

Lithium and Potassium Cations Affect the Performance of Maleamate-Based Organic Anode Materials for Potassium- and Lithium-Ion Batteries

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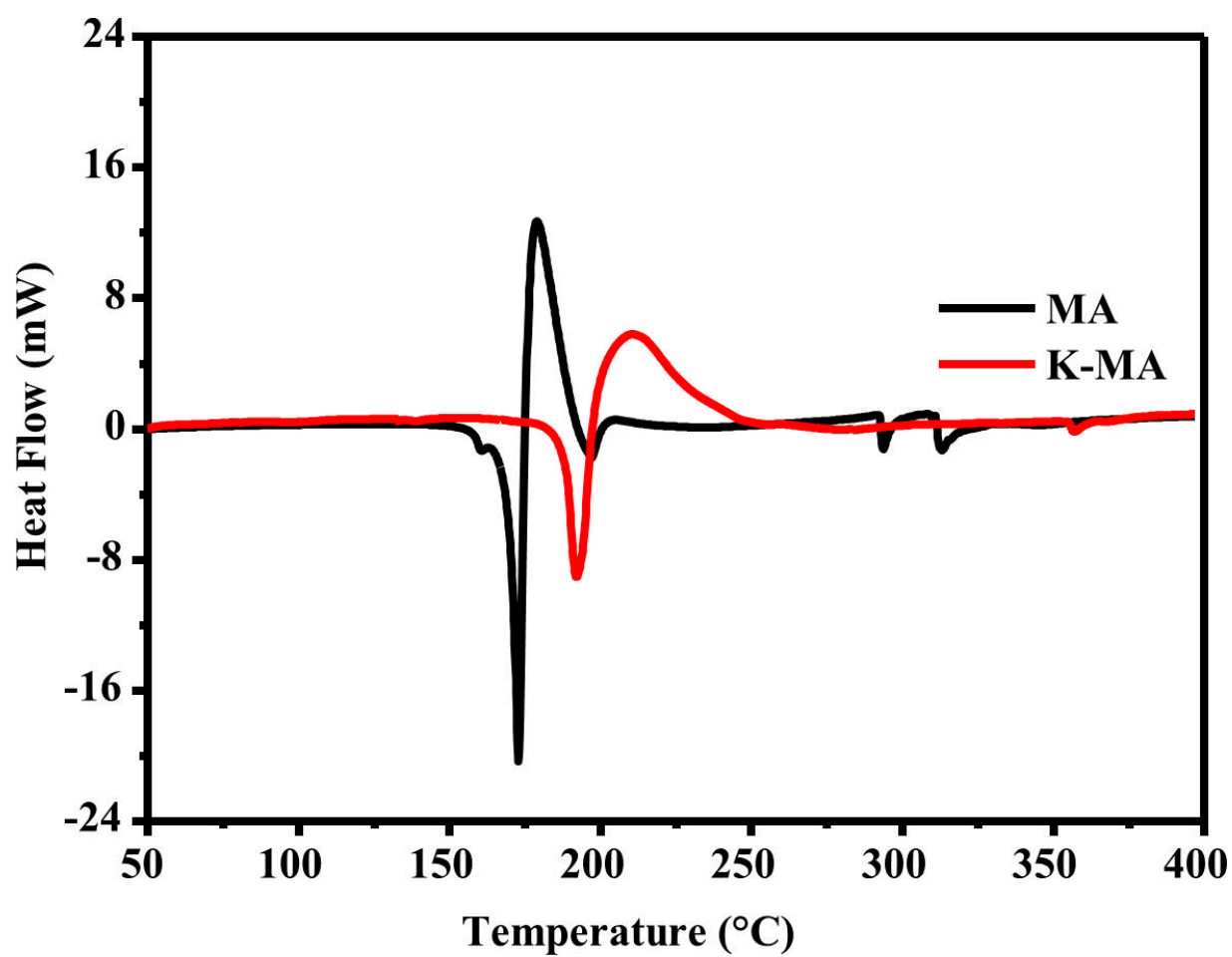


Figure S1. DSC traces of MA and K-MA, recorded at a scan rate of 10 °C min⁻¹.

