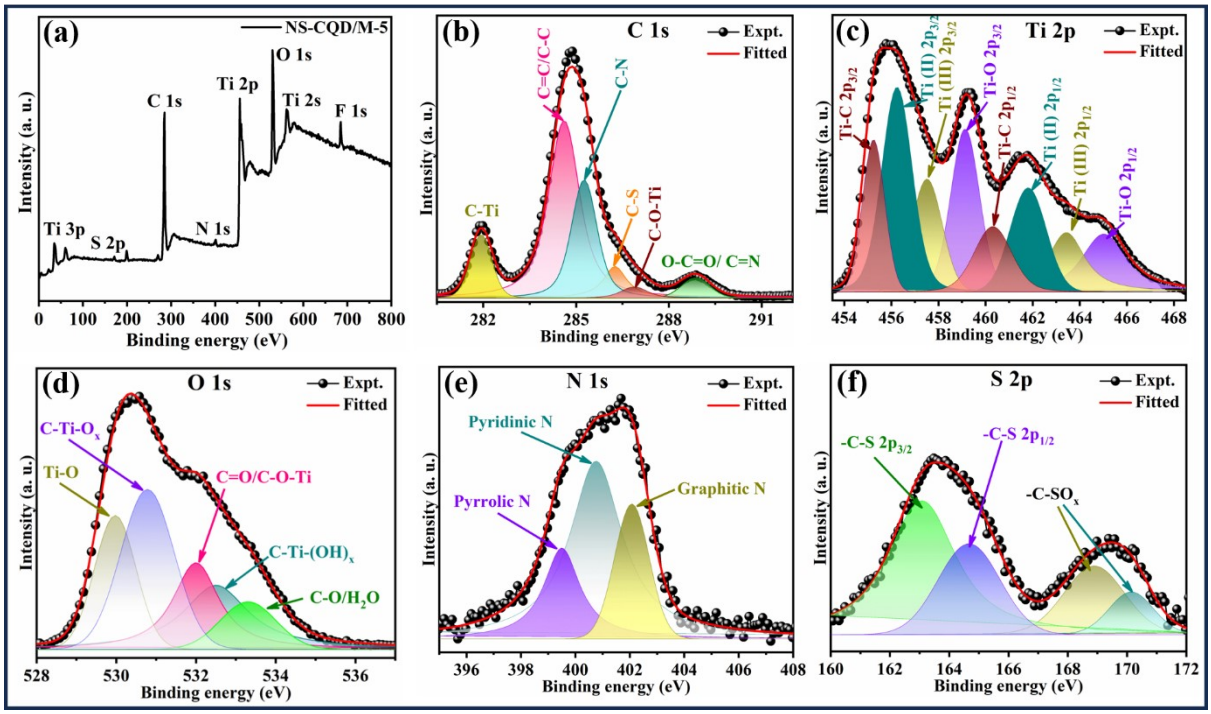

Fig. S6: XPS profile of NS-CQD/M-5, (a) full range spectrum, deconvoluted high resolution spectra of (b) C 1s, (c) Ti 2p, (d) O 1s, (e) N 1s, and (f) S 2p

