# Electronic Supplementary Information

## Self-supporting network structured $MoS_2$/heteroatom doped graphene as superior anode materials for sodium storage

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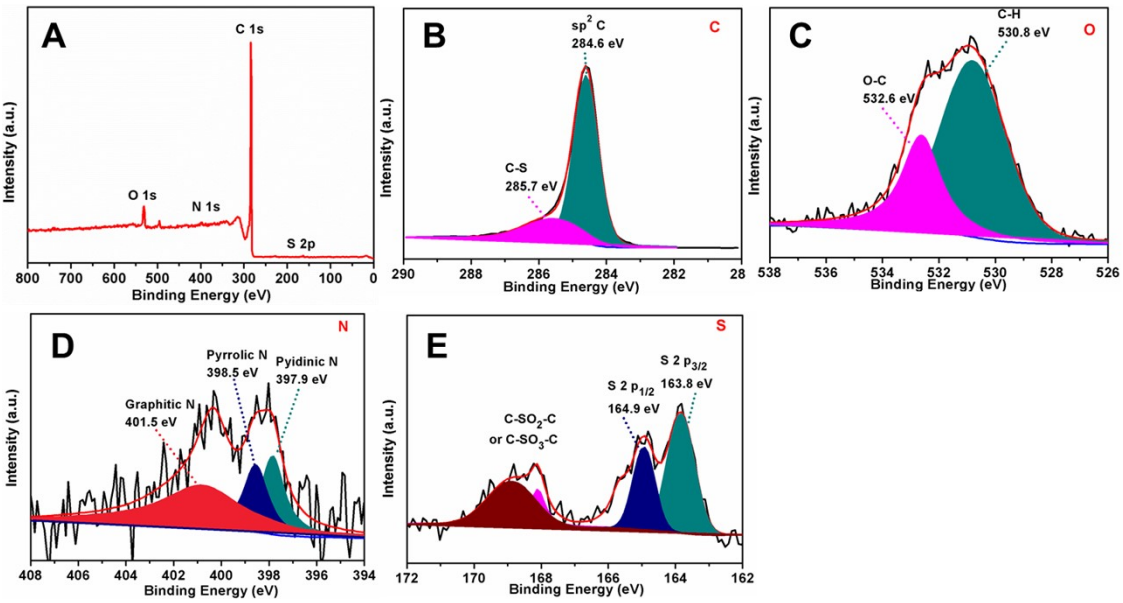


**Fig. S1** XPS spectra of the N, S co-doped graphene nanosheets (A) and the corresponding high-resolution of C1s (B), O 1s (C), N 1s (D) and S 2p (E).

