

## Supporting Information

### A Fast and Efficient Pre-doping Approach to High Energy Density Lithium-Ion Hybrid Capacitors

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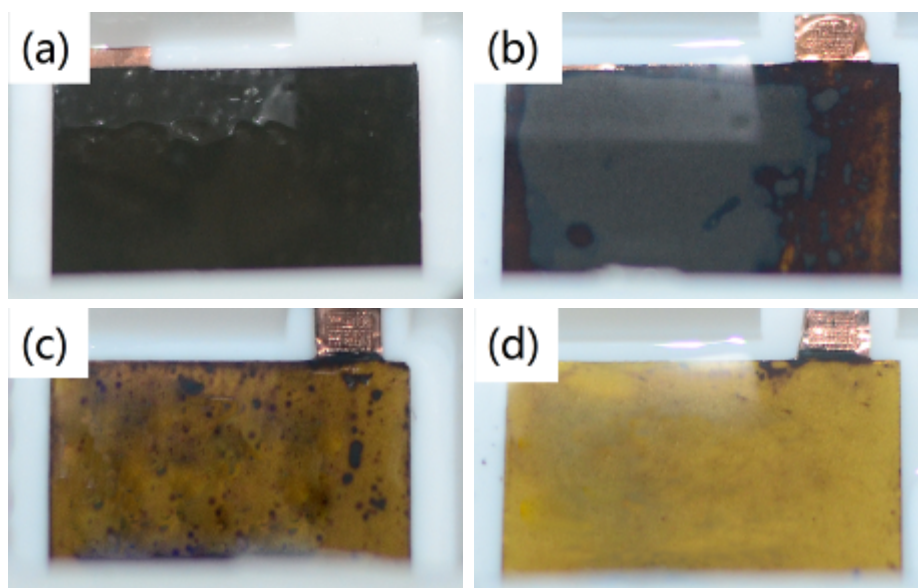
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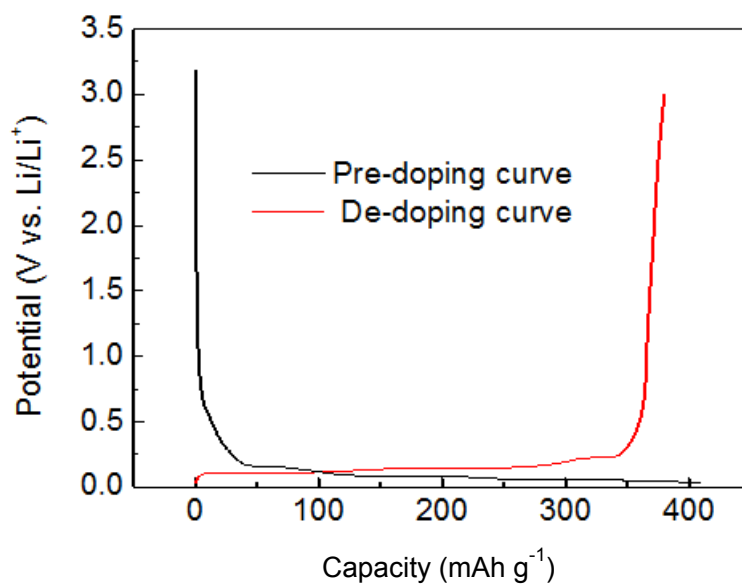
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#### Supporting Figure S1



IS pre-doped graphite electrodes at various doping times: (a) 4, (b) 15, (c) 30, and (d) 60 min.

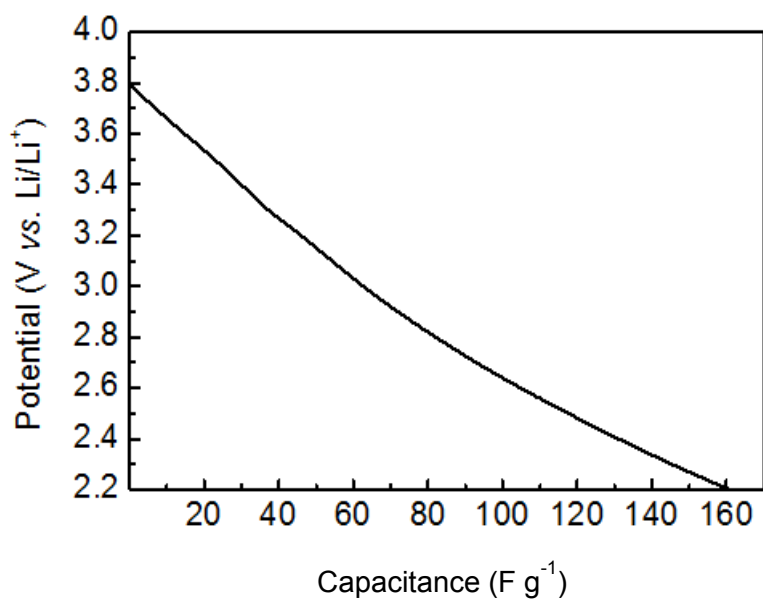
## Supporting Figure S2



Pre-doping and de-doping curves of graphite electrodes via EC method at the current rate of 0.03 C.

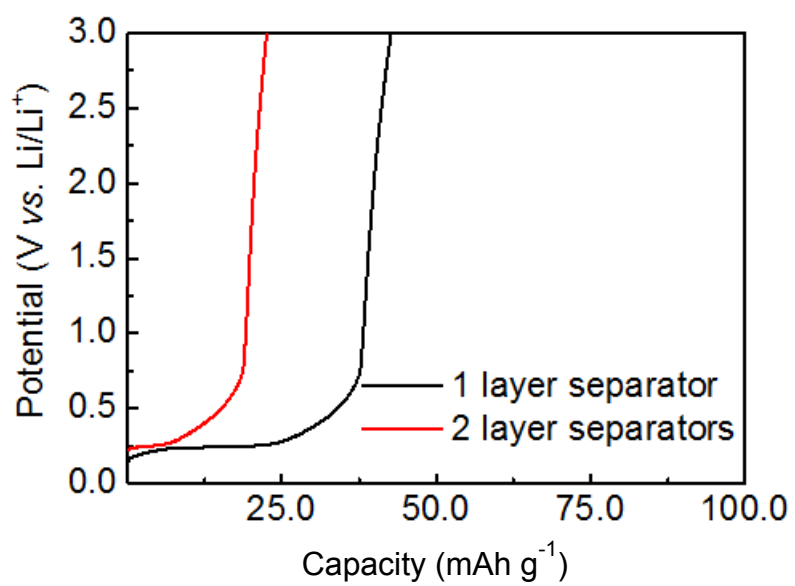
### Supporting Figure S3

The AC/Li half-cell was charged from its OCV to 3.8 V and discharged to 2.2 V on 0.2 C condition. The capacitance of the AC electrode was 160 F g<sup>-1</sup>.



Discharge curves of AC/Li half-cell at 0.2C

Supporting Figure S4



De-doping curves of the ESC pre-doped graphite with one layer or two layers of separator.