Electronic Supplementary Information

Crystallinity-dependent Capacity of LiBC Anode Material in Li-ion Batteries

Jianfeng Jia,‡[a] Shaorui Chen,‡[b] Qianwen Yang,[a] Xiang Feng,[a] De Li *[abc]

[a]State Key Laboratory on Marine Resource Utilization in South China Sea; Hainan Provincial Key Laboratory of Research on Utilization of Si–Zr–Ti Resources; College of Materials Science and Chemical Engineering, Hainan University, 58 Renmin Road, Haikou 570228, China

[b]National Laboratory of Solid State Microstructures & College of Engineering and Applied Sciences, Nanjing University, Nanjing 210093, China

[c]Key Laboratory of Advanced Energy Materials Chemistry (Ministry of Education), Nankai University, Tianjin 300071, China

‡These authors contributed equally.

*Corresponding Author

E-mail: lidenju@sina.com

Supporting Information contains Fig. S1-7.

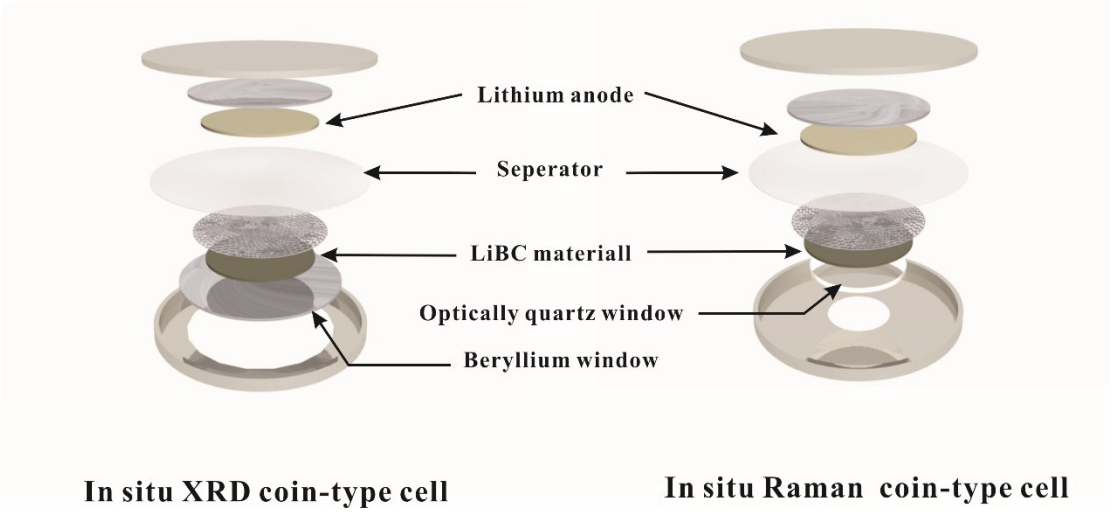

Fig. S1 Coin-type cells used for in situ XRD (left panel) and in situ Raman (right panel) measurements.

