

Supporting Information

Effect of Fibrous Separators on the Performance of Lithium-Sulfur Batteries

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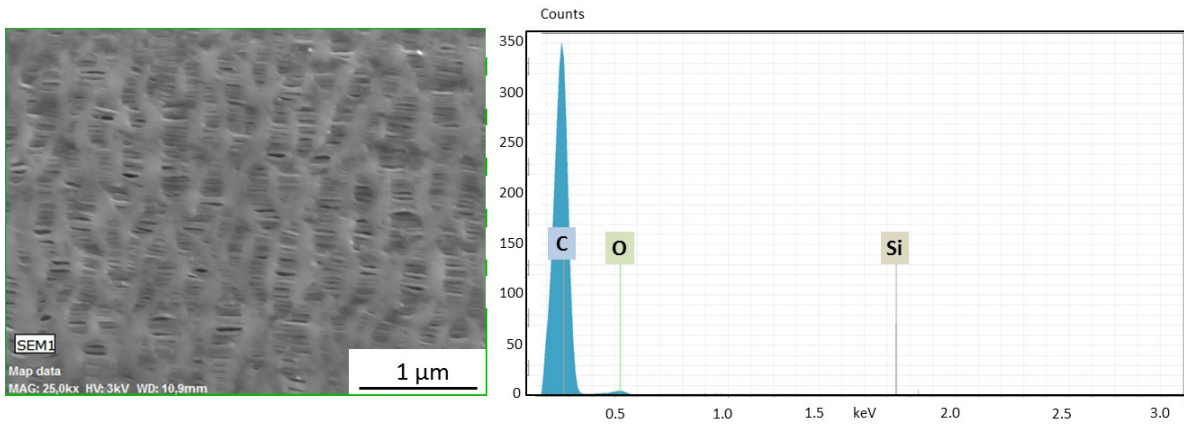


Figure S1:EDX spectra of Celgard separator.

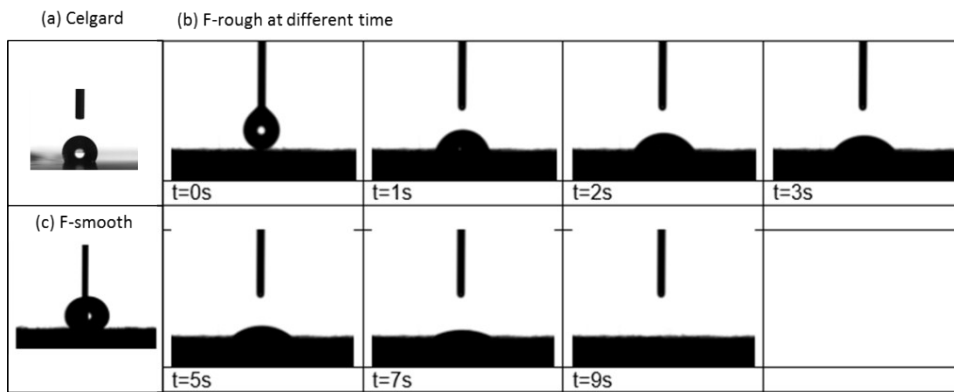


Figure S2: Contact angle measurements of different separators.