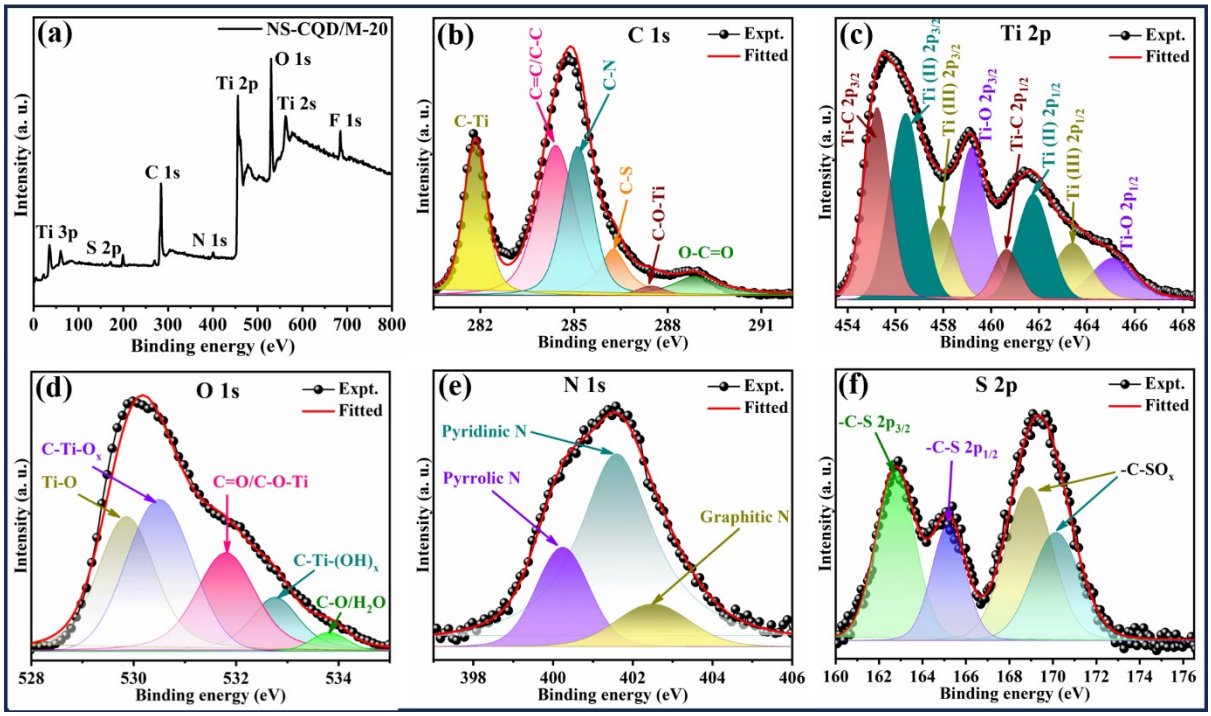

Fig. S7: XPS profile of NS-CQD/M-20, (a) full range spectrum, deconvoluted high resolution spectra of (b) C 1s, (c) Ti 2p, (d) O 1s, (e) N 1s, and (f) S 2p

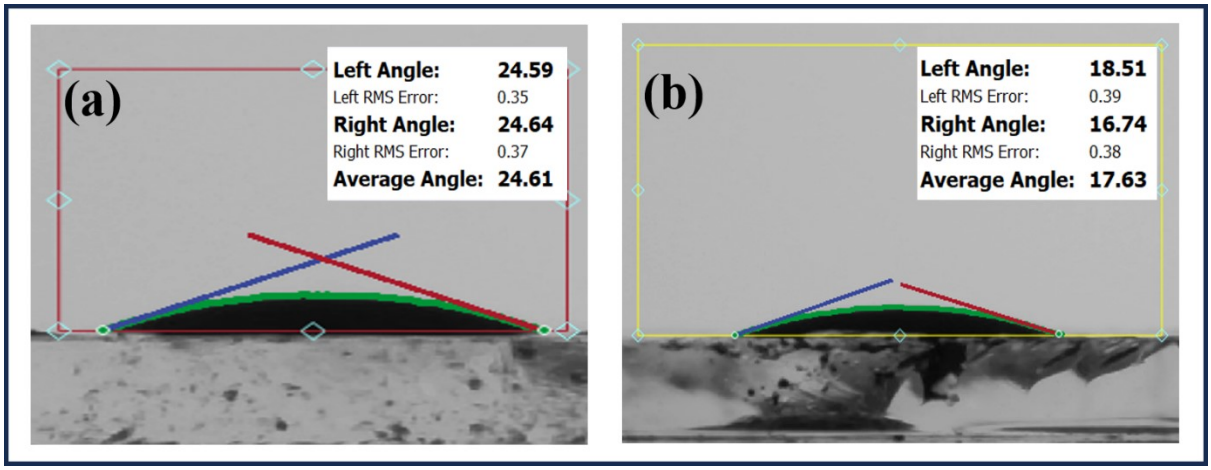

Fig. S8: Contact angle of (a) CQD and (b) NS-CQD-10.

