Supplementary Materials

Efficient performance optimization of natural graphite enabled by hydrothermal modification with Mg(NO$_3$)$_2$

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Keywords: graphite anode, Mg(NO$_3$)$_2$, modification, cyclability

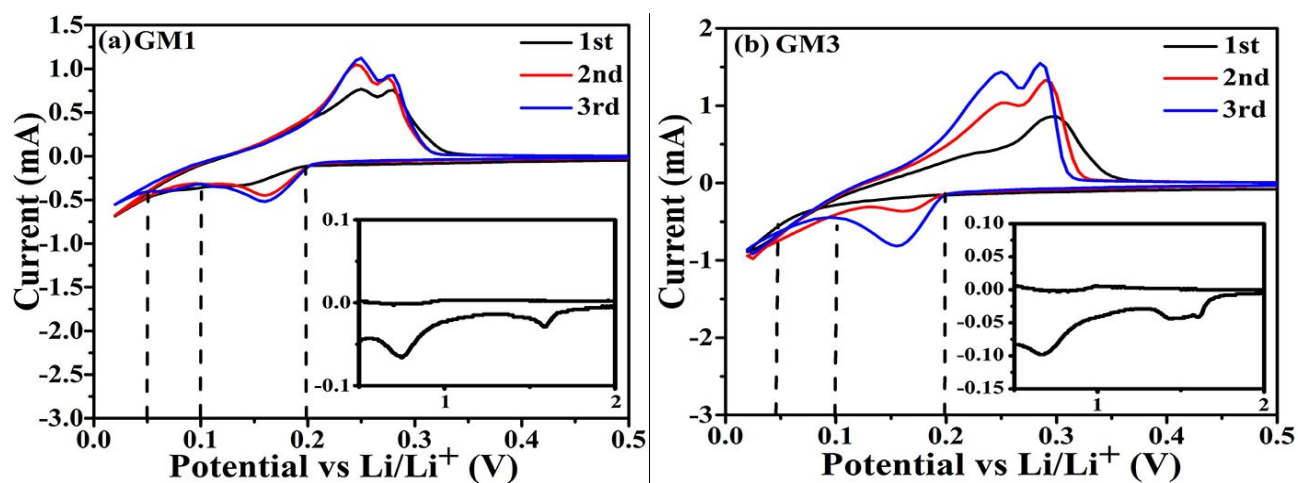**Fig. S1.** CV plots of (**a**) GM1, (**b**) GM3 at 0.1 mV s^{-1}.
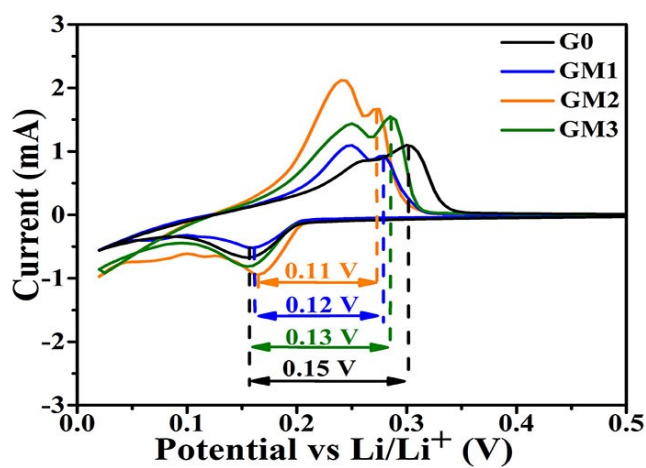

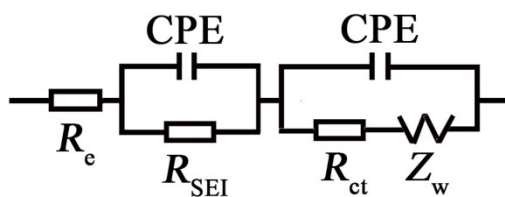**Fig. S2.** CV plots of G0, GM1, GM2, GM3 after 3 cycles at 0.1 mV s^{-1}.
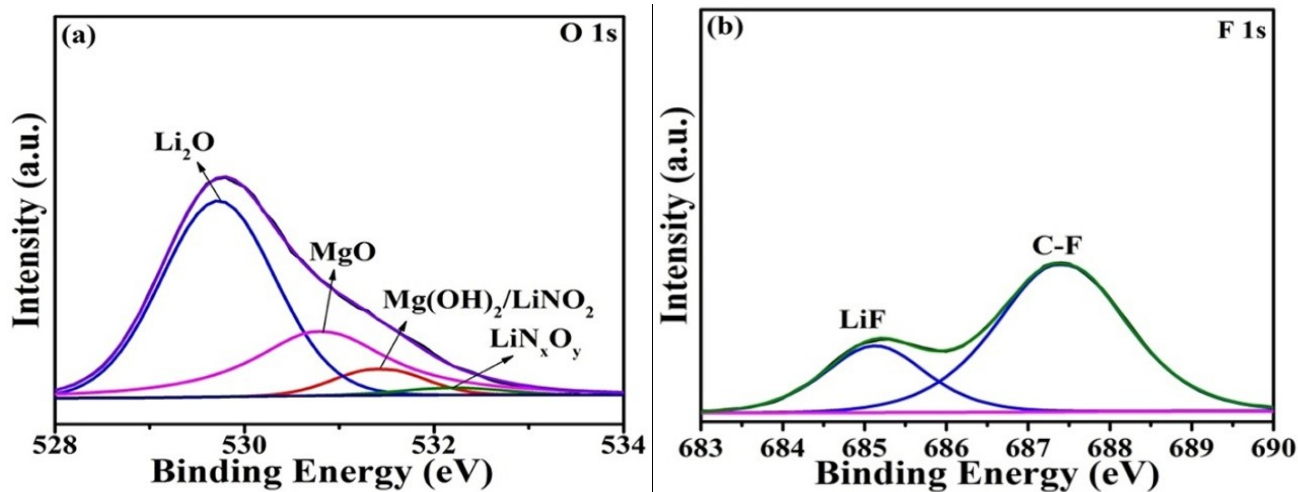

Fig. S3. Corresponding equivalent circuit after 3 cycles.

Fig. S4. XPS spectra of (**a**) O 1s, (**b**) F 1s of GM2 after 30 cycles.

Table S1 Fitted impedance (Ω) for G0, GM1, GM2 and GM3

Sample	R_e	R_{SEI}	R_{ct}	R_T
G0	1.6	170.4	101.2	273.2
GM1	0.8	64.1	55.3	120.2
GM2	2.2	61.4	53.6	117.2
GM3	1.6	97.3	65.3	164.2