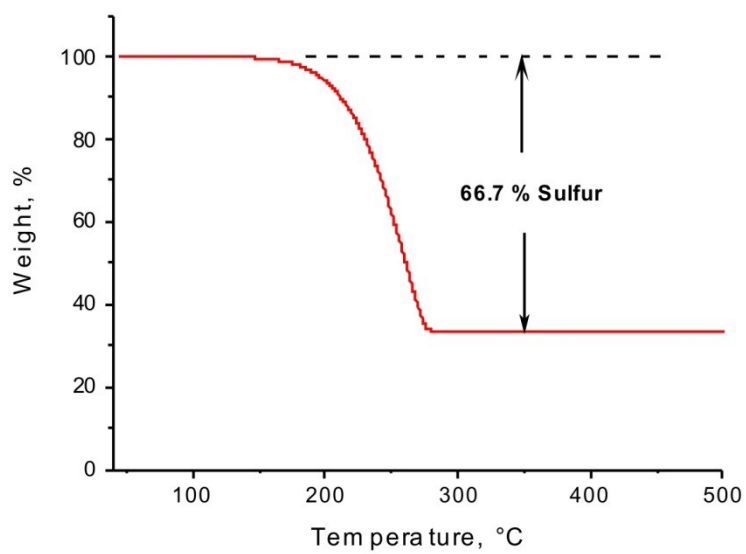


Figure S3: TGA results of carbon mixed with sulfur

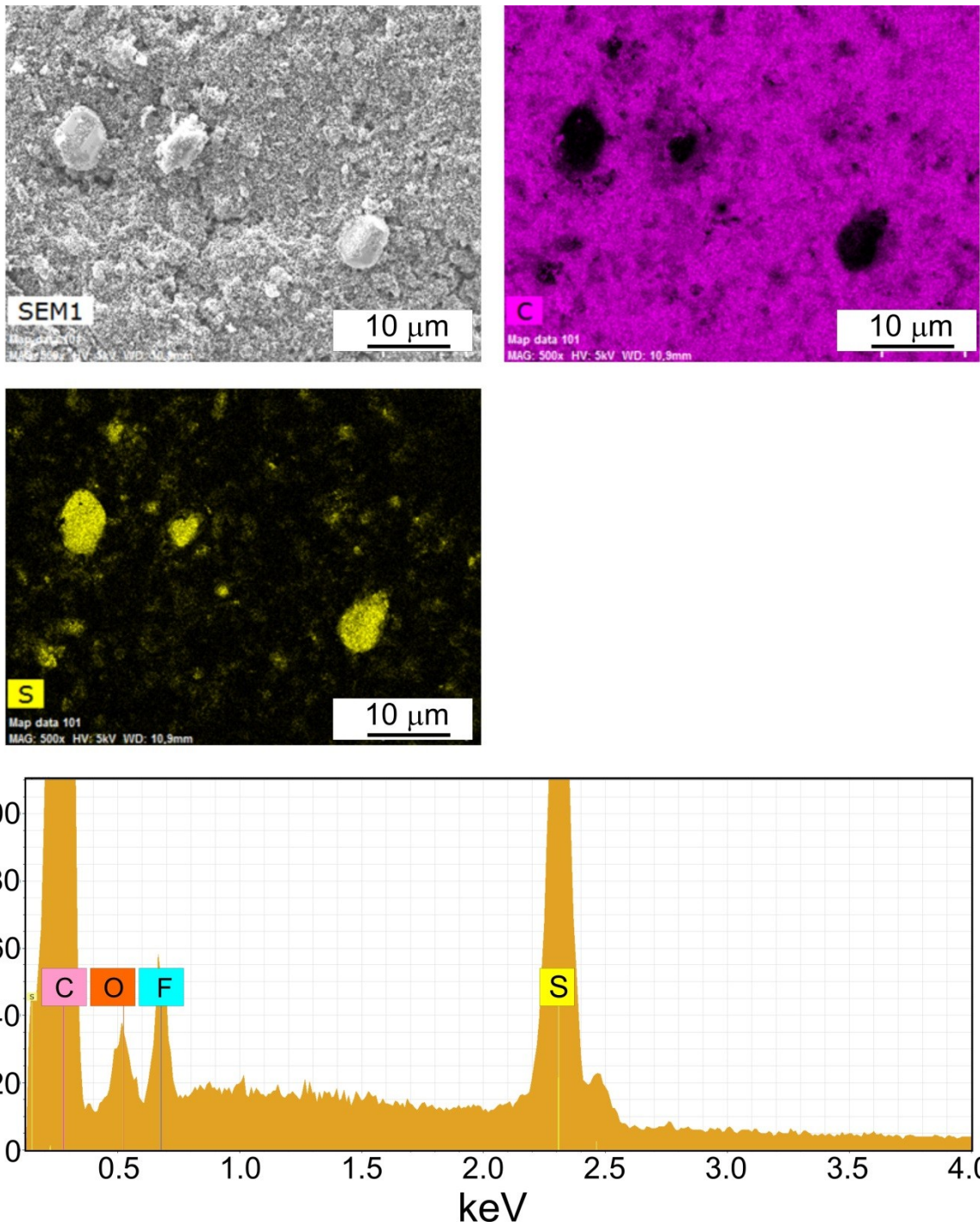


Figure S4: EDX results of carbon-sulfur cathode

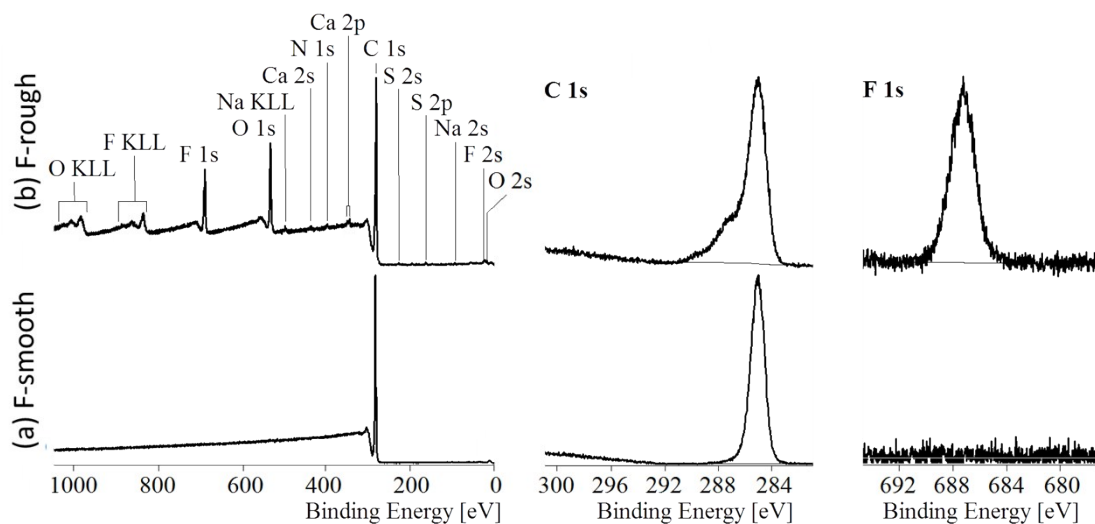


Fig S5: XPS wide-scan (left column), C 1s (middle column), and F 1s (right column) high-resolution element spectra of F-smooth (a) and F-rough (b) samples.

Table S1: Quantification report from XPS. BE and FWHM stand for “binding energy” and “full width at half maxima”, respectively.

Sample	Peak	Position BE (eV)	FWHM (eV)	Atomic Conc %	Mass Conc %
Celgard	C 1S	285.0	2.365	99.50	99.33
	O 1S	532.4	2.675	0.50	0.67
F-smooth	C 1S	285.0	2.466	100.00	100.00
F-rough	C 1S	285.0	3.448	79.02	71.57
	O 1S	532.4	3.386	12.37	14.92
	F 1S	686.4	3.392	6.52	9.34
	N 1s	400.0	1.417	0.63	0.67
	Na 1s	1070.2	2.309	0.31	0.53
	Si 2p	102.2	1.641	0.31	0.66
	S 2p	168.8	2.924	0.34	0.83
	Cl 2p	201.0	1.276	0.09	0.24
Ca 2p	348.0	2.279	0.41	1.24	

Table S2: Weight contribution of separators in all combination in 2032 coin cells.

Component	Weight (g)	Weight fraction of separator (%)						
		Cel	Cel 5x	F-rough	F-smooth	Cel + F-rough	Cel + F-smooth	
Li	0.0045	0.15	0.73	0.61	0.41	0.76	0.56	
Celgard:	0.0042							
Freudenberg_smooth	0.0118							
Freudenberg_rough	0.0175							
Coin cell parts	2.72							
Current collectors	Cu							0.036
	Ni							0.0175
Cathode	0.0036							
Electrolyte	0.057							
Total (with electrolyte)								2.8428