

Electronic Supplementary Information

A novel electrolyte with the ability to form a solid state interface on the anode and cathode of a LiMn₂O₄/graphite battery

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Figure S1. Cycling performance of $\text{LiMn}_2\text{O}_4/\text{graphite}$ batteries in 1.0 M LiPF_6 in EC-EMC (1:2) electrolytes without (base), with various contents of VC (A), and with various contents of PES (B) at room temperature. It can be found from Figure S1 that capacity retention of the batteries increases with increasing the content of the additives, reaches the maximum at 3 wt% for VC and 5 wt% for PES and decreases with increasing the content of the additive.

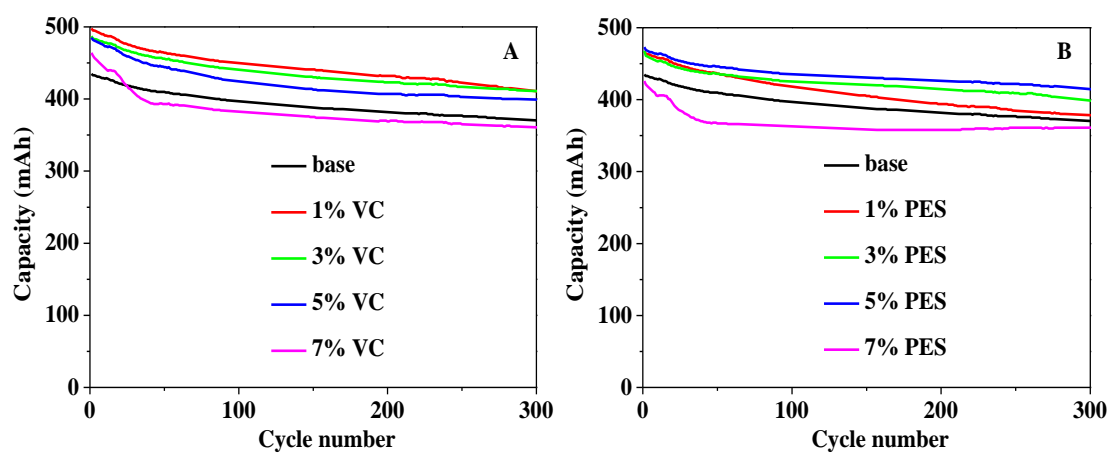


Figure S2. Cycling performance of $\text{LiMn}_2\text{O}_4/\text{graphite}$ batteries in 1.0 M LiPF_6 in EC-EMC (1:2) electrolytes without (base), with various contents of VC (A), and with various contents of PES (B) at 60°C . It can be seen from Figure S2 and Table 1 that the batteries using 3 wt% VC and 5% have the best performances after 150 cycles.

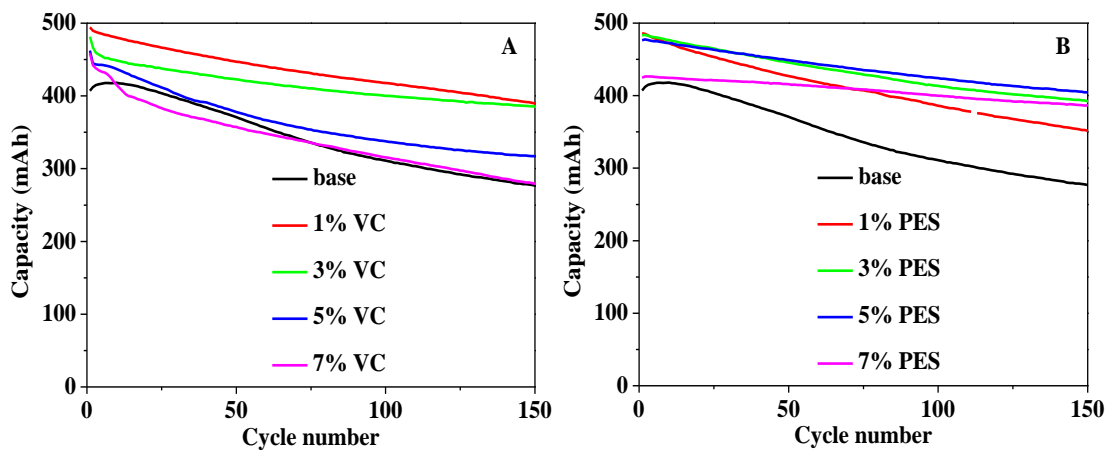


Table S1. Swell values of the batteries after 150 cycles with and without using additive.

Solvent	Additive	Swell value/%	Additive	Swell value/%
EC-EMC (1:2)	Base	36.4		
	1 wt% VC	9.6	1 wt% PES	26.7
	3 wt% VC	9.1	3 wt% PES	4.6
	5 wt% VC	31.4	5 wt% PES	3.4
	7 wt% VC	48.2	7 wt% PES	4.0