Electronic Supplementary Material (ESI) for Dalton Transactions.

Electrolyte Additive Strategy Enhancing the Electrochemical Performance of Soft-Packed $LiCoO_2$//Graphite Full Cell

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Figure S1

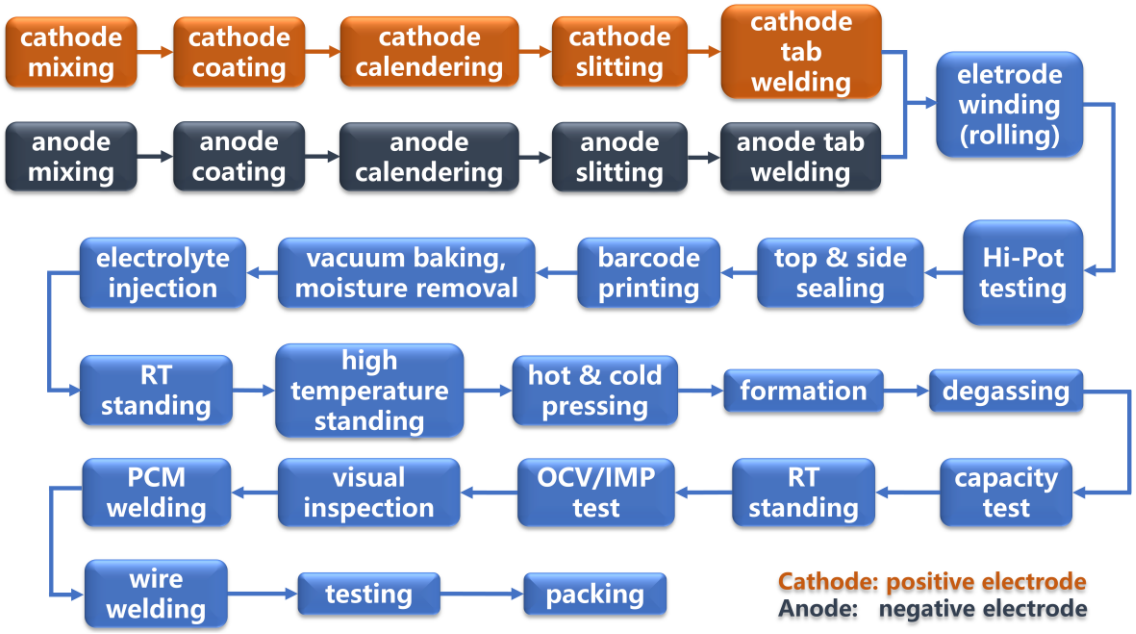


Figure S1. The flow chart of the assembling process of the soft-packed full cell.