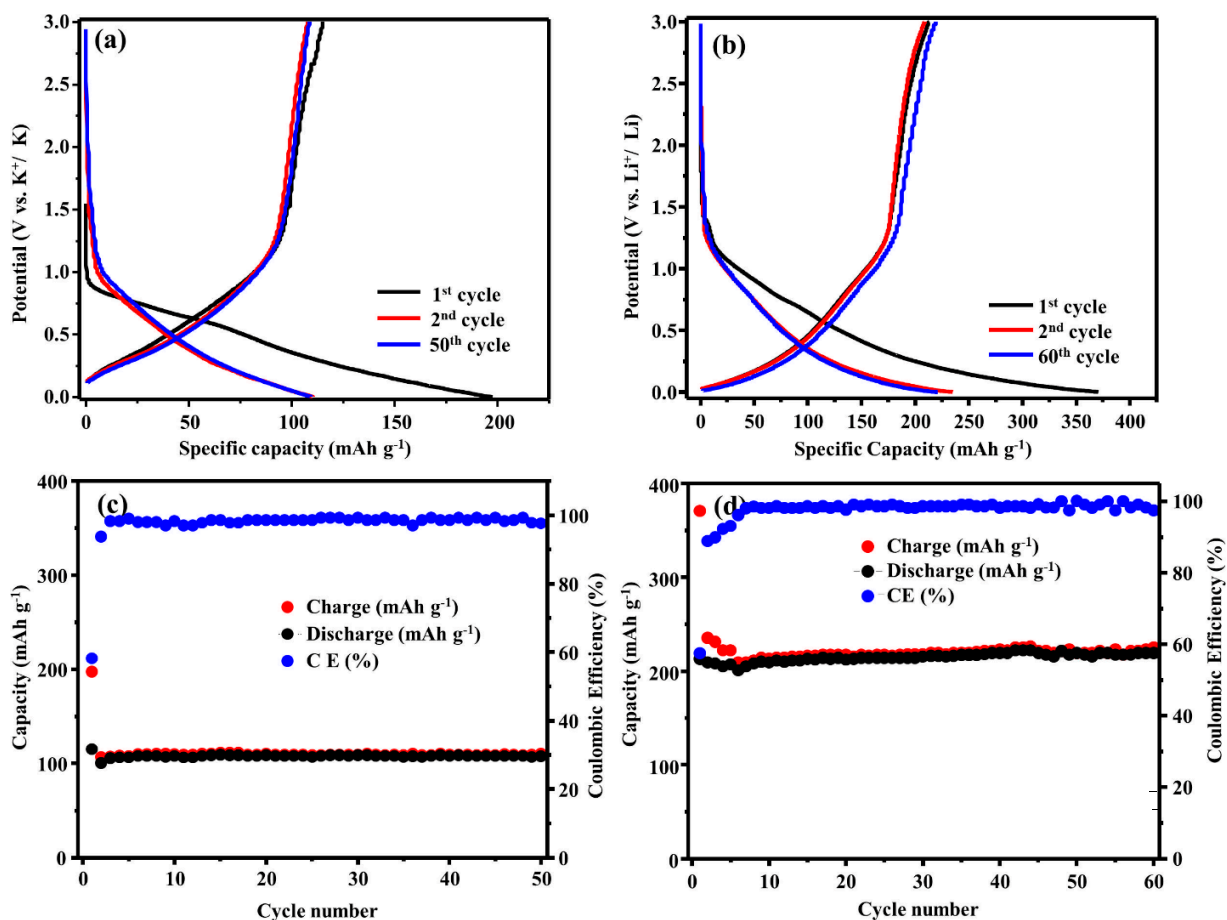


Figure S2. (a, b) Charge/discharge profiles and (c, d) cyclic performance of (a, c) SP_KFSI (100%) as KIBs and (b, d) SP_LiFSI (100%) as LIBs, measured at a scan rate of 0.1 mV s⁻¹ and a rate of 0.1C.