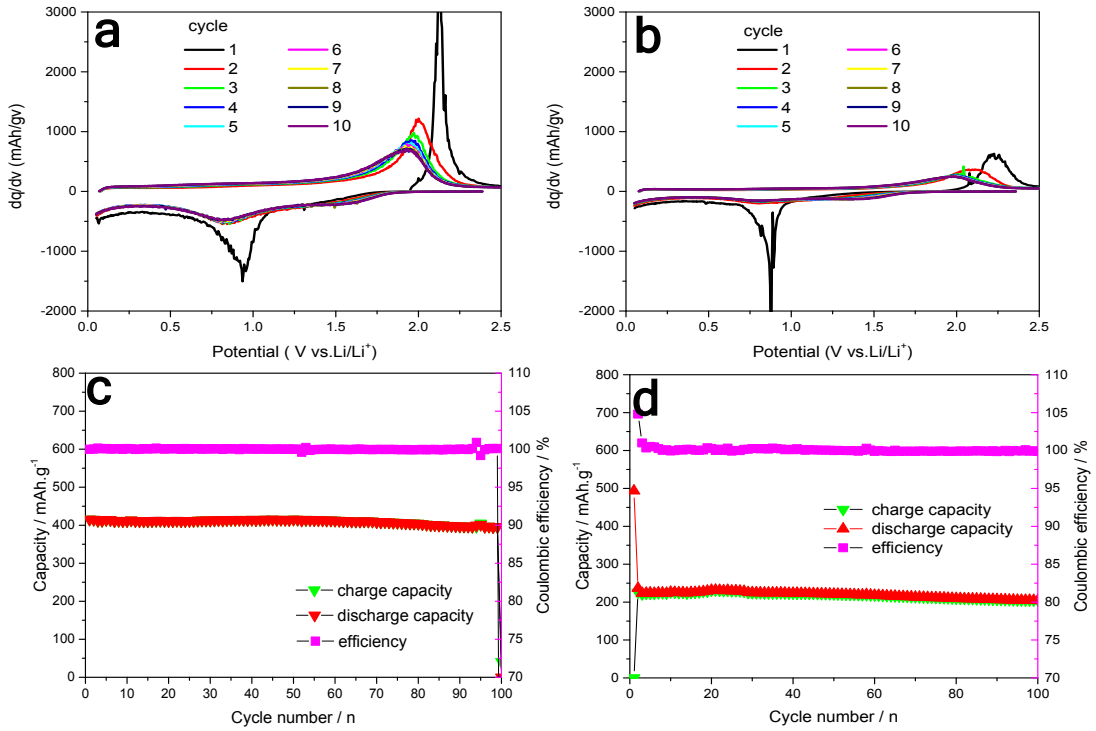

Fig. S2 The dQ/dV curves of (a) a-LiBC and (b) g-LiBC for initial 10 consecutive cycles, corresponding to Fig. 3a and 3c, respectively. (c) Cycling performance of a-LiBC at a rate of 0.2C and (d) g-LiBC at a rate of 0.1C.

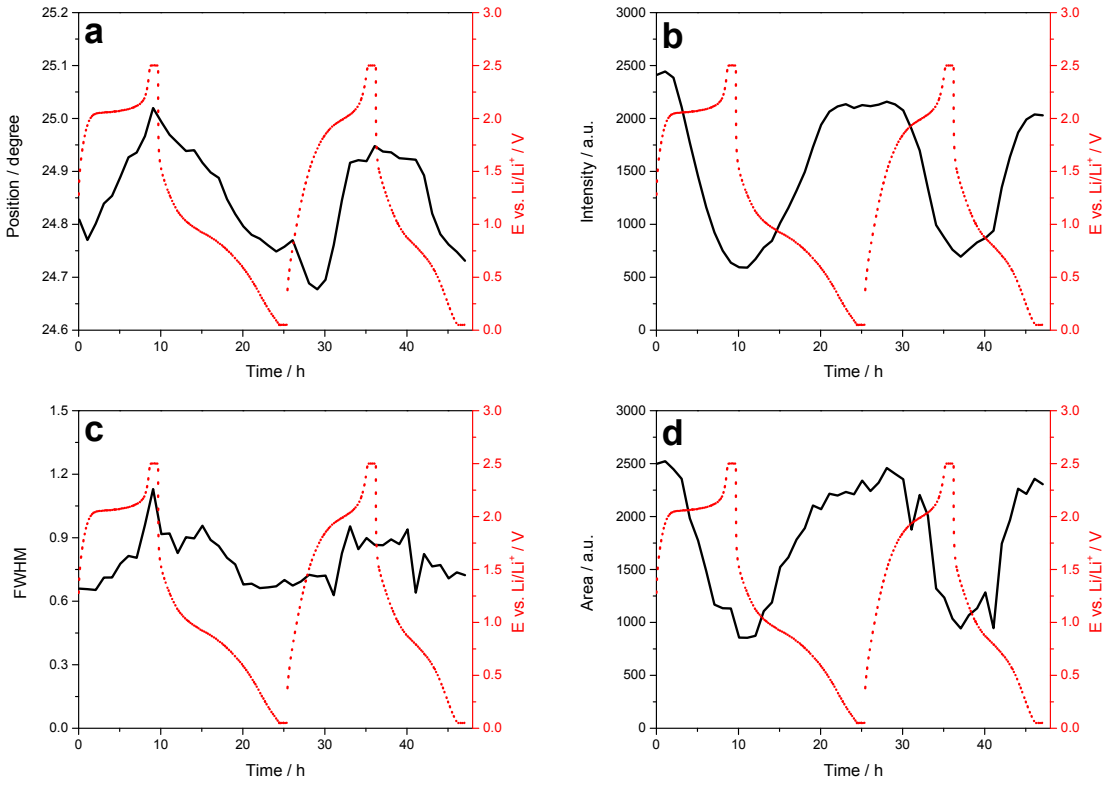

Fig. S3 (a) The position, (b) intensity, (c) full width at half maximum (FWHM) and (d) area of LiBC (002) peak for initial 2 consecutive cycles of a-LiBC, corresponding to Fig. 4b and 4c, where the red dotted line represents the charge/discharge curve.

