CVD-Grown Phase-Pure V_2C Nanosheets with Pseudocapacitive Behavior for Fast and Stable Lithium-Ion Storage

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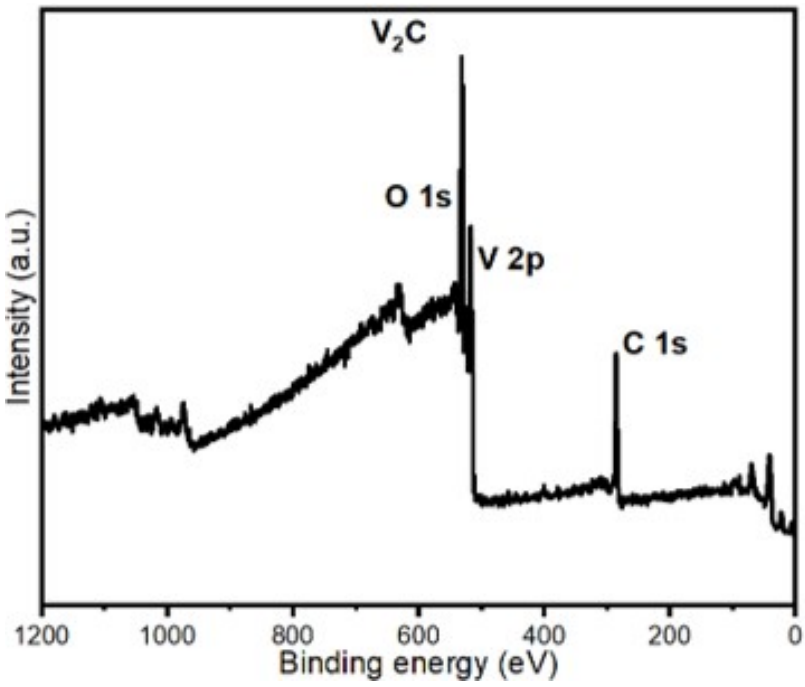

Figure S1. XPS survey spectra of the V_2C nanosheets.

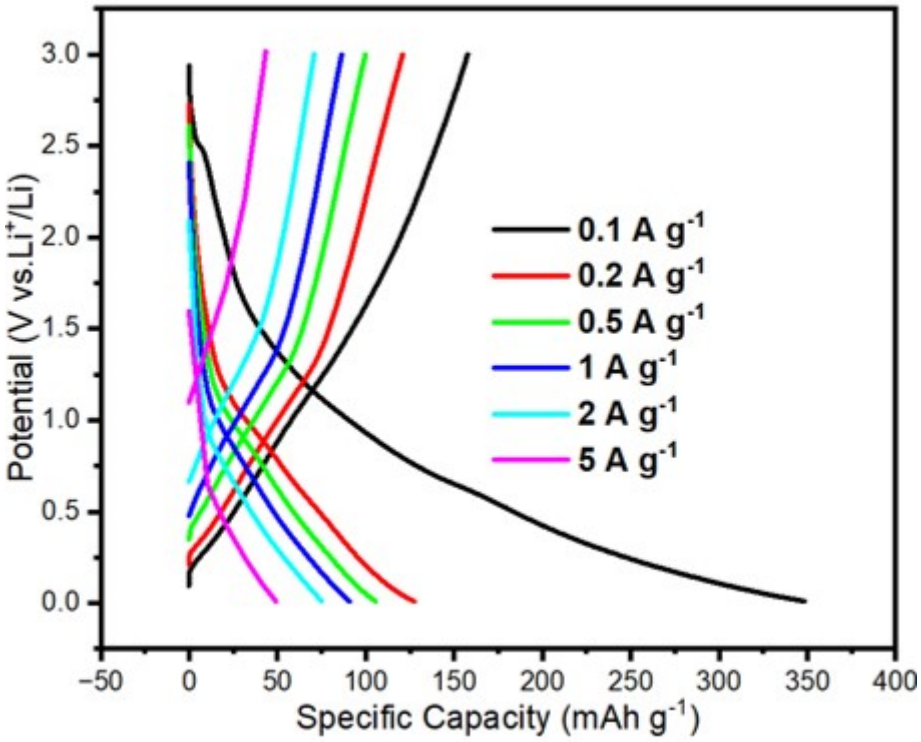

Figure S2. Charge/discharge voltage curve as a function of specific capacity of V_2C nanosheets at different current density ranging from 0.1 to 5 A g^{-1}.