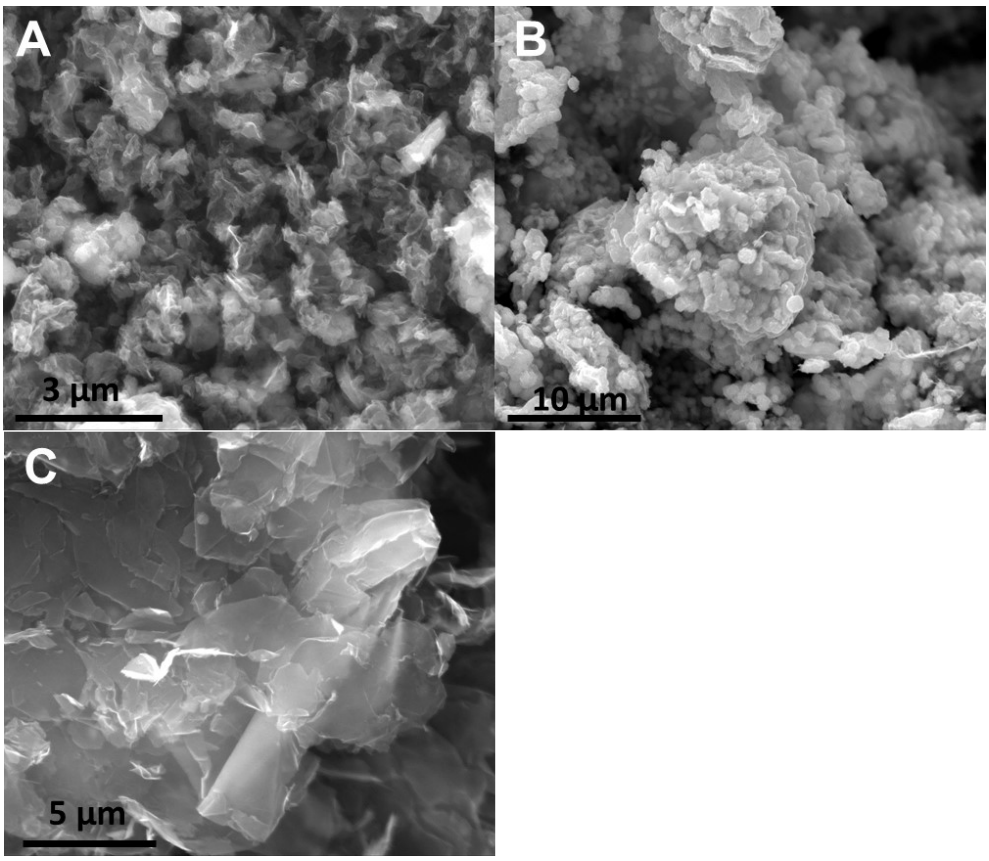


**Fig. S2** SEM images of $MoS_2$/Gs-G (A), bulk $MoS_2$ (B) and bulk N, S co-doped graphene (C) samples.

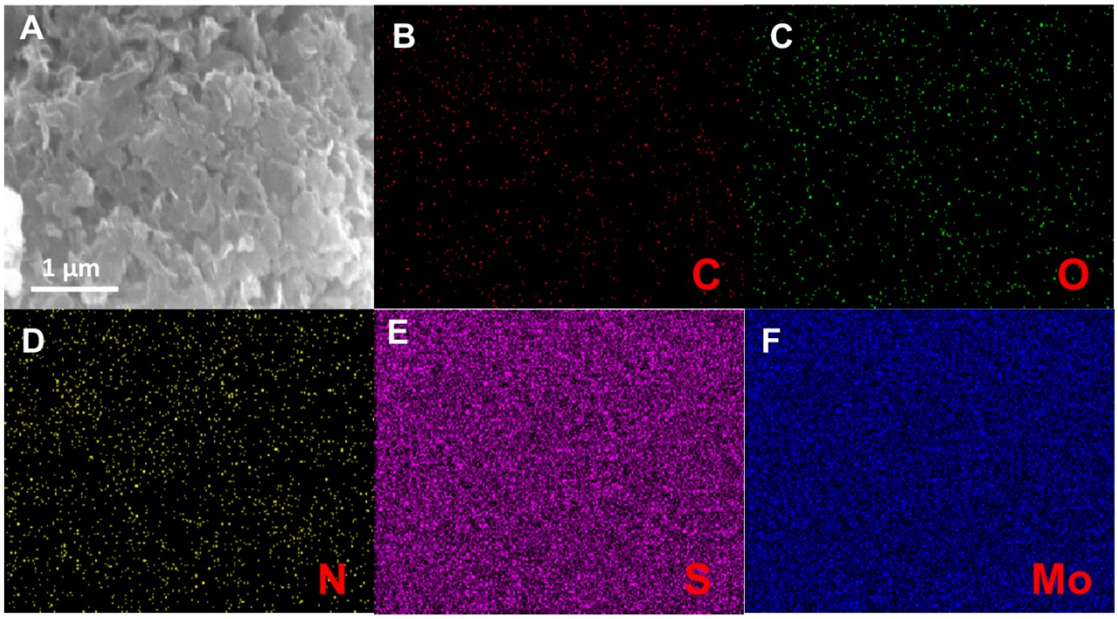


**Fig. S3** SEM image of $MoS_2$/NSGs-G sample (A) and corresponding elemental mapping images of C (B), O (C), N (D), S (E) and Mo (F).