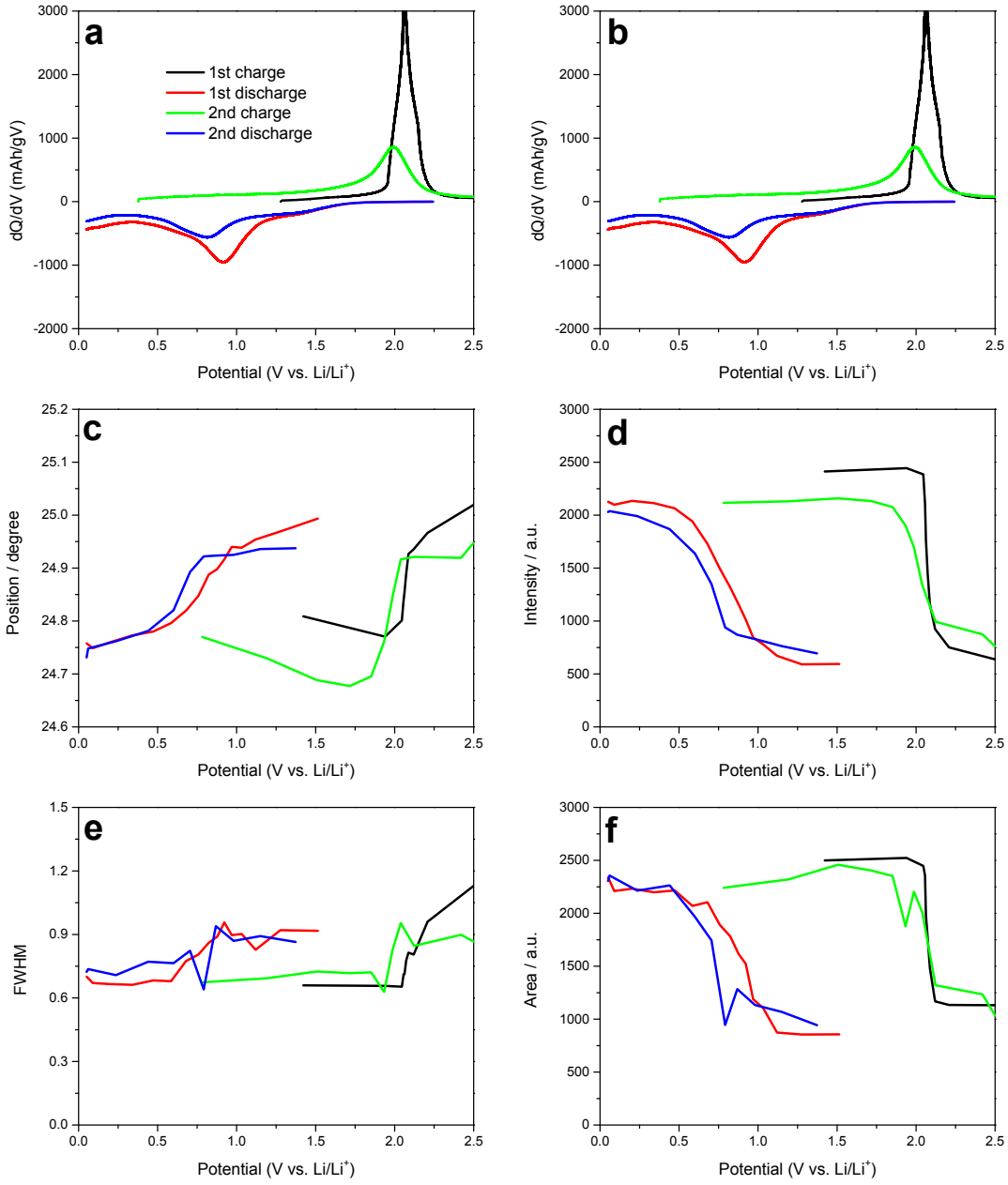

Fig. S4 (a, b) The dQ/dV curves for initial 2 consecutive cycles of a-LiBC. (c) The position, (d) intensity, (e) FWHM and (f) area of LiBC (002) peak for initial 2 consecutive cycles of a-LiBC, where the time is substituted by the potential in the x axis, compared with Fig. S3.

