Supporting Information

Amino-functionalized MOF derived porous Fe$_3$O$_4$/N-doped C encapsulated within graphene network by self-assembling for enhanced Li-ion storage

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Figure S1. SEM image of the NH$_2$-MIL-101(Fe).

Figure S2. Photograph images of the NH$_2$-MIL-101(Fe)@GO hydrogel.
Figure S3. Photograph image of the NH$_2$-MIL-101(Fe)@GO foam.

Figure S4. SEM images of (A, B) Fe$_3$O$_4$/NC@rGO-5%, (C, D) Fe$_3$O$_4$/NC@rGO-20%.
Figure S5. TGA curves of (A) Fe₃O₄/NC@rGO-10% and (B) Fe₃O₄/NC.

Figure S6. XRD pattern of the NH₂-MIL-101(Fe).
Figure S7. Galvanostatic charge/discharge curves of (A) Fe$_3$O$_4$/NC, (B) Fe$_3$O$_4$/NC@rGO-5% and (C) Fe$_3$O$_4$/NC@rGO-20% electrodes.

Figure S8. EIS of the Fe$_3$O$_4$/NC and Fe$_3$O$_4$/NC@rGO-10% electrodes.
Figure S9. Comparison of the rate capability of the Fe$_3$O$_4$/NC@rGO-10% with those of other recently reported Fe$_3$O$_4$-based electrodes.

Figure S10. Cycle performance of NC@rGO at the current density of 0.2 A g$^{-1}$. 
Figure S11. (A, B) SEM images of the Fe$_3$O$_4$/NC@rGO-10% electrode after 100 cycles, (C, D) SEM images of the Fe$_3$O$_4$/NC electrode after 100 cycles.