

## Supporting information for

### Boosting Sodium Ion Storage by Anchoring MoO<sub>2</sub> on Vertical Graphene

#### Arrays

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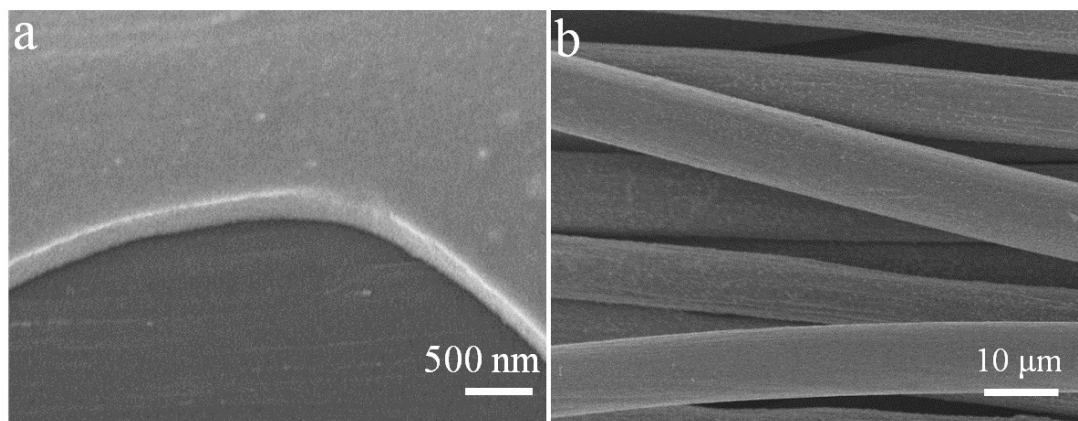
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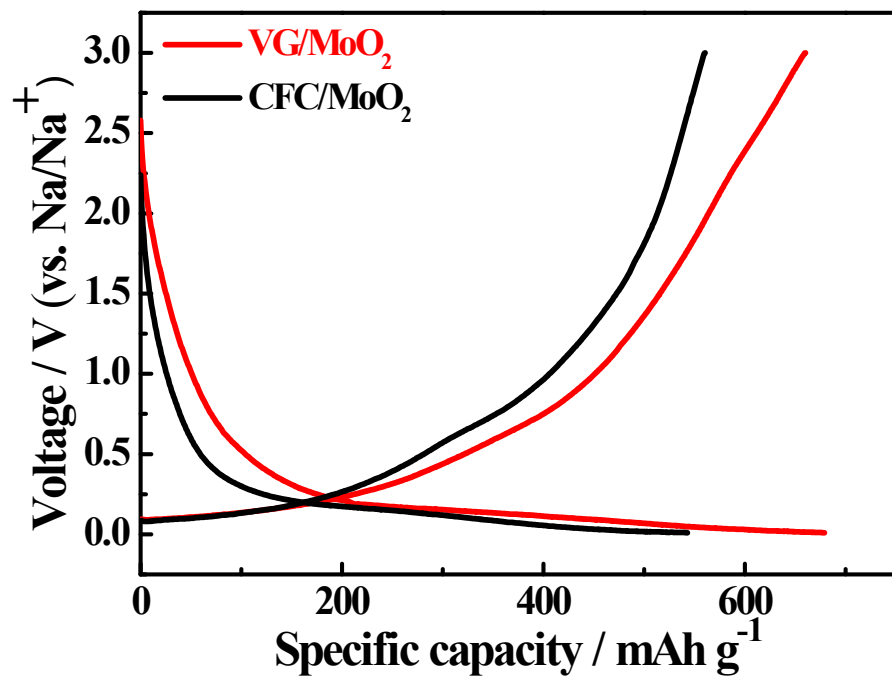


**Fig. S1** (a, b) SEM images of CFC/MoO<sub>2</sub> film.

**Table S1.** Parameter values of CFC/MoO<sub>2</sub> and VG/MoO<sub>2</sub> electrodes from the Equivalent circuit diagram at different cycle

Electrode		R <sub>s</sub> (Ω)	R <sub>ct</sub> (Ω)	R <sub>w</sub> (Ω)	Q <sub>c</sub> (F)
VG/MoO <sub>2</sub>	1 <sup>st</sup> cycle	6.25	96.2	0.068	0.56
	500 <sup>th</sup> cycle	2.86	48.9	0.065	0.69
CFC/MoO <sub>2</sub>	1 <sup>st</sup> cycle	8.79	289.3	0.72	0.045
	500 <sup>th</sup> cycle	5.80	162.5	0.57	0.089

R<sub>S</sub> and Q<sub>C</sub> designate the total ohmic resistance of solution and electrodes and the capacitance of the double layer. R<sub>ct</sub> and R<sub>w</sub> are designated as charge transfer resistance and Warburg resistance, reflecting the electrochemical reaction impedance related to the diameter of semicircle and the diffusion of electroactive species associated with the line slope, respectively. These parameters are calculated through the plots with ZView software and listed in Table S1.