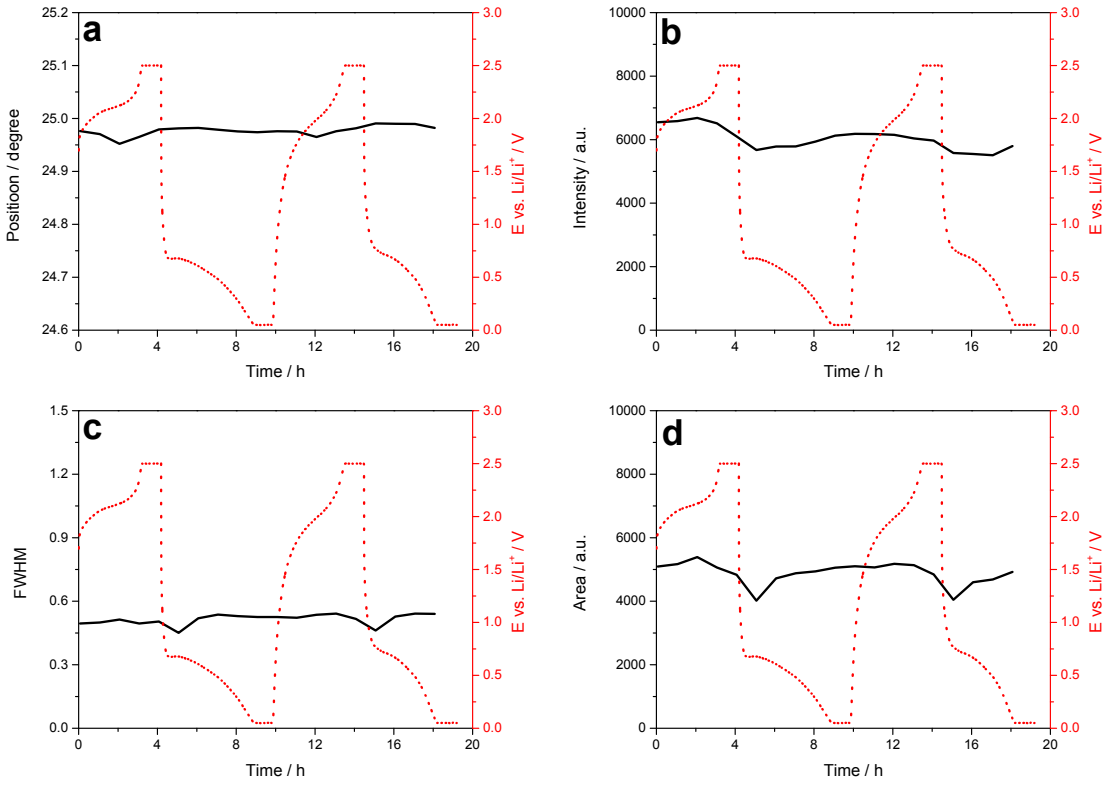

Fig. S5 (a) The position, (b) intensity, (c) FWHM and (d) area of LiBC (002) peak for initial 2 consecutive cycles of g-LiBC, corresponding to Fig. 5b and 5c, where the red dotted line represents the charge/discharge curve.