Figure S2

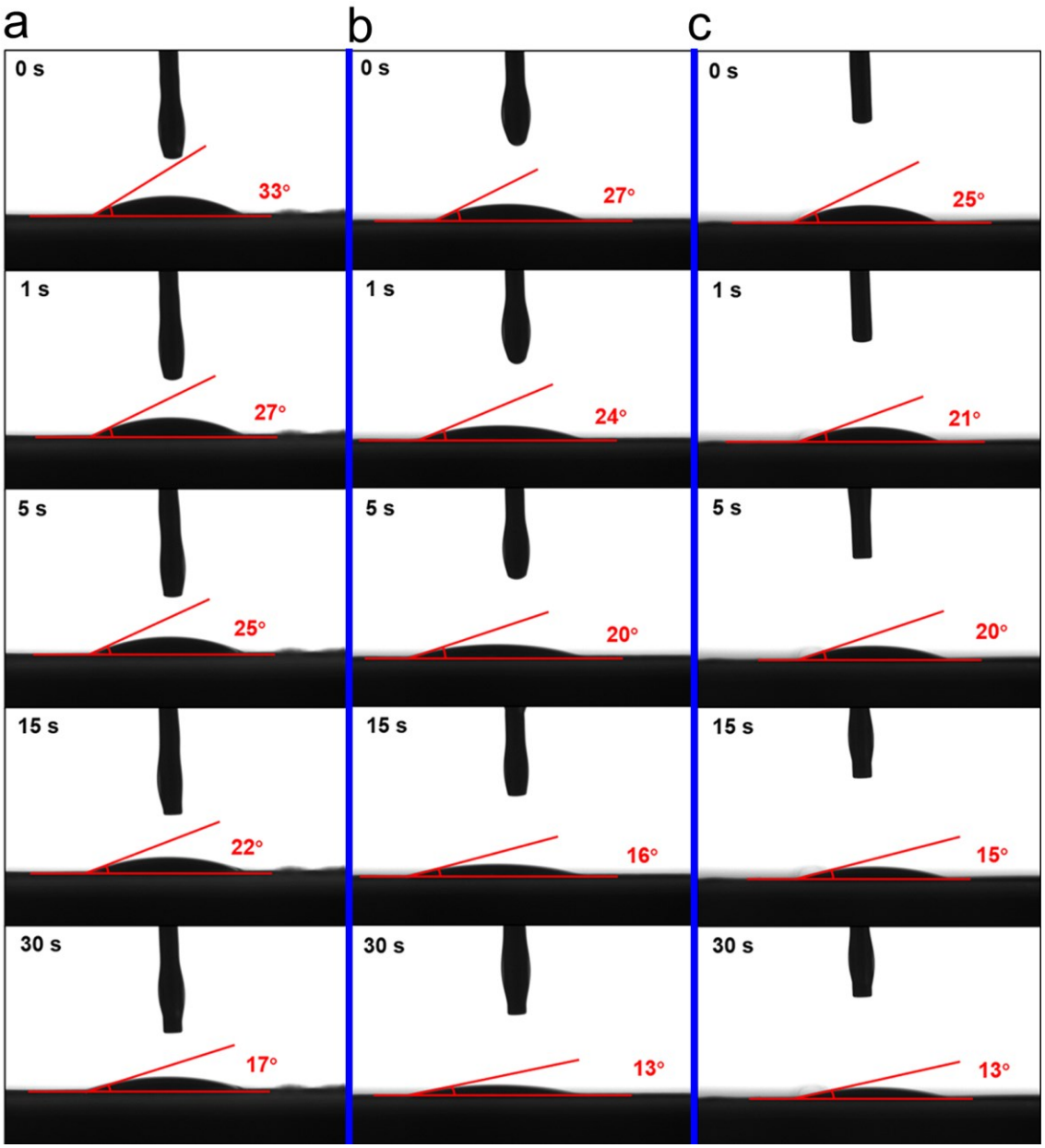


Figure S2. The contact angle test results of $LiCoO_2$ in F01 (1.0% FEC), F02 (1.5% FEC), F03 (2.0% FEC).