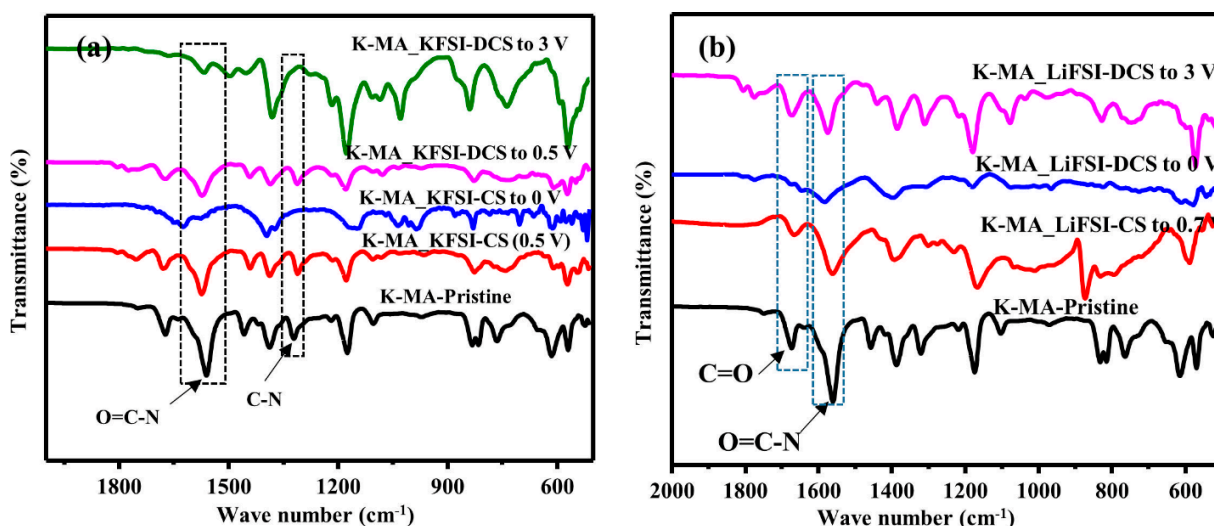


Figure S3. Ex-situ FTIR spectra of (a) K-MA_KFSI and (b) K-MA_LiFSI electrodes in pristine, charging state (CS), and discharging states (DCS).

