Construction of sandwiched graphene paper@Fe$_3$O$_4$ nanorod array@graphene for large and fast lithium storages with extended lifespan

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Fig. S1 SEM image of FeOOH nanorods.

Fig. S2 SEM image of Fe$_3$O$_4$ obtained by annealing pristine FeOOH nanorods.
Fig. S3 The first and second galvanostatic charge/discharge profiles of graphene paper at current density of 0.2 A g\(^{-1}\).

Fig. S4 Cyclic performance of graphene paper at current density of 0.2 A g\(^{-1}\). It is clearly shown that the G paper delivers good cyclic stability. The pristine G paper exhibits initial discharge capacity of 1069 mAh g\(^{-1}\) and charge capacity of 405 mAh g\(^{-1}\), delivering a low initial columbic efficiency of 37.9%. The reversible discharge capacity decreases rapidly to 248 mAh g\(^{-1}\) at the 6th cycle, and then keeps stable till the 85th cycle (251 mAh g\(^{-1}\)). After that, the capacity increases slightly to 280 mAh g\(^{-1}\) at the 107th cycle and keeps stable till the 200th cycle.

Fig. S5 SEM image of GPFG after 300 cycles of electrochemical test.