Figure S3

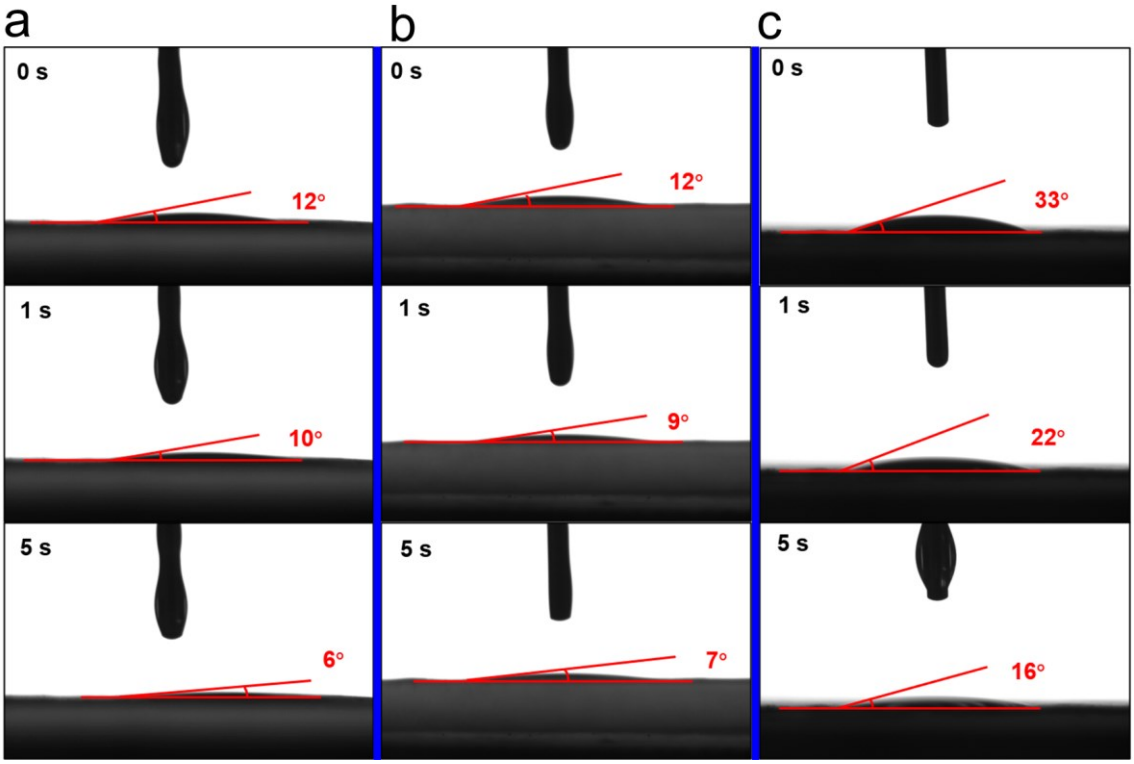


Figure S3. The contact angle test results of graphite in F01 (1.0% FEC), F02 (1.5% FEC), F03 (2.0% FEC).

Figure S4

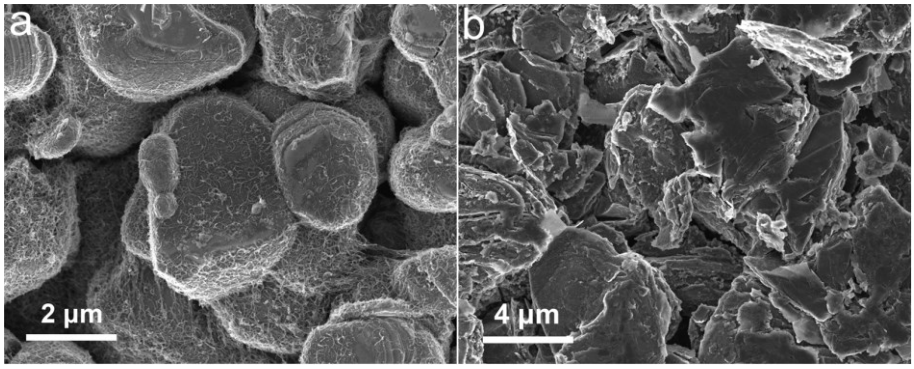


Figure S4. SEM results of (a) $LiCoO_2$ and (b) graphite.

Figure S5

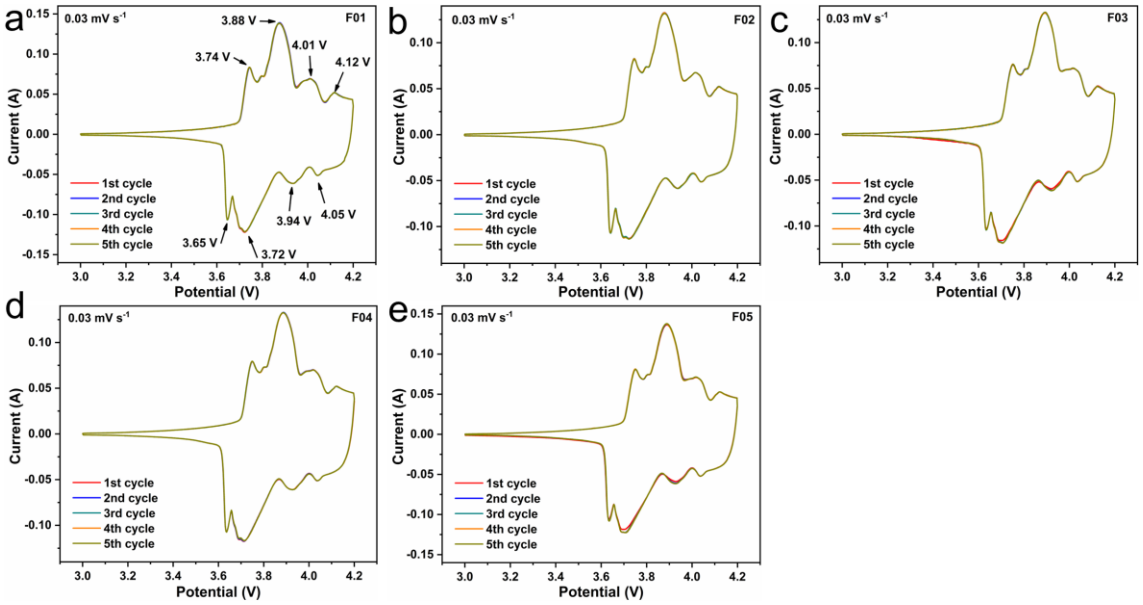


Figure S5. CV curves of all samples at 0.03 mV s^{-1}.