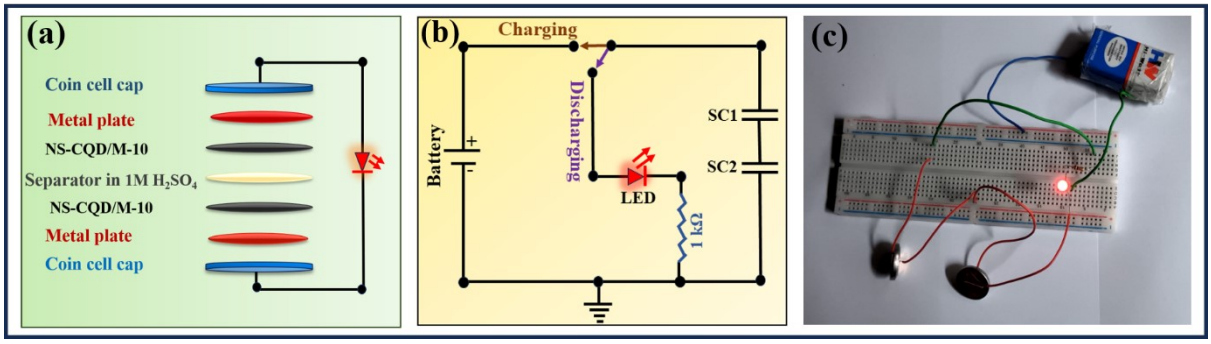

Fig. S9: (a) Schematic of coin cell construction, (b) circuit diagram for charging/discharging, (c) digital photograph of burning LED using two-coin cells.

Table S1: Values of specific capacitance calculated from CV curves of all samples at different scan rates

Materials	Value of **10 mVs^{-1}**	Specific **20 mVs^{-1}**	Capacitance **30 mVs^{-1}**	at scan **40 mVs^{-1}**	rate of **50 mVs^{-1}**
$Ti_3C_2T_x$	243.8	205.0	189.8	174.1	166.9
NS-CQD/M-5	573.0	510.7	480.9	447.3	425.7
NS-CQD/M-10	709.2	664.9	627.7	607.9	575.1
NS-CQD/M-20	532.4	486.2	460.9	440.7	416.6

Table S2: Values of Specific capacitance obtained from GCD curves for all samples at different current densities

Materials	Values of Specific Capacitance at current density of							
	1 Ag^{-1}	**2 Ag^{-1}**	**3 Ag^{-1}**	**4 Ag^{-1}**	**5 Ag^{-1}**	**10 Ag^{-1}**	**15 Ag^{-1}**	**20 Ag^{-1}**
$Ti_3C_2T_x$	256.8	233.8	203.3	185.8	172.3	142.2	138.9	129.5
NS-CQD/M-5	562.7	511.3	477.0	437.4	407.9	326.4	316.2	299.0
NS-CQD/M-10	725.7	671.2	632.1	614.1	582.7	458.3	445.4	430.9
NS-CQD/M-20	523.4	492.0	463.8	421.5	401.2	298.8	278.1	251.5

Table S3:

Values of EIS parameters obtained from fitted Nyquist plot.

Samples	**R_s(Ohm)**	**R_{ct}(Ohm)**	**W_0(Ohm)**	**CPE (F)**
$Ti_3C_2T_x$	2.01	2.15	2.64	0.78
NS-CQD/M-5	1.12	0.57	1.60	0.79
NS-CQD/M-10	0.89	0.23	1.15	0.61
NS-CQD/M-20	1.34	0.67	2.65	0.8