

Natural polymers for green supercapacitors

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Supplementary Materials

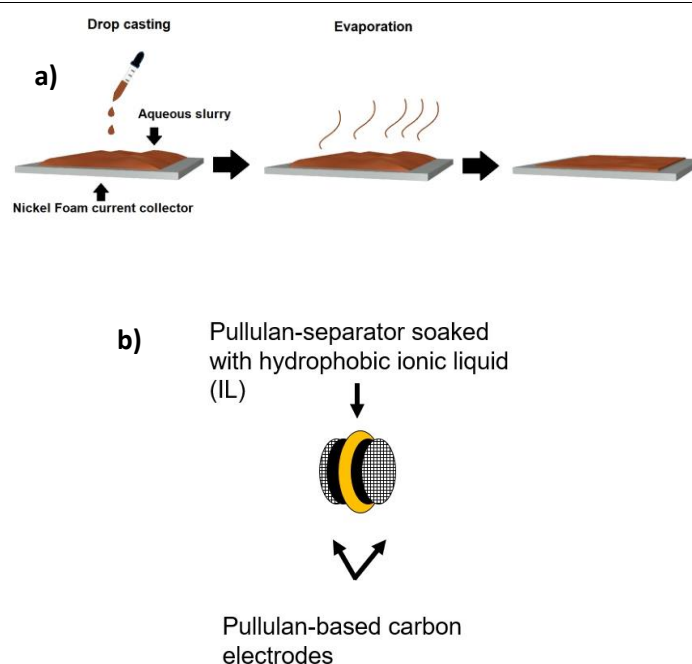


Figure S1. Schemes of (a) the casting preparation of the pullulan-based electrodes and (b) of the supercapacitor assembly.

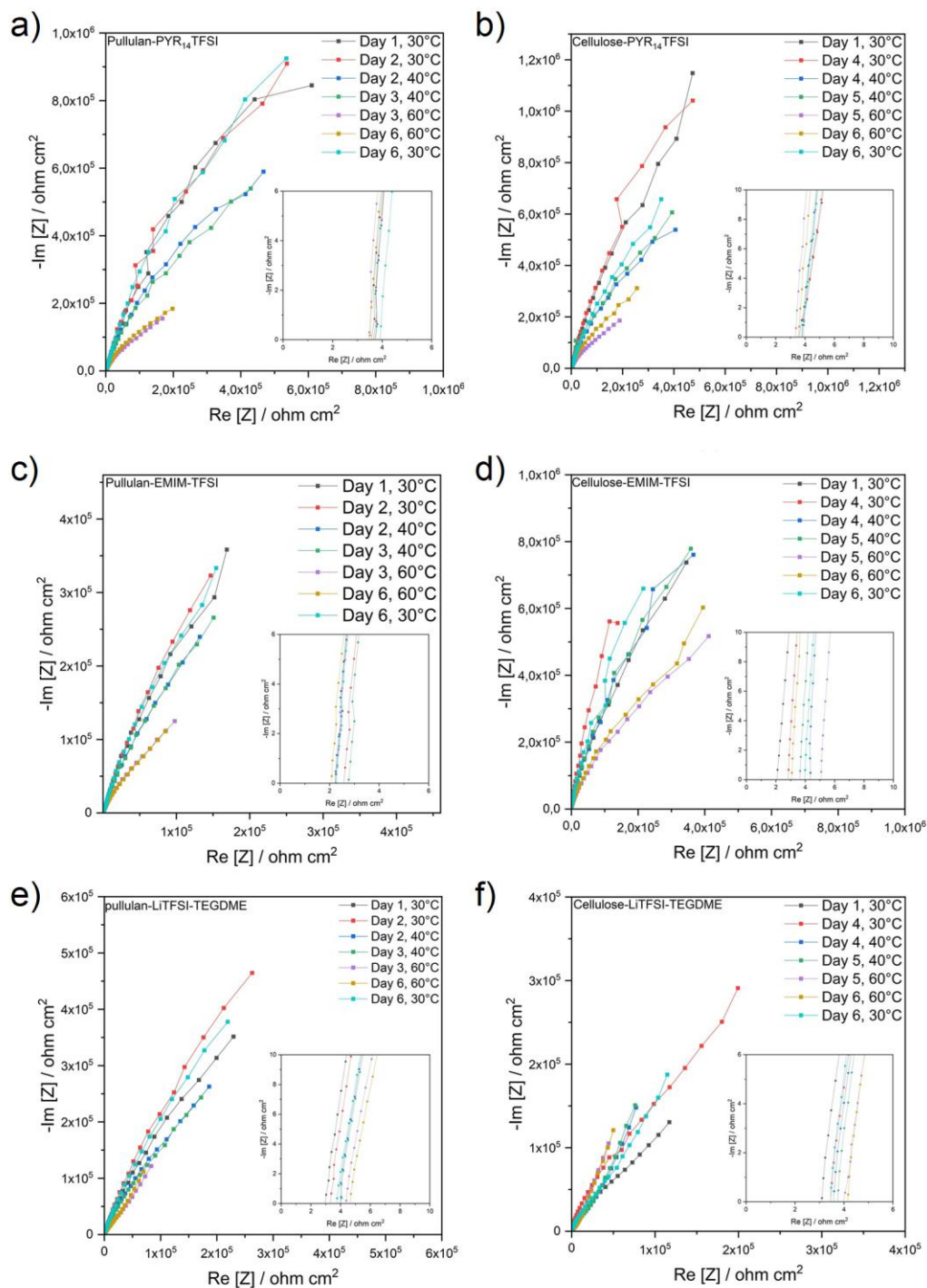


Figure S2. Nyquist plot of Pullulan electrospun membrane soaked with (a) PYR₁₄TFSI, (c) EmimTFSI, (e) 0.5 m LiTFSI TEGDME and Cellulose triacetate electrospun membrane soaked with (b) PYR₁₄TFSI, (d) EmimTFSI, (f) 0.5 m LiTFSI TEGDME.