Figure S6

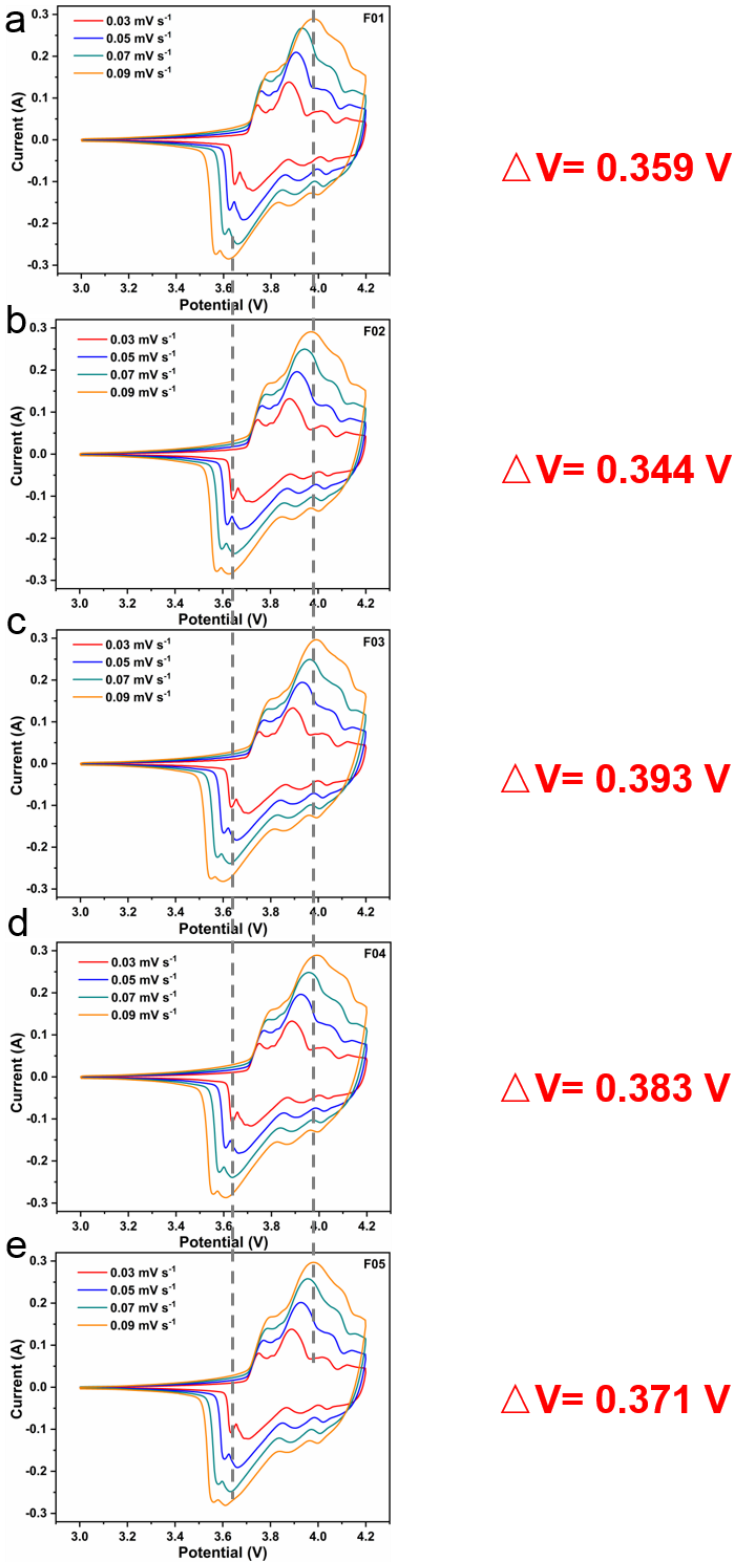


Figure S6. CV curves of all samples at the sweeping rates of 0.03-0.09 mV s^{-1}.

