Electronic Supplementary Material (ESI) for RSC Advances.

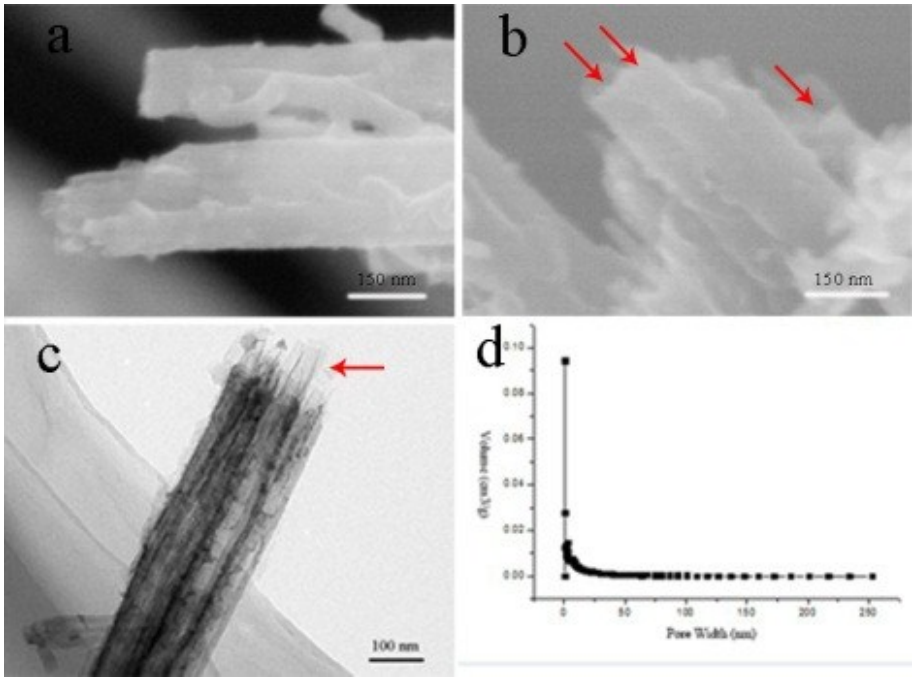

Fig. S1 (a-b) the cross sectional SEM images of MoS_2/VACNTs-2, (c) TEM image of MoS_2/VACNTs-2, (d) pore size distribution curves of VACNTs

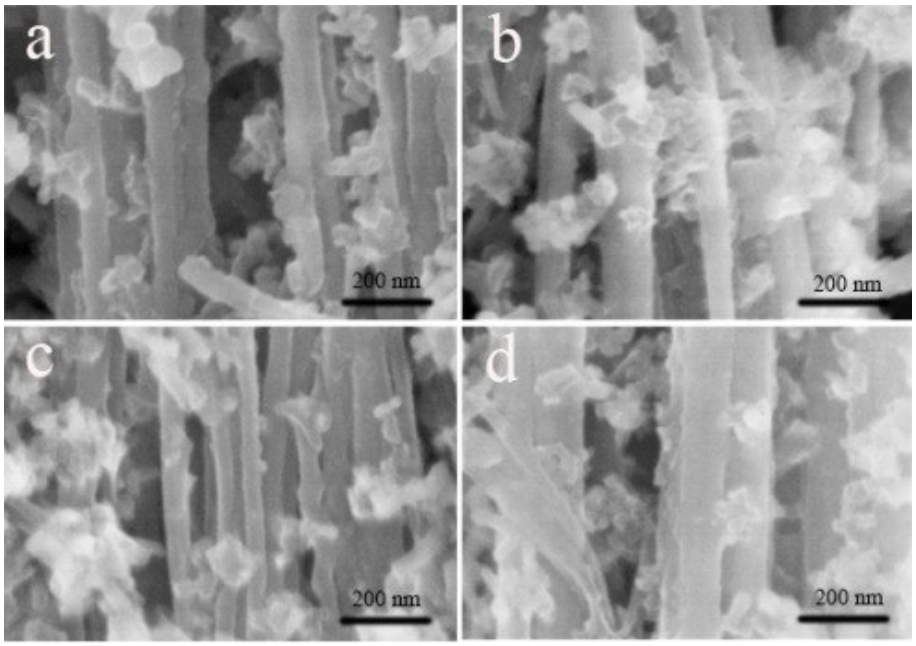

Fig. S2. The SEM of the composites after cycling: (a) MoS_2/VACNTs-1, (b-c) MoS_2/VACNTs-2, (d) MoS_2/VACNTs-3.

Table S1. Comparison of the electrochemical performance of this work with related literature

	Active materials	Rate capacity at 1000 mA g^{-1}	Capacity after 50 cycle at 100 mA g^{-1}	Capacity after 1000 cycle at 5000 mA g^{-1}
Ref. [1]	CNT@MoS_2 NSs	369 mAh g^{-1}	698 mAh g^{-1}	
Ref. [2]	Carbon–CNT–MoS_2		522 mAh g^{-1}	
Ref. [3]	MoS_2/3D graphene networks	597 mAh g^{-1}	665 mAh g^{-1} (100 mA g^{-1})	
Ref. [4]	Layered MoS_2/graphene	900 mAh g^{-1}	1187 mAh g^{-1} (100 cycle)	
Ref. [5]	MoS_2/3D porous carbon nanosheet	880 mAh g^{-1}	1127 mAh g^{-1} (200 cycle)	
Ref. [6]	MoSx/CNTs ($2 \leqslant x \leqslant 3$)	358 mAh g^{-1}	1000 mAh g^{-1} (45 cycle, 100 mA g^{-1})	
This work	MoS_2/VACNTs	864 mAh g^{-1}	969 mAh g^{-1} (100 cycle)	497 mAh g^{-1}

CNT: carbon nanotubes, VACNTs: vertically aligned carbon nanotube arrays, NSs: nanosheets

Ref. [1] Chem. Eur. J., 2011, 17, 13142–13145

Ref. [2] Materials Letters, 130(2014)240–244

Ref. [3] small, 2013, 9, No. 20, 3433–3438

Ref. [4] Nano, 2011, 5 (6), 4720–4728

Ref. [5] Nano, 2015, 9 (4), 3837–3848

Ref. [6] Scientific Reports, 2013, 3, 2169