Table S1 The rate charge capacity of $MoS_2$/NSGs-G, $MoS_2$/Gs-G, bulk N, S co-doped graphene

and bulk1 $MoS_2$ at different current densities.

| Samples | Specific capacity（mAh $g^{-1}$） | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0.1A $g^{-1}$ | 0.2A $g^{-1}$ | 0.5 A $g^{-1}$ | 1 A $g^{-1}$ | 2 A $g^{-1}$ | 5 A $g^{-1}$ | 10 A $g^{-1}$ | 0.1A $g^{-1}$ |
| **$MoS_2$/NSGs-G** | 496.6 | 493.5 | 453.9 | 418.1 | 383.8 | 333.1 | 294.4 | 507.3 |
| **$MoS_2$/Gs-G** | 453.2 | 436.8 | 402.6 | 366.0 | 325.4 | 270.9 | 234.6 | 445.8 |
| **Bulk graphene** | 344.8 | 327.2 | 315.7 | 303.2 | 286.5 | 248.5 | 238.7 | 397.7 |
| **Bulk $MoS_2$** | 262.8 | 272.1 | 270.0 | 258.9 | 243.3 | 215.3 | 211.2 | 289.8 |

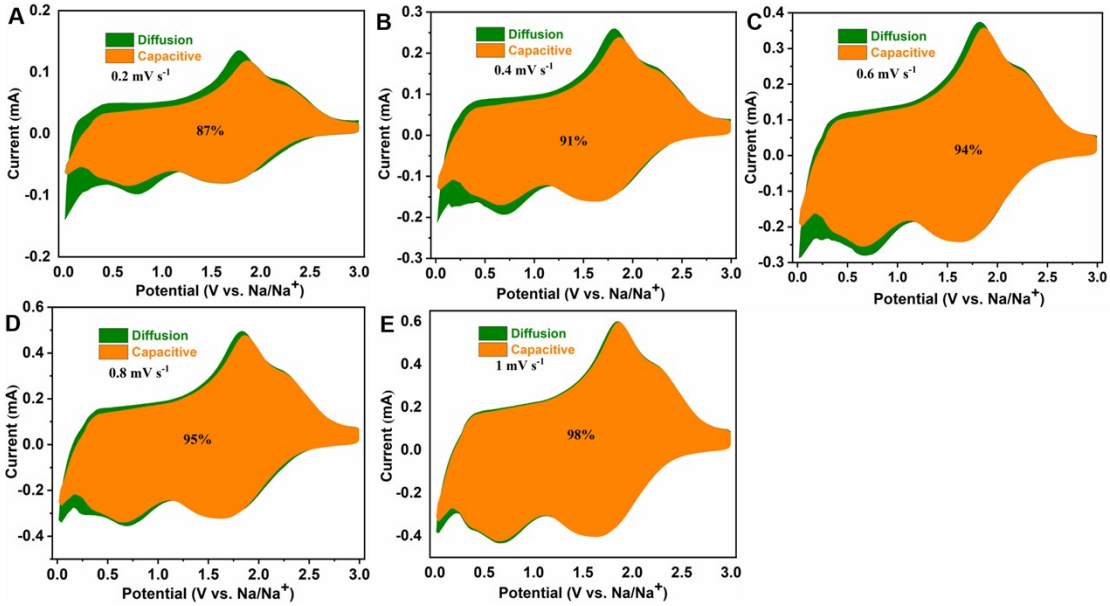


**Fig. S4** Capacitive charge storage contribution (orange) and diffusion charge storage contribution (olive) at 0.2 (A) mV $s^{-1}$, 0.4 (B) mV $s^{-1}$, 0.6 (C) mV $s^{-1}$, 0.8 (D) mV $s^{-1}$ and 1 (E) mV $s^{-1}$.