Figure S7

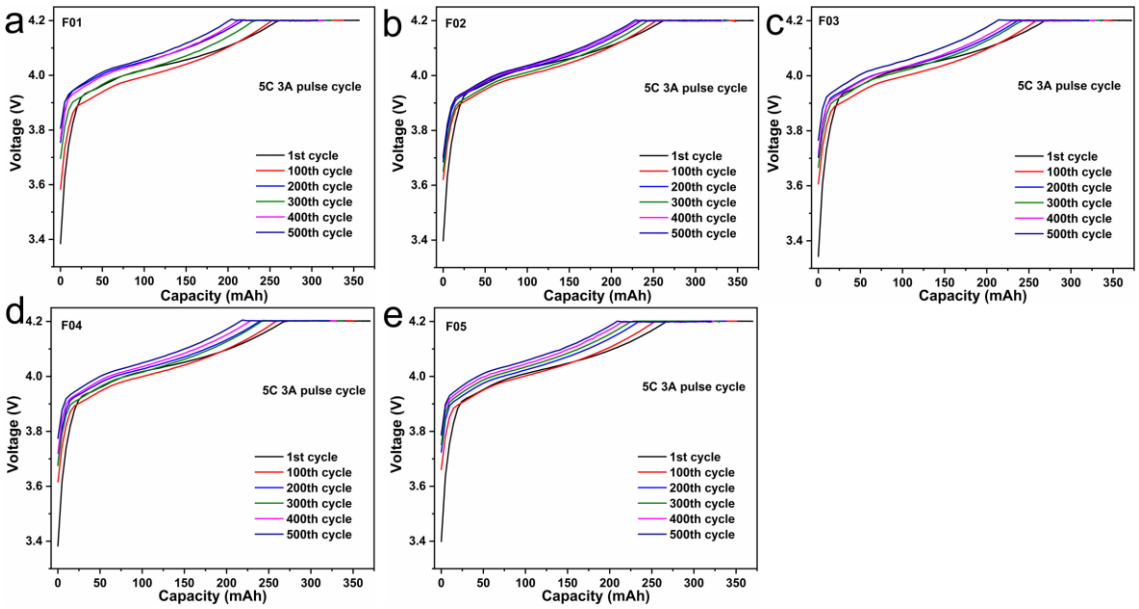


Figure S7. GCD curve of cycles (1st, 100, 200, 300, 400, 500 cycles) under 5C (charge) and 8.6C (3A) (discharge) pulse.