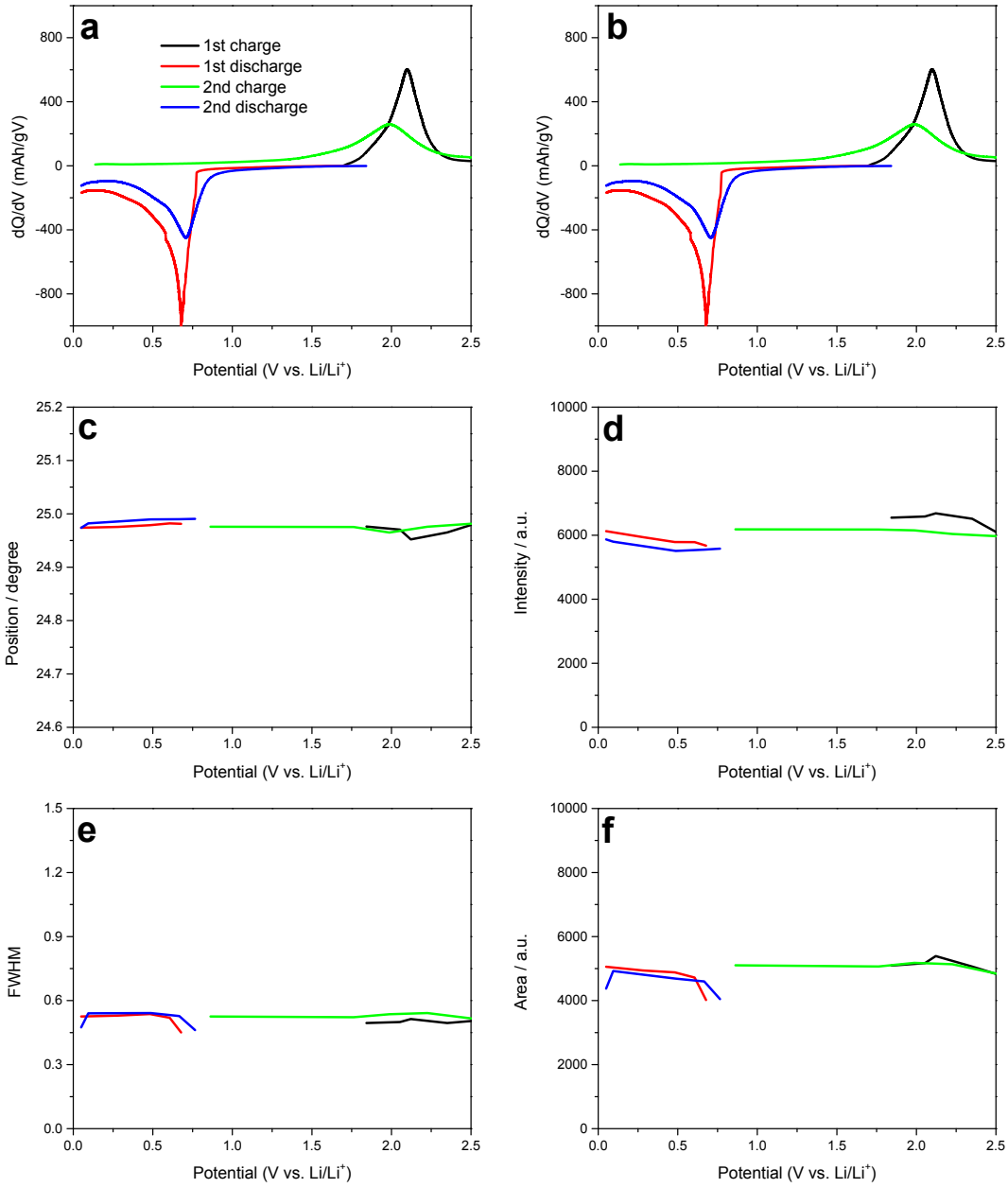

Fig. S6 (a, b) The dQ/dV curves for initial 2 consecutive cycles of g-LiBC. (c) The position, (d) intensity, (e) FWHM and (f) area of LiBC (002) peak for initial 2 consecutive cycles of g-LiBC, where the time is substituted by the potential in the x axis, compared with Fig. S5.

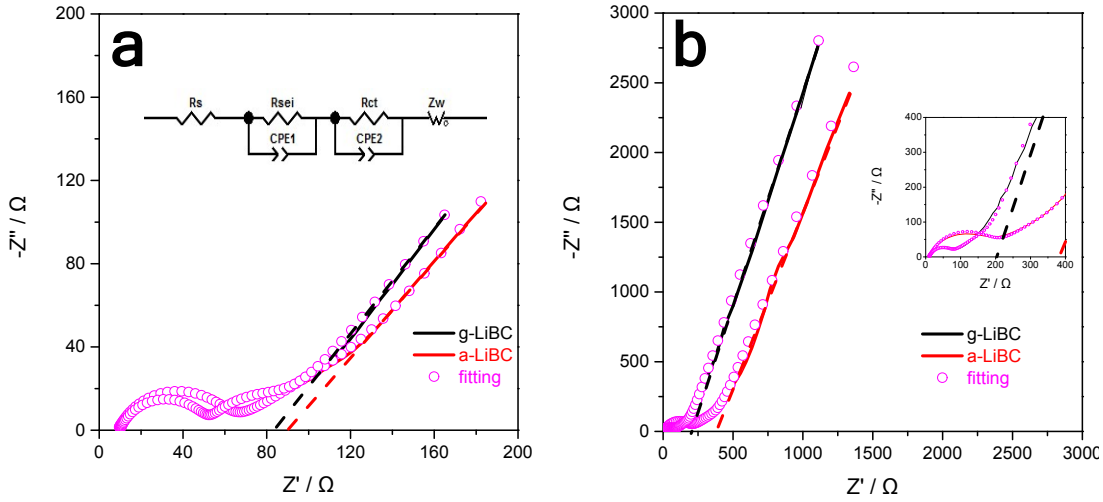

Fig. S7 Electrochemical impedance spectra (EIS) of a-LiBC and g-LiBC. (a) EIS spectra at the fully discharged state of 0.05V and an equivalent circuit model in the inset; (b) EIS spectra at the fully charged state of 2.5V and an enlarged view in the inset, where the dashed line was extended from the Warburg region to obtain an intercept at the Z' axis.