

Insight into the Storage Mechanism of Sandwich-Like Molybdenum Disulphide/Carbon Nanofibers Composite in Aluminum-Ion Batteries

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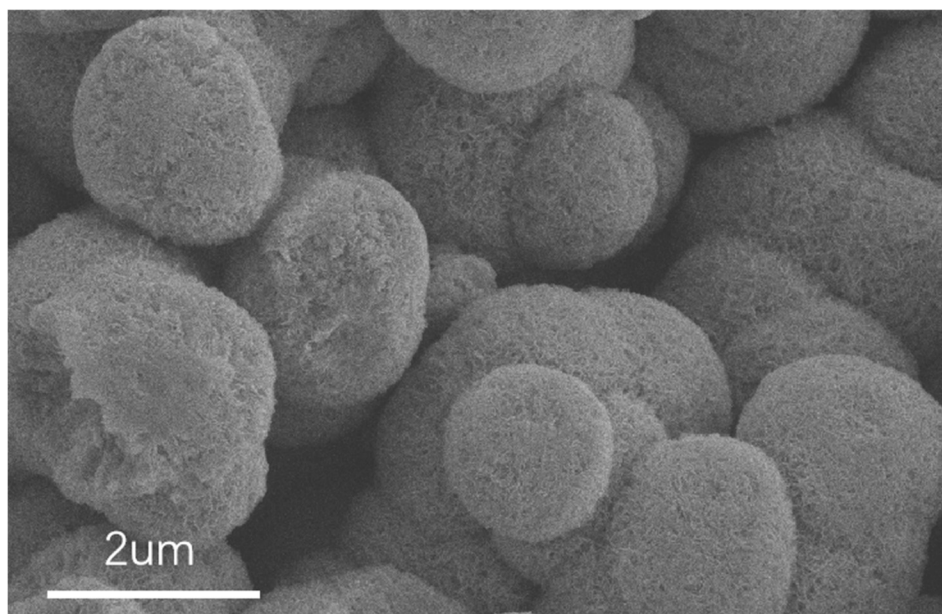


Figure S1 Scanning electron microscopy (SEM) images of MoS₂.

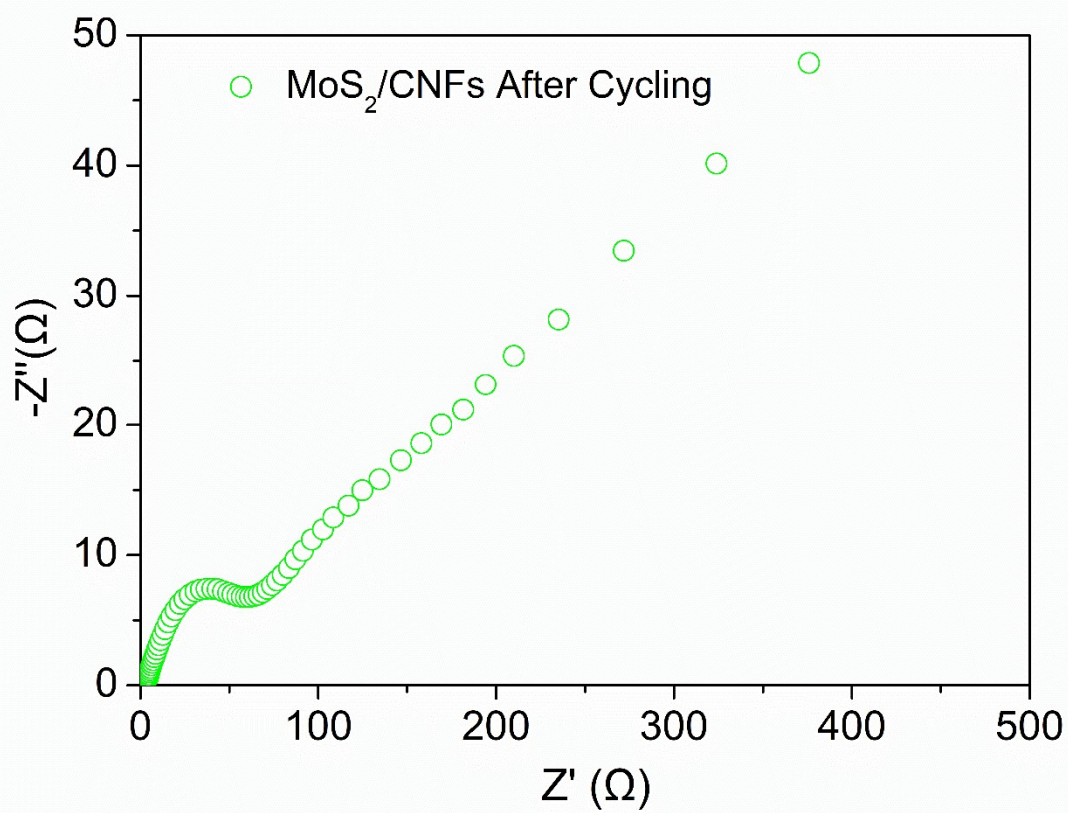


Figure S2 Nyquist plots of MoS₂/CNFs after cycling.

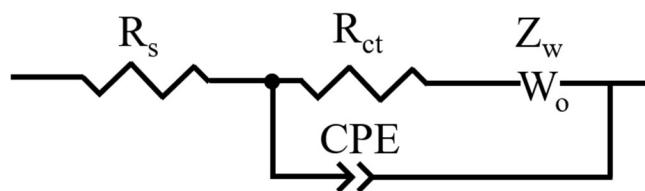


Figure S3 Equivalent circuit model.

