Supporting Information

Immobilizing Organic Electrode Material through π-π Interaction for High-Performance Li-Organic Batteries

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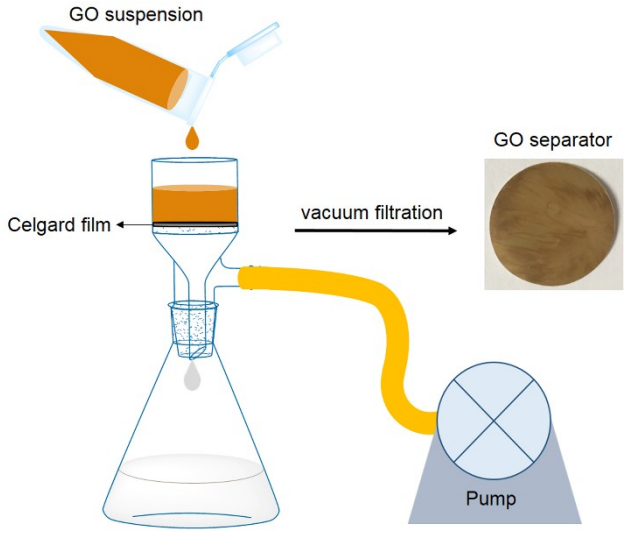

Fig. S1 Illustration of deposition process of GO separator.

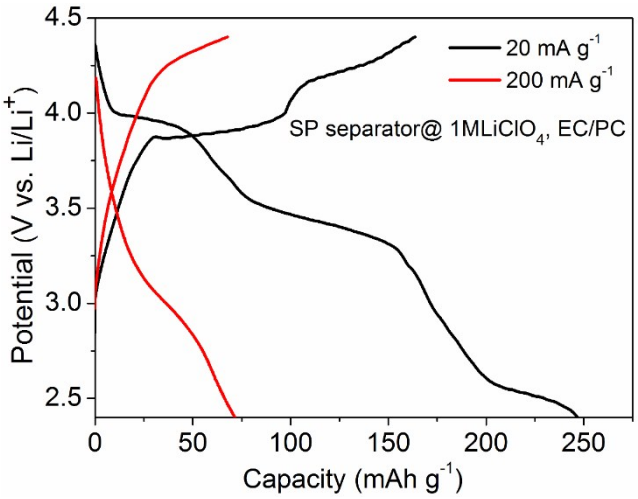

Fig. S2 Charge-discharge curves of first cycle for the CuTCNQ based cell with SP separator in the EC/PC electrolyte of 1 M $LiClO_4$ within the voltage range from 2.4 to 4.4 V *vs*. Li^+/Li at current densities of 20 and 200 mA g^{-1}.

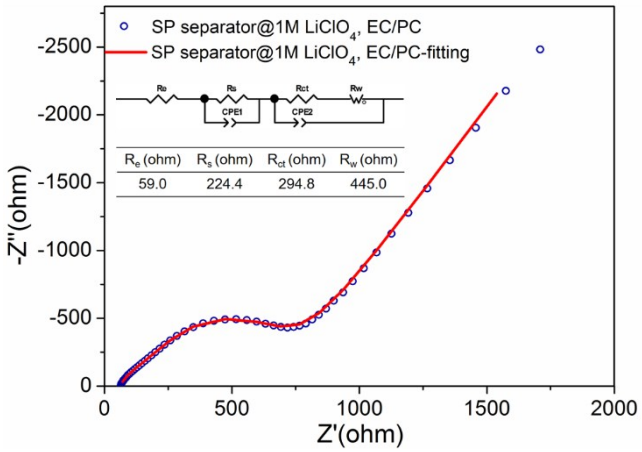

Fig. S3 EIS curve of the fresh CuTCNQ cell with SP separator in EC/PC electrolyte of 1 M $LiClO_4$. Inset: EIS equivalent circuit and the fitted resistance values.

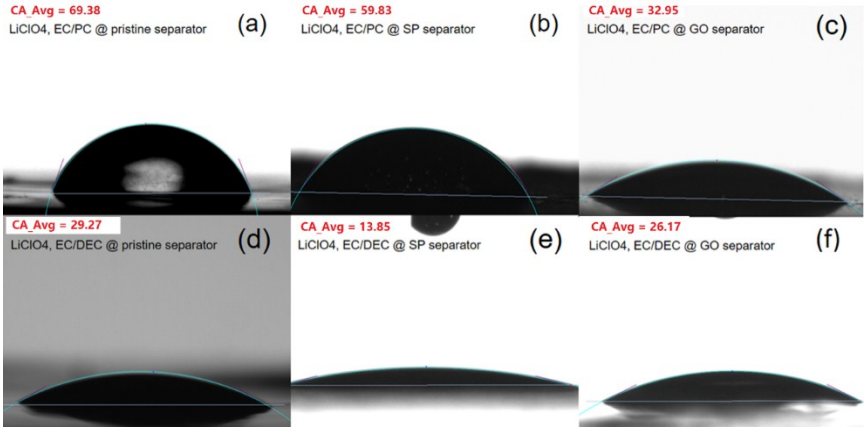

Fig. S4 Contact angle images of droplets: (a, b, c) 1 M $LiClO_4$ in EC/PC electrolyte and (d, e, f) 1 M $LiClO_4$ in EC/DEC electrolyte on (a, d) pristine Celgard separators, (b, e) SP separators and (c, f) GO separators.

