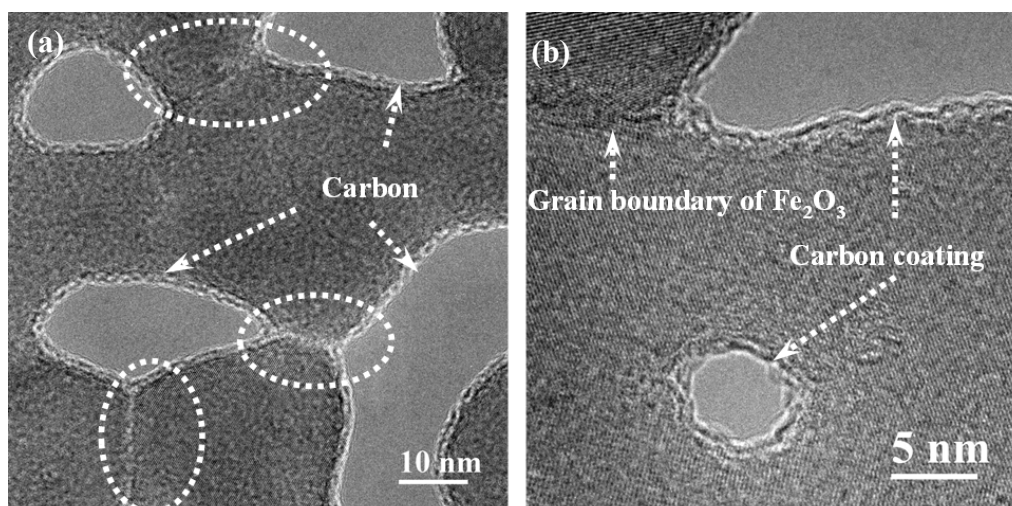
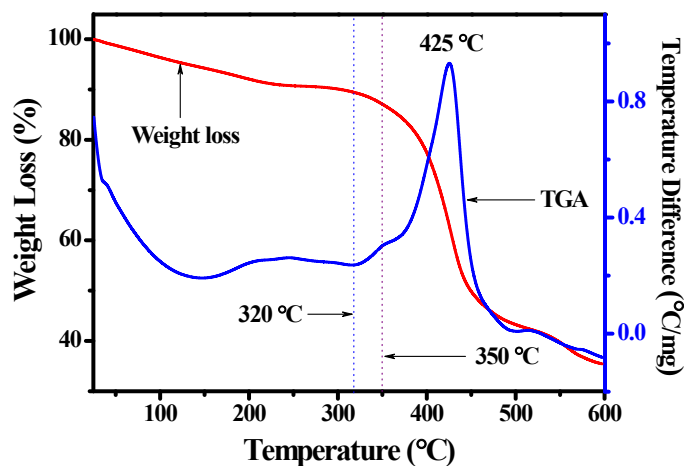


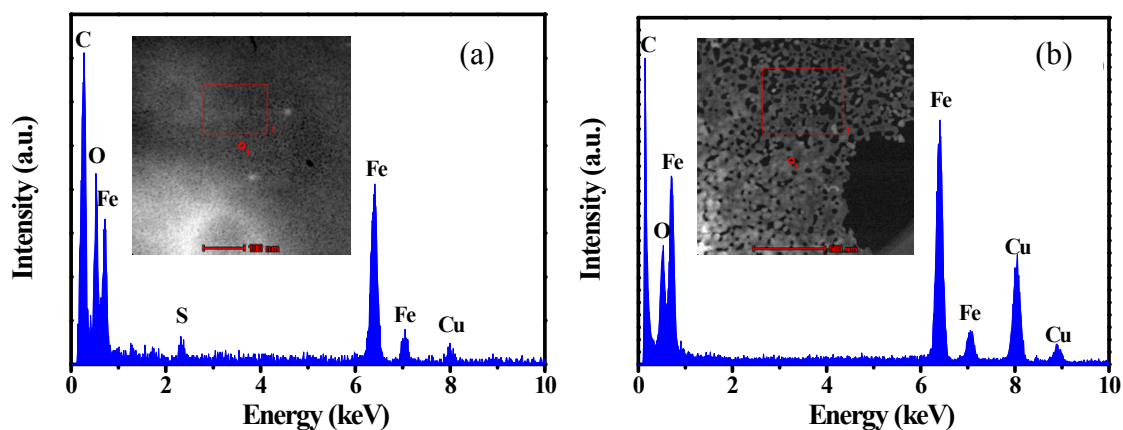
## Supporting Information

### Mesoporous $\text{Fe}_2\text{O}_3$ flakes of high aspect ratio encased within a thin carbon skeleton for superior lithium-ion battery anodes

Junhua Wang,<sup>a</sup> Mingxia Gao,<sup>\*a</sup> Hongge Pan,<sup>a</sup> Yongfeng Liu,<sup>a</sup> Ze Zhang,<sup>b</sup> Jixue Li,<sup>b</sup> Qingmei

Su,<sup>c</sup> Gaohui Du,<sup>c</sup> Min Zhu,<sup>d</sup> Liuzhang Ouyang,<sup>d</sup> Congxiao Shang<sup>e</sup> and Zhengxiao Guo<sup>f</sup>