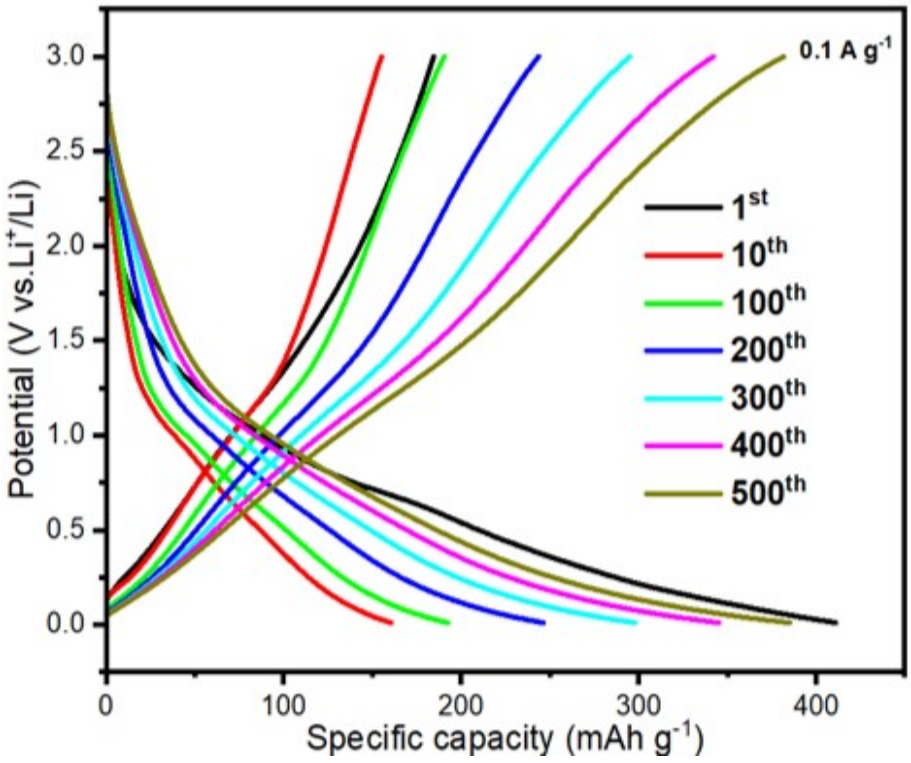

Figure S3. Charge/discharge voltage curve as a function of specific capacity of V_2C nanosheets at different cycles at 0.1 A g^{-1}.

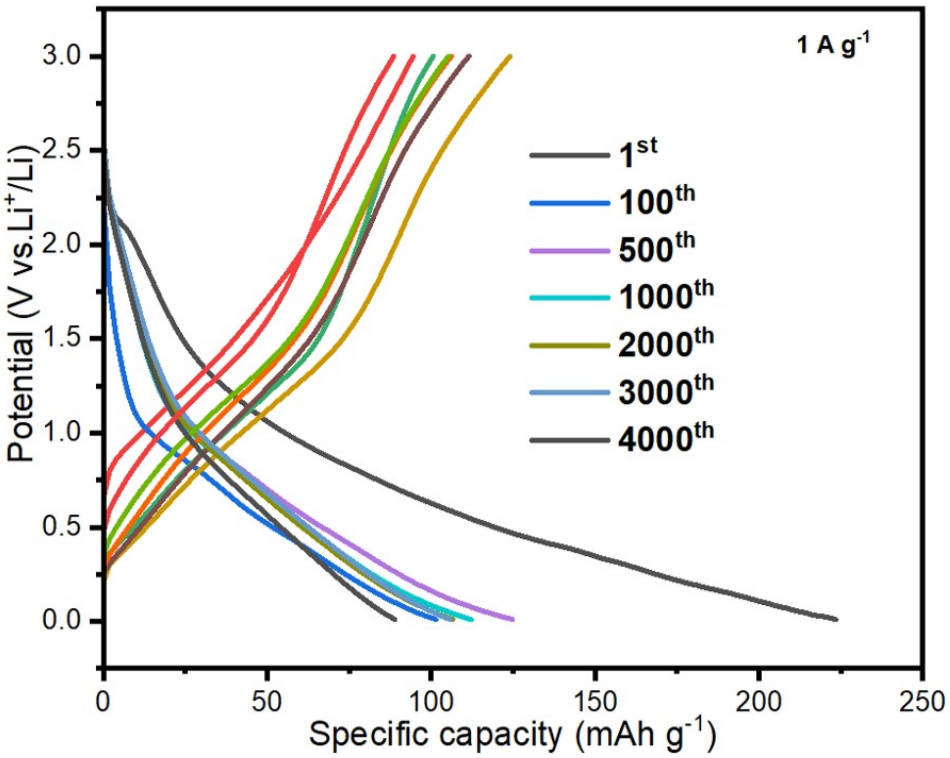

Figure S4. Charge/discharge voltage curve as a function of specific capacity of V_2C nanosheets at different cycles at 1 A g^{-1}.