Figure S8

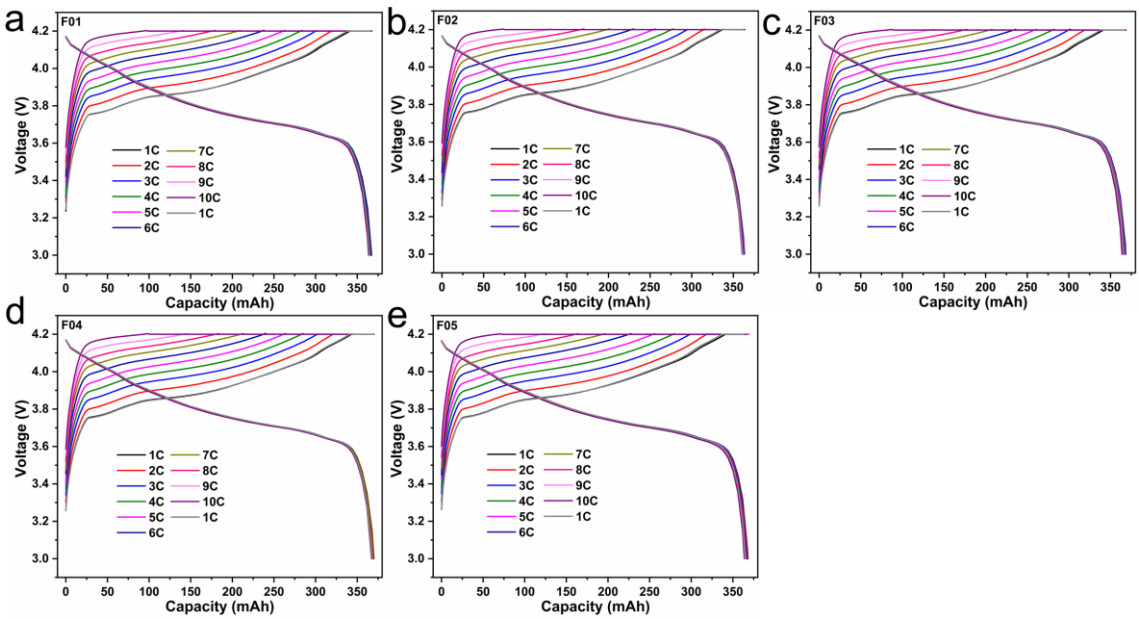


Figure S8. GCD curves of rate charging at 1C-10C and discharging at 1C of all the samples.

Table S1

Table S1. The comparison of the price of FEC and EC.

FEC				EC			
Supplier	**Purity**	**URL**	**Price/kg**	**Price/kg**	**URL**	**Purity**	**Supplier**
Aladdin	>98%	[1]	**$236.88**	**$18.44**	[8]	>98%	**Aladdin**
Macklin	99%	[2]	**$340**	**$21.56**	[9]	>99%	**Macklin**
Reagent	99%	[3]	**$368.75**	**$30.94**	[10]	＞99%	**Reagent**
Alfa Aesar	98%	[4]	**$4670**	**$73.8**	[11]	99%	**Alfa Aesar**
Sigma aldrich	≥99%	[5]	**$13240**	**$1720**	[12]	≥99%	**Sigma aldrich**
Thermo Scientific	98%	[6]	**$6871.4**	**$75.8**	[13]	99%	**Thermo Scientific**
P212121	>98%	[7]	**$862**	**$82**	[14]	>99%	**P212121**

1 USD = 6.4 CNY, Data collected at 2021/11/05 (GMT+8).

Web URL:

[1] https://www.aladdin-e.com/zh_cn/f120339.html

[2] http://www.macklin.cn/products/F810047

[3] https://www.reagent.com.cn/goodsDetail/42a40d6644c0451e99a012290a9ce439

[4] https://www.alfa.com/zh-cn/catalog/H61502/

[5] https://www.sigmaaldrich.com/US/en/product/aldrich/901686?context=product

[6] https://www.fishersci.ca/shop/products/4-fluoro-1-3-dioxolan-2-one-98-2/p-7053812

[7] https://store.p212121.com/fluoroethylene-carbonate/

[8] https://www.aladdin-e.com/zh_cn/e105727.html

[9] http://www.macklin.cn/products/E808838

[10] https://www.reagent.com.cn/goodsDetail/ce0e69c7788847c8ad1331f93a2e45fd

[11] https://www.alfa.com/zh-cn/catalog/A15735/

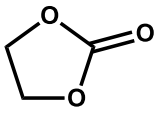
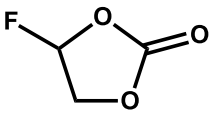
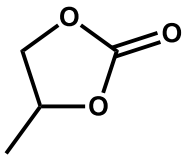
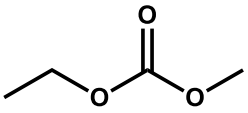
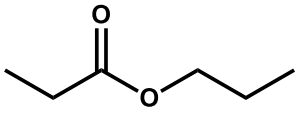
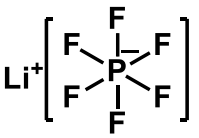
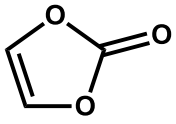
[12] https://www.sigmaaldrich.com/US/en/search/96-49-1?focus=products&page=1&perPage=30&sort=relevance&term=96-49-1&type=product

[13] https://www.fishersci.ca/shop/products/ethylene-carbonate-99-thermo-scientific/p-3736441#?keyword=96-49-1

[14] https://store.p212121.com/ethylene-carbonate/

Table S2

Table S2. The main constituent of electrolyte.

Ingredients	Structural formula
Ethylene carbonate (EC)	
Fluoroethylene carbonate (FEC)	
Propylene carbonate (PC)	
Ethyl methyl carbonate (EMC)	
Propyl propionate (PP)	
Lithium hexafluorophosphate (Li_xPF_6)	
Vinylene carbonate (VC)	
1,3-Propanesultone (PS)