Supporting Information

Ionically conductive hydrogels constructed with the participation of aliphatic polycarbonates for multi-scenario flexible electronics and bioelectrical signal sensing

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1. Synthesis of MCC

5-methyl-5-carboxytrimethylene carbonate [1], prepared following a reported procedure, was dissolved in tetrahydrofuran (THF). Pd/C and $Pd(OH)_2/C$ were then introduced at room temperature, each at 0.5 wt% relative to the monomer. The mixture was stirred under a H_2 atmosphere for 48 h. Upon completion, the catalysts were removed by filtration, and the solvent was removed under reduced pressure to afford a white solid crude product. The crude material was recrystallized from ethyl acetate to yield the target compound, MCC.

2. Synthesis of PEG-b-PMCC

MCC and PEG6000 were charged into a polymerization tube at a molar ratio of 15:1. A toluene solution of stannous octoate was then added, with the molar ratio of MCC to stannous octoate set to 500:1. The tube was subjected to three vacuum–inert gas purge cycles to remove residual oxygen and moisture, and then flame-sealed under vacuum. The sealed tube was heated at 140 °C for 12 h. After cooling to room temperature, the tube was opened to collect the polymerization product.

3. ^{1}H NMR of PEG-b-PMCC

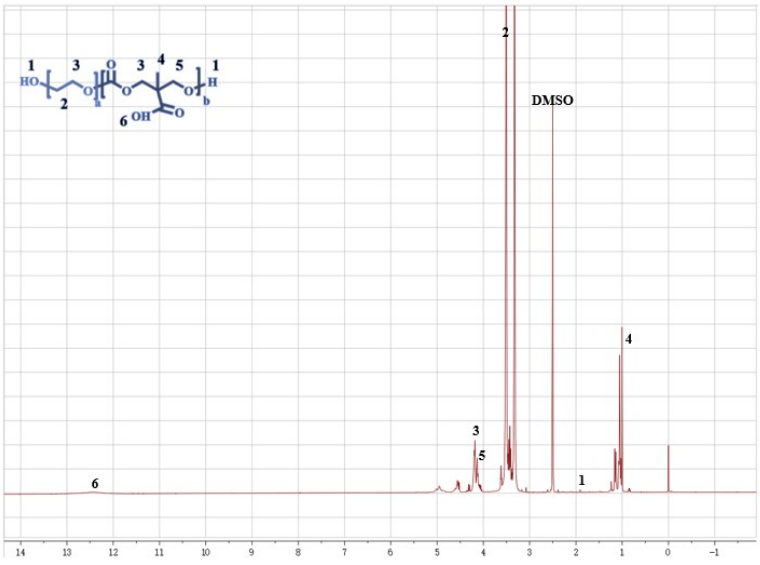

Figure S1 ^{1}H NMR of PEG-b-PMCC

4. LC-MS results of Al(TFSI)$_3$

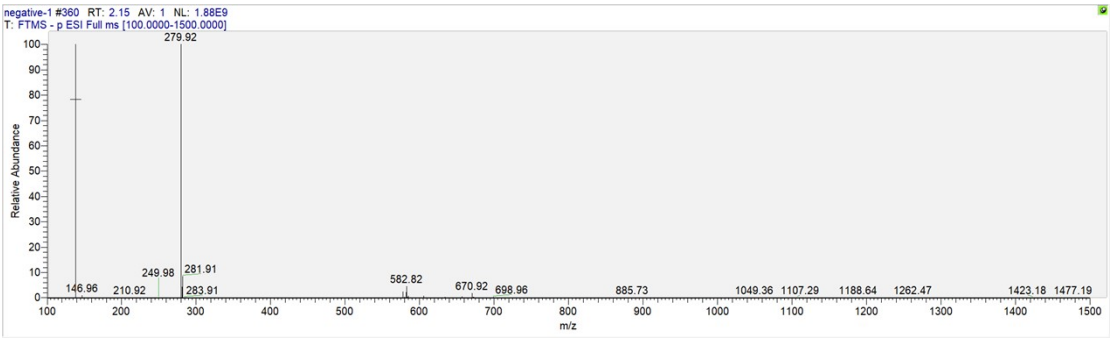

Figure S2 LC-MS results of Al(TFSI)$_3$

5. EDS results of Al(TFSI)$_3$

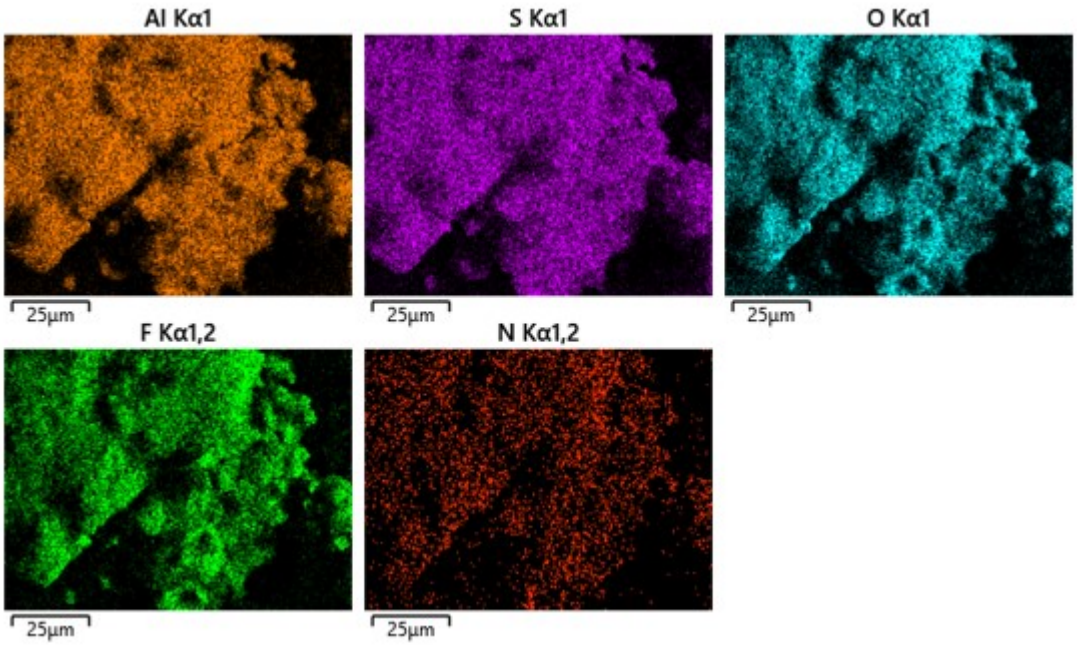

Figure S3 EDS results of Al(TFSI)$_3$

6. Performance comparison

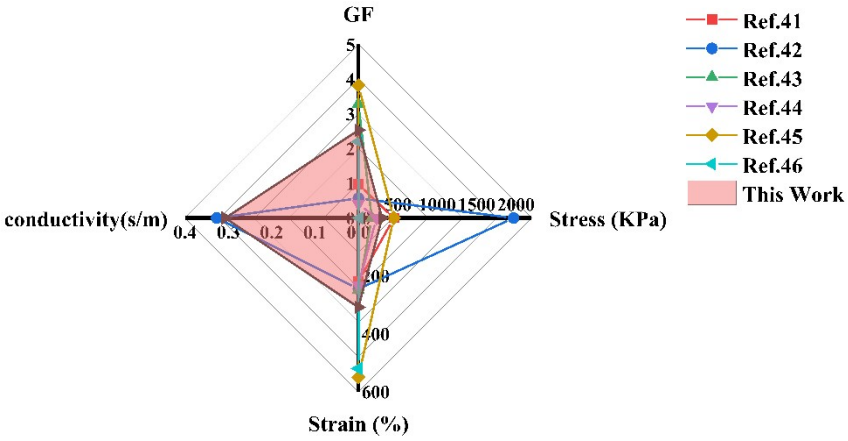

Figure S4 Performance comparison

References

[1] Yao, P. Li, X. Liu, J. Hu, L.Yang. COLLOID. POLYM. SCI. 293 (2015) 3049-3059