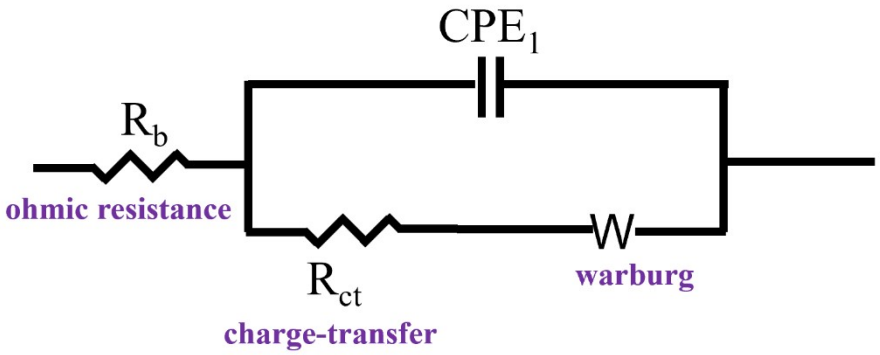

Figure S5. Equivalent circuit used for fitting EIS data.

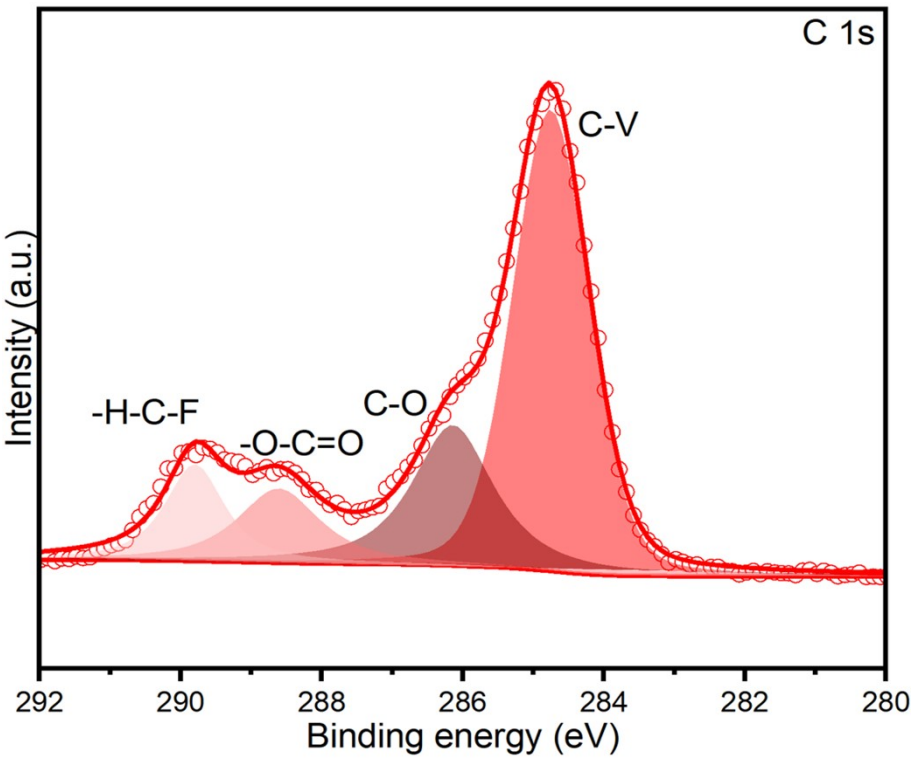

Figure S6. XPS spectra of C 1s in the V_2C electrode after 100 cycles.

Table S1. XPS fitting result for V_2C nanosheets

Material	Element	Position (eV)	FWHM	Area	Bond
V_2C	C 1s	282.79	0.56	1186.483	C-V
		284.57	1.07	4931.45	C-C
		285.27	1.55	2660.01	C-O
	V 2p	513.49	1.19	2920.65	$V2^+$
		515.53	2.61	8627.52	$V3^+$
		516.83	2.02	5389.38	$V4^+$
		521.49	1.94	1457.32	$V2^+$
		523.84	2.26	2963.53	$V3^+$
V_2C （100cycles）	C 1s	284.72	1.27	5840.72	C-V
		286.08	1.70	2905.68	C-O
		288.57	1.52	1212.10	O-C=O
		289.85	1.23	1133.30	-H-C-F-
	V 2p	516.41	1.80	1897.11	V3+
		517.25	1.30	2252.24	V4+
		524.25	2.55	1551.90	V3+

Table S2. Comparison of V_2C anodes reported in the literatures of lithium-ion batteries.

Materials	Current density ($A\ g^{-1}$)	Cycle numbers	Specific capacity ($mAh\ g^{-1}$)	References
V_2C nanosheets	0.1	500	385.2	This work
V_2C MXene	0.074	100	254	[1]
V_2C MXene	0.1	140	257	[2]
V_2C	0.1	300	223.6	[3]
V_2C	0.1	10	228	[4]
V_2C	0.1	120	172.2	
V_2C-5	0.1	120	190	
V_2C-10	0.1	120	429.5	[5]
V_2C-20	0.1	120	281.9	
V_2C-30	0.1	120	235.7	

References

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