

Supplementary data for

**Pressure-Dependent Vacuum Fractional Distillation for DMC-
Rich Fraction Recovery from a Model Lithium-Ion Battery
Electrolyte Solvent Mixture**

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Fig. S1

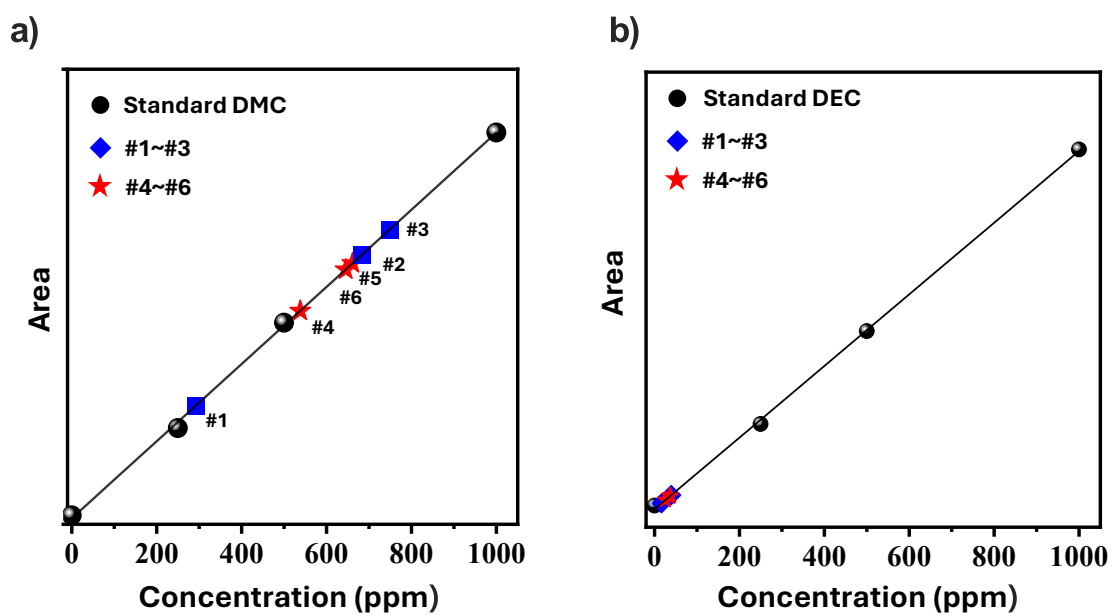


Fig. S1 Calibration curves for GC quantification of (a) DMC and (b) DEC

Table S1

Table S1 Antoine coefficients used for vapor-pressure calculations.

Solvent	A	B	C	B _p at 760 torr
DMC	7.1147	1285.45	213.15	90.5°C
DEC	7.65126	1721.904	235.191	126.8°C
EC	7.3551	2100.0	210.0	248.1°C

Table S2

Table S2 Recovery behavior of pure DMC, DEC, and EC during vacuum distillation at different operating pressures.

Solvent	Pressure (Torr)	Main distillation fraction		Total recovery (mL)	Recovery rate (%)	remarks
		Temp. range (°C)	Volume (mL)			
DMC (initial volume: 100mL, holding time: 1hr)						
DMC	100	50	84	100	100	-
		60	16			
DMC	300	70	86	100	100	-
		80	14			
DMC	500	80	36	97	97	Residue : 3 ml
		90	44			
DEC (initial volume: 100mL, holding time: 1hr)						
DEC	100	70	56	100	100	-
		80	44			
DEC	300	100	86	100	100	-
		110	5			
		120	9			
DEC	500	120	42	78	78	Residue : 13 ml
		130	12			
		140	24			
EC (initial volume: 100mL, holding time: 1hr)						
EC	10~500	170~240	Not recovered	0	0	Not recovered

Table S3

Table S3 Normalized FID peak-area fractions of DMC and DEC in the recovered distillate fractions.

Sample	Normalized FID peak-area fraction (% of DMC+DEC)	
	DMC	DEC
#1	96.07	3.93
#2	92.41	7.59
#3	93.04	6.96
#4	94.65	5.35
#5	93.17	6.83
#6	92.43	7.57

Note: Values represent normalized FID peak-area fractions on a DMC + DEC basis without response-factor correction; EC was not detected and was excluded from the normalization.