Supporting Information

for

Ultra-small Fe$_3$O$_4$ nanoparticles decorated graphenes with superior cyclic performance and rate capability

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Figure S1. Size distribution of Fe$_3$O$_4$ particles (A) before and (B) after annealing.
Figure S2. Thermogravimetric curve of the annealed USIO/G composite.

Figure S3. High resolution XPS spectrum of C1s from GO.

Figure S4. XPS spectrum of Fe2p obtained from USIO/G.
Figure S5. Charge-discharge profiles of the annealed USIO/G composites at first two cycles after current density restored to 1800 mA g$^{-1}$ (corresponding to total cycle numbers of 921$^{st}$ and 922$^{nd}$).

Figure S6. Cycling performance of pure ultra-small iron oxide (USIO) under different current densities. Red circle: 100 cycle under current density of 100 mA g$^{-1}$. Blue diamond: first 3 cycles at 50 mA g$^{-1}$, subsequent 3 cycles at 100 mA g$^{-1}$, followed by 94 cycles at 500 mA g$^{-1}$.