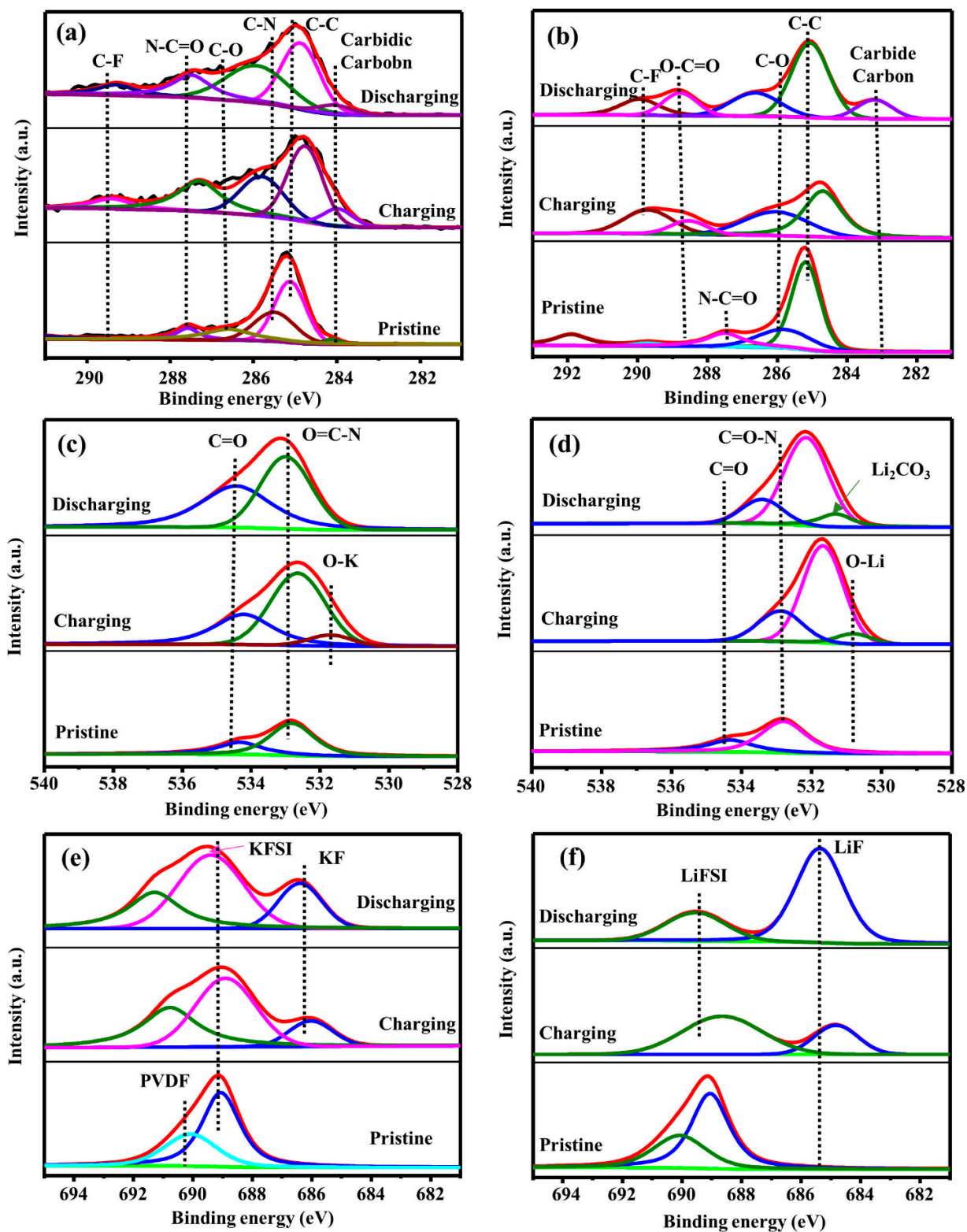


Figure S4. (a, b) C 1s, (c, d) O 1s, and (e, f) F 1s XPS spectra of (a, c, e) K-MA_KFSI and (b, d, f) K-MA_LiFSI electrodes in pristine, charging, and discharging states.

