Electronic Supplementary Information

Methyl-functionalized MoS$_2$ nanosheets with reduced lattice breathing for enhanced pseudocapacitive sodium storage

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Fig. S1 (a, b) The SEM characterization of the pristine MoS$_2$. (c) TEM and (d) HRTEM images of the pristine MoS$_2$. (e) The SAED pattern of the pristine MoS$_2$. 
Fig. S2 (a) FTIR results of M-MoS$_2$ and MoS$_2$ in KBr pellet. (b) FTIR results of M-MoS$_2$ and MoS$_2$ in paraffin oil.

Fig. S3 (a) FTIR result of methanol.
Fig. S4 Raman spectra of (a) MoS$_2$ and (b) M-MoS$_2$.

Fig. S5 The discharge/charge curves of (a) MoS$_2$ and (b) M-MoS$_2$ at the specific current of 1A/g.
Fig. S6 The rate performances of M-MoS$_2$ and MoS$_2$.

Fig. S7 Determination of the $b$-values of the anodic and cathodic peaks: (a) M-MoS$_2$ and (b) MoS$_2$. 
**Fig. S8** The capacitive contributions of (a) MoS$_2$ and (b) M-MoS$_2$ at 1 mV/s.

**Fig. S9** *Ex-situ* SEM image of M-MoS$_2$ after 500 cycles at the current density of 1 A/g.