Table S1. Resistance normalized by the plain area of Pullulan electrospun separator in different tested electrolytes.

Day, temperature (°C)	PYR ₁₄ TFSI (ohm cm ²)	EmimTFSI (ohm cm ²)	0.5 m LiTFSI in TEGDME (ohm cm ²)
day 1 at 30°C	3.57	2.24	2.96
day 2 at 30°C	3.64	2.58	3.31
day 2 at 40°C	3.72	2.22	3.98
day 3 at 40°C	3.69	2.77	4.01
day 3 at 60°C	3.44	2.26	4.37
day 6 at 60°C	3.50	2.07	4.63
day 6 at 30 °C	3.92	1.94	3.72

Table S2. Resistance normalized by the plain area of Cellulose triacetate electrospun separator in different tested electrolytes.

Day, temperature (°C)	PYR ₁₄ TFSI (ohm cm ²)	EmimTFSI (ohm cm ²)	0.5 m LiTFSI in TEGDME (ohm cm ²)
day 1 at 30°C	3.57	2.08	3.09
day 4 at 30°C	3.74	2.84	3.44
day 4 at 40°C	3.79	4.34	3.57
day 5 at 40°C	3.86	3.64	3.75
day 5 at 60°C	3.35	5.07	4.01
day 6 at 60°C	3.56	3.13	4.15
day 6 at 30 °C	3.86	3.97	3.45

Table S3. Resistivity of Pullulan electrospun separator in different tested electrolytes.

Day, temperature (°C)	PYR ₁₄ TFSI (kohm cm)	EmimTFSI (kohm cm)	0.5 m LiTFSI in TEGDME (kohm cm)
day 1 at 30°C	0.65	0.41	0.54
day 2 at 30°C	0.66	0.47	0.60
day 2 at 40°C	0.68	0.40	0.72
day 3 at 40°C	0.67	0.50	0.73
day 3 at 60°C	0.63	0.41	0.79
day 6 at 60°C	0.64	0.38	0.84
day 6 at 30 °C	0.71	0.35	0.68

Table S4. Resistivity of Cellulose triacetate electrospun separator in different tested electrolytes.

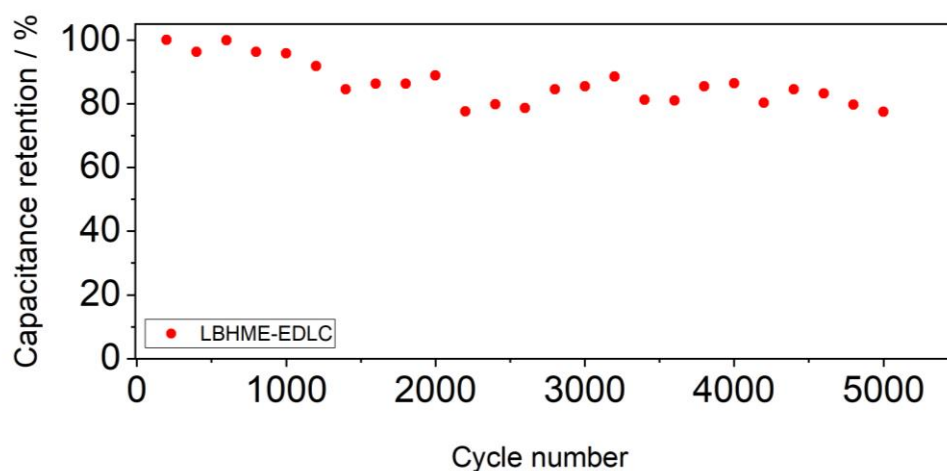
Day, temperature (°C)	PYR ₁₄ TFSI (kohm cm)	EmimTFSI (kohm cm)	0.5 m LiTFSI in TEGDME (kohm cm)
day 1 at 30°C	1.79	1.04	1.55
day 4 at 30°C	1.87	1.42	1.72
day 4 at 40°C	1.89	2.17	1.79
day 5 at 40°C	1.93	1.82	1.87
day 5 at 60°C	1.68	2.54	2.00
day 6 at 60°C	1.78	1.56	2.08
day 6 at 30 °C	1.93	1.98	1.72

Table S5. Mac Mullin number of Pullulan electrospun separator in different tested electrolytes.

Day, temperature (°C)	PYR ₁₄ TFSI	EmimTFSI	0.5 m LiTFSI in TEGDME
day 1 at 30°C	2	5	1
day 2 at 30°C	2	6	1
day 2 at 40°C	3	6	2
day 3 at 40°C	3	8	2
day 3 at 60°C	4	11	4
day 6 at 60°C	4	10	4
day 6 at 30 °C	2	4	1

Table S6. . Mac Mullin number of Cellulose triacetate electrospun separator in different tested electrolytes.

Day, temperature (°C)	PYR ₁₄ TFSI	EmimTFSI	0.5 m LiTFSI in TEGDME
day 1 at 30°C	5	13	3
day 4 at 30°C	6	18	4
day 4 at 40°C	7	33	5
day 5 at 40°C	8	27	5
day 5 at 60°C	11	65	10
day 6 at 60°C	11	40	10
day 6 at 30 °C	6	25	4

**Figure S3** Trend of the capacitance percentage normalized by the value at first cycle the as function of the cycle number (at 1 A g⁻¹, cell voltage cut-off: 0 V -3.2 V).