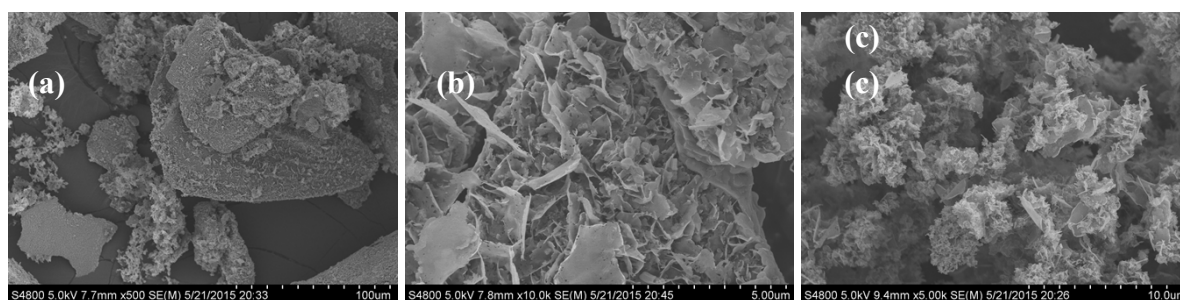




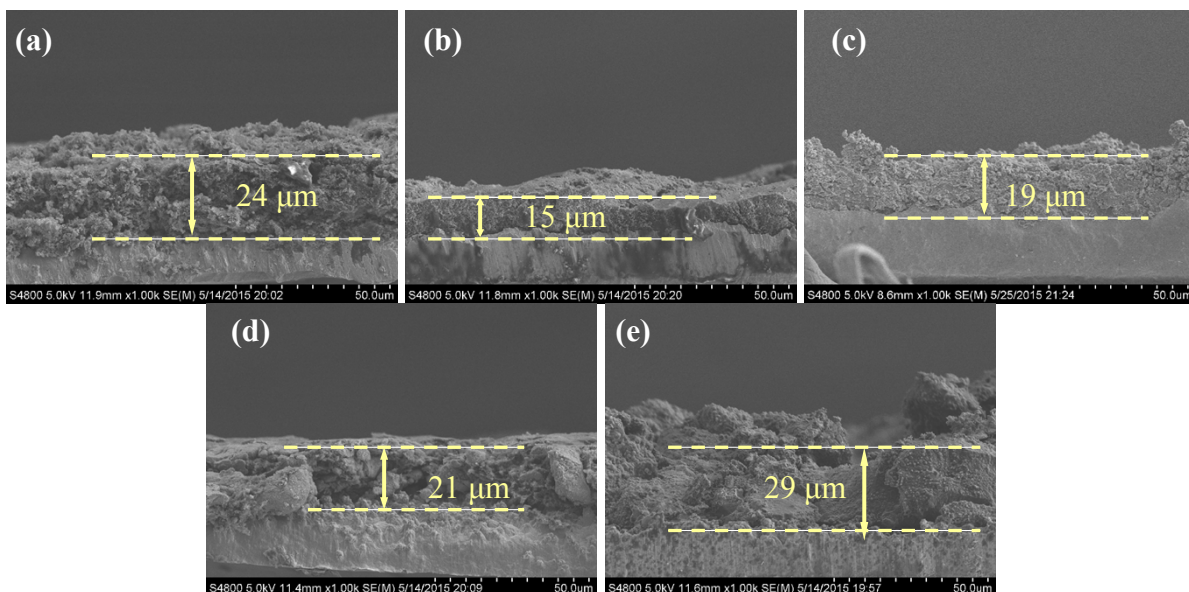
**Fig. S3** EDX patterns of the precursor (a) and the 2D-FC (b) detected from the corresponding rectangle region of the inset STEM image.



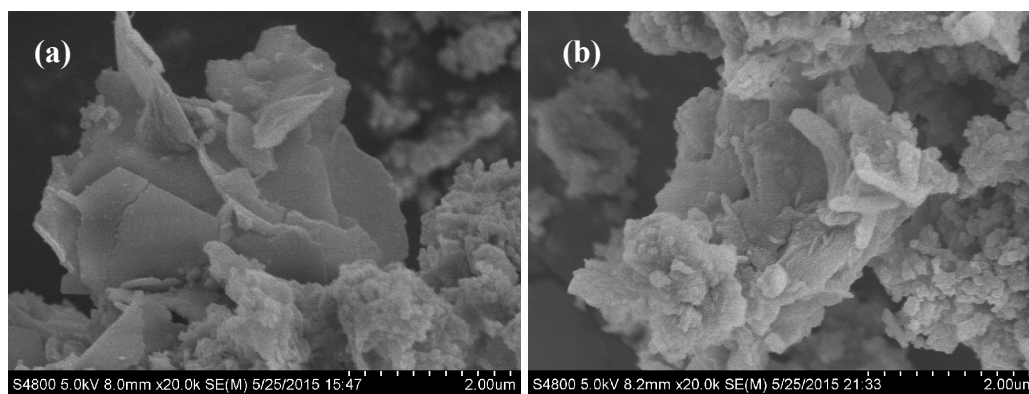
**Fig. S4** The appearance of the solutions of acidic 1,10-phenanthroline with the precursor (left) and the 2D-FC (right) dissolved.



**Fig. S5** SEM images of the precursor by heating to 350 °C without dwelling showing the particle size distribution (a) and the dense flakes formed on the surface of bulk particles (b); (c) A SEM image of the precursor by heating to 450 °C without dwelling, illustrating the disassembling of the bulk particles formed at 350 °C.



**Fig. S6\*** SEM images of the cross sections of the 2D-FC electrode before (a), and after initial (b) and 10 cycles of (d) lithiation; those of the commercial nano Fe<sub>2</sub>O<sub>3</sub> before (d) and after initial lithiation (e). \*Note: as the sample is not fully perpendicular, only the clearly focused area is measured to be the real thickness of the active material layer.



**Fig. S7** SEM images of the 2D-FC electrode material at the states of delithiation (a) and lithiation (b) after 10 cycles.