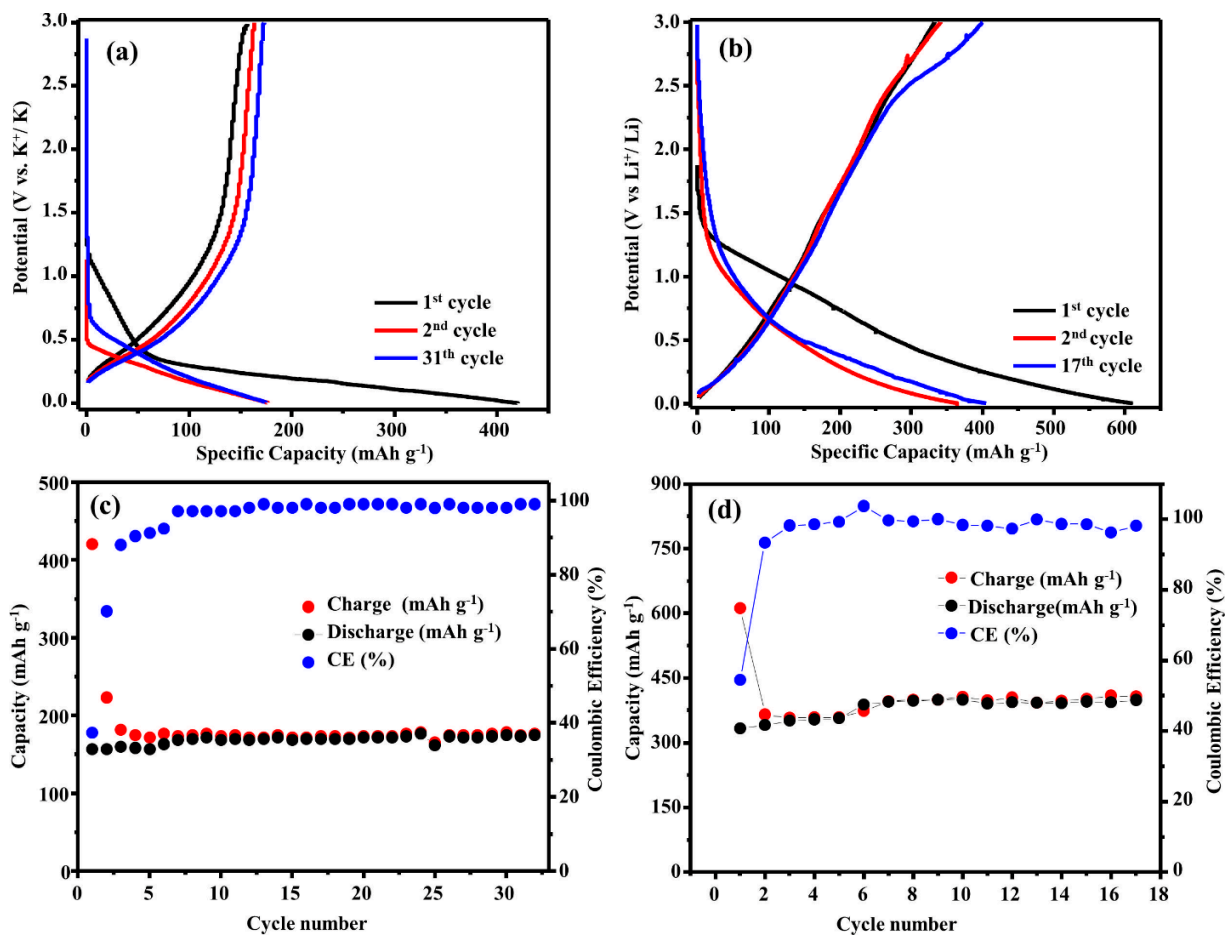


Figure S5. (a, b) Charge/discharge profiles and (c, d) cyclic performance of (a, c) Li-MA_KFSI and (b, d) Li-MA_LiFSI at a rate of 0.1C.

Table S1. Li⁺ ion conductivities in 1 M LiPF₆ and 1 M LiFSI and K⁺ ion conductivity in 1 M KFSI, measured through conductometry.

Electrolyte	Ionic conductivity (mS cm ⁻¹)	Temperature (°C)
1M LiPF ₆ [EC:PC:DEC, 3:2:5 (v/v)]	3.88	24.7
1M LiFSI [EC:EMC, 1:2 (v/v)]	3.65	25.5
1M KFSI [EC:EMC, 1:2 (v/v)]	8.47	25.2

Table S2. Capacities of K-MA_LiFSI, K-MA_KFSI, SP_LiFSI, and SP_KFSI measured at current densities of 5C and 10C.

Sample	5C (mA h g⁻¹)	10C (mA h g⁻¹)	Difference (mA h g⁻¹)
K-MA_LiFSI	166.7	150.0	-5.67 (-8.57%)
K-MA_KFSI	108.6	88.9	-8.8 (-15%)
SP_LiFSI	125.4	109.3	-14.49 (-12.84%)
SP_KFSI	24.3	13.1	-10.08 (-46.1%)