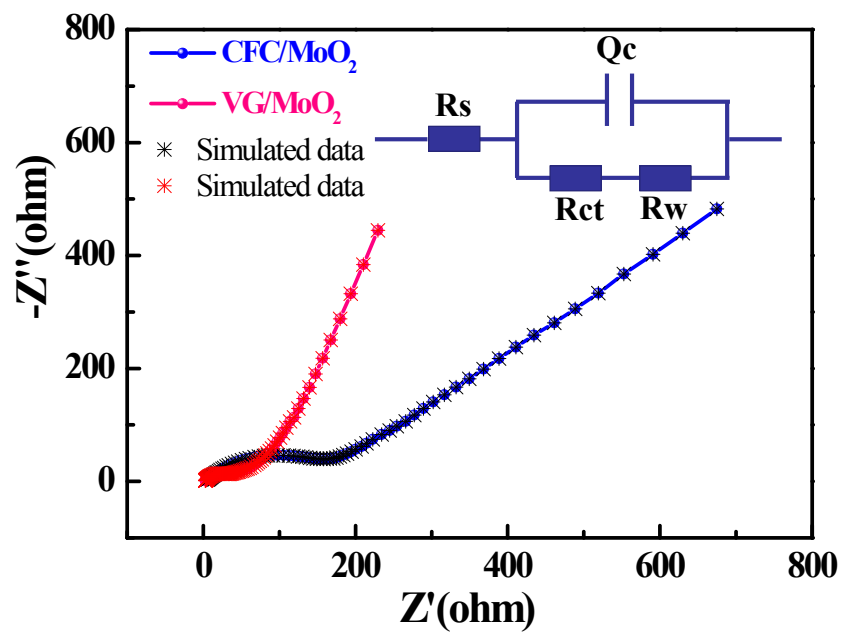
**Fig. S2** Charge/discharge curves of VG/MoO<sub>2</sub> and CFC/MoO<sub>2</sub> electrodes at the second cycle at 100 mA g<sup>-1</sup>.

**Table S2.** Cycling comparison of different MoO<sub>2</sub>-based electrodes

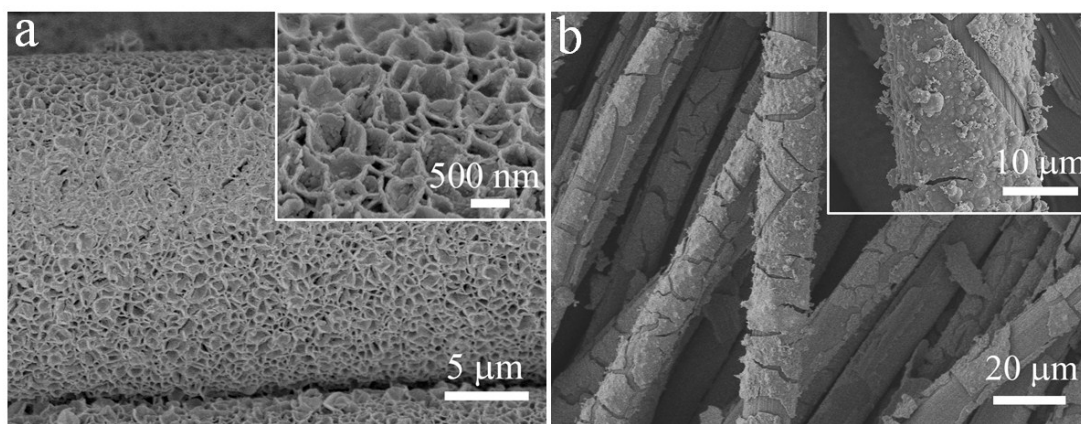
Electrode	Capacity	Cycle (Decay rate)
MoO <sub>2</sub> /GO powder	483 mAh g <sup>-1</sup> at 100 mA g <sup>-1</sup>	1.9 % per cycle <sup>1</sup>
MoO <sub>2</sub> /C nanosheet powder	367 mAh g <sup>-1</sup> at 100 mA g <sup>-1</sup>	2.3% per cycle <sup>2</sup>
TiO <sub>2</sub> @MoO <sub>2</sub> -C	297 mAh g <sup>-1</sup> at 100 mA g <sup>-1</sup>	0.17% per cycle <sup>3</sup>
MoO <sub>2</sub> /C nanoflower powder	172 mAh g <sup>-1</sup> at 100 mA g <sup>-1</sup>	0.06% per cycle <sup>4</sup>
MoO <sub>2</sub> /GO nanocomposite	557 mAh g <sup>-1</sup> at 100 mA g <sup>-1</sup>	5.0 % per cycle <sup>5</sup>
This work	678 mAh g <sup>-1</sup> at 100 mA g <sup>-1</sup>	0.036% per cycle

### References

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**Fig. S3** Nyquist plots of CFC/MoO<sub>2</sub> and VG/MoO<sub>2</sub> electrodes tested at discharge state at the 500th cycle at 100 mA g<sup>-1</sup>. (Equivalent circuit diagram in inset).



**Fig. S4** SEM images of (a) VG/MoO<sub>2</sub> and (b) CFC/MoO<sub>2</sub> electrodes after 500 cycles at 100 mA g<sup>-1</sup>.