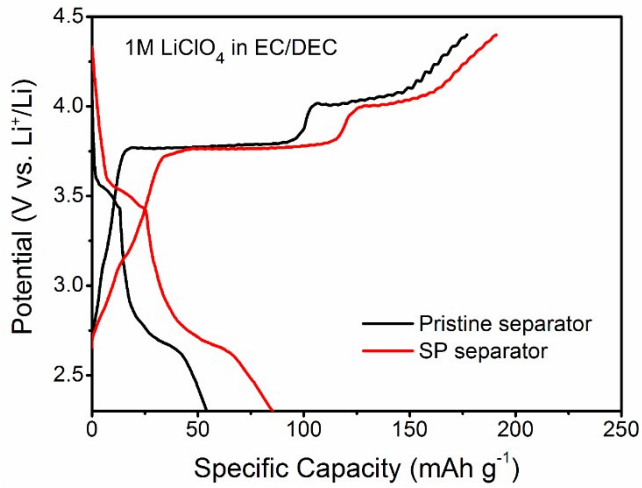

Fig. S5 Charge-discharge curves of CuTCNQ in the voltage range from 2.4 to 4.4 V *vs*. Li^+/Li at a current density of 50 mA g^{-1}.

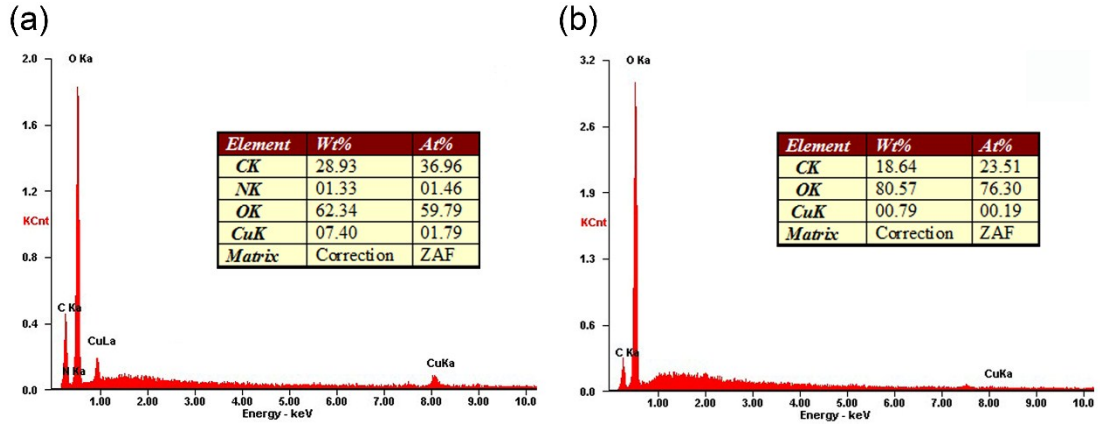

Fig. S6 EDX spectra and elemental contents of Li metal surface assembled in CuTCNQ cells (a) without and (b) with GO separators.

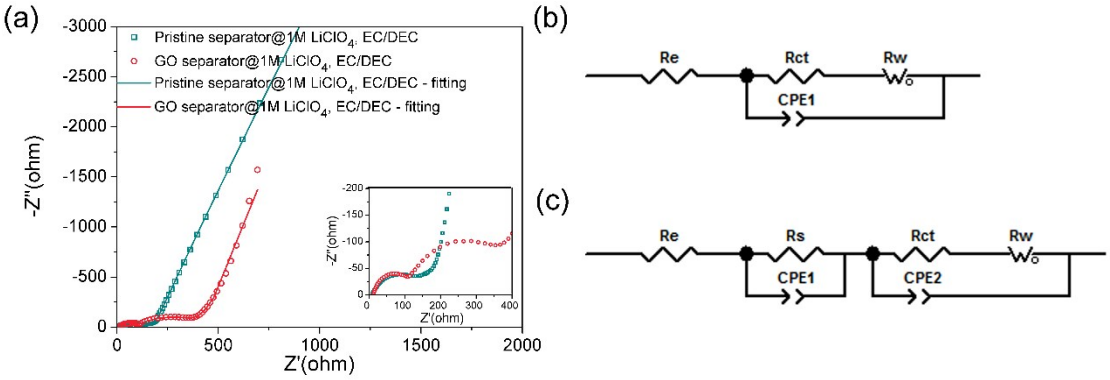

Fig. S7 (a) EIS curves of the fresh CuTCNQ cell with pristine separator and GO separator in EC/DEC electrolyte of 1 M $LiClO_4$. (b, c) Equivalent circuits of the EIS curve of (b) pristine PP film separated cell and (c) GO film separated cell.

Table S1. Fitted resistance parameters (R_e, R_s, R_{ct}, R_w) for CuTCNQ cell with pristine separator and GO separator in EC/DEC electrolyte of 1 M $LiClO_4$.

Samples	R_e (ohm)	R_s (ohm)	R_{ct} (ohm)	R_w (ohm)
Pristine separator @ $LiClO_4$-EC/DEC	8.0	--	131.6	166.9
GO separator @$LiClO_4$-EC/DEC	11.5	109.5	182.8	279.6