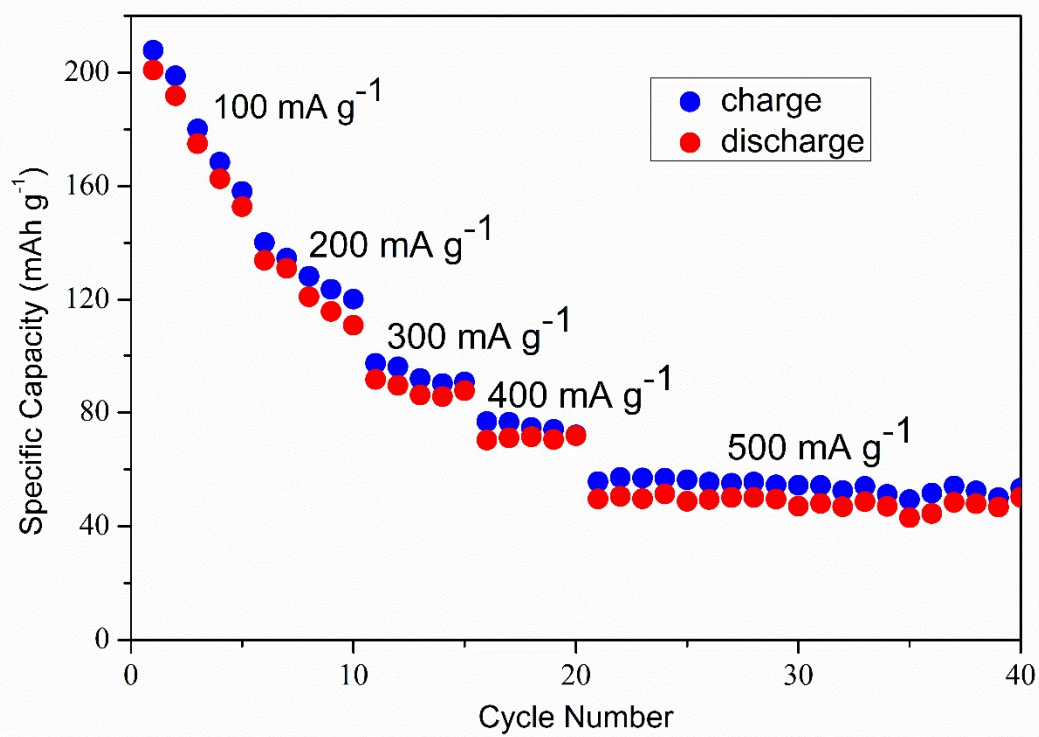


Figure S4 Rate performance of MoS_2/CNFs electrode at different current density.

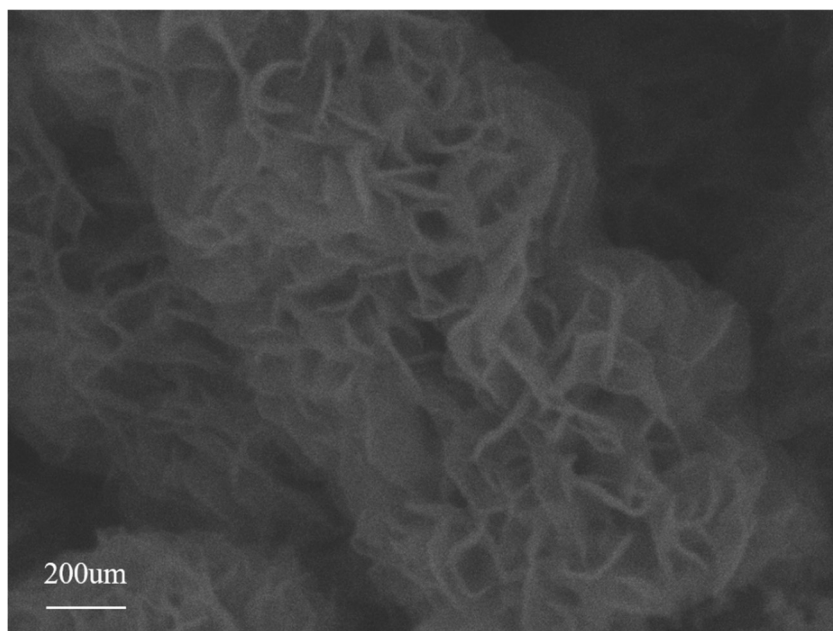


Figure S5 Scanning electron microscopy (SEM) images of MoS₂/CNFs after cycling.

Table S1 Performance comparison of MoS₂/CNFs with several other transition metal dichalcogenides for application in AIBs

Cathode materials	Cycle number	Current density (mA g ⁻¹)	Specific capacity (mAh g ⁻¹)	Ref.
Graphene-VS ₂	50	100	50	[39]
VS ₄	120	400	129.24	[40]
Ni ₃ S ₂ @graphene	100	100	60	[41]
Mo ₆ S ₈	50	12	70	[42]
Co ₃ S ₄ microsphere	150	50	90	[43]
SnS porous film	100	200	70	[44]
Layered TiS ₂	50	5	85	[45]
VS ₄ @rGO	100	300	80	[46]
WS ₂ @NCNFs	100	100	198	[47]
2D WS ₂	500	1000	119	[48]
Graphene-SnS ₂	100	200	70	[49]
MoS ₂	100	40	66.7	[27]
CoS ₂ /CNT	100	100	60	[50]
MoS₂/CNFs	200	100	66	This work

Table S2 The formation energy of aluminum ions embedded in different channels of MoS₂

the possible entry pathways for aluminum ions	Total energy (eV)	Formation energy (eV)
Channel 1	-716.86	5.34
Channel 2	-720.62	0.64