

Supporting Information

Enhanced Cycling Stability of Li-O₂ Batteries by Using a Polyurethane/SiO₂/Glass Fiber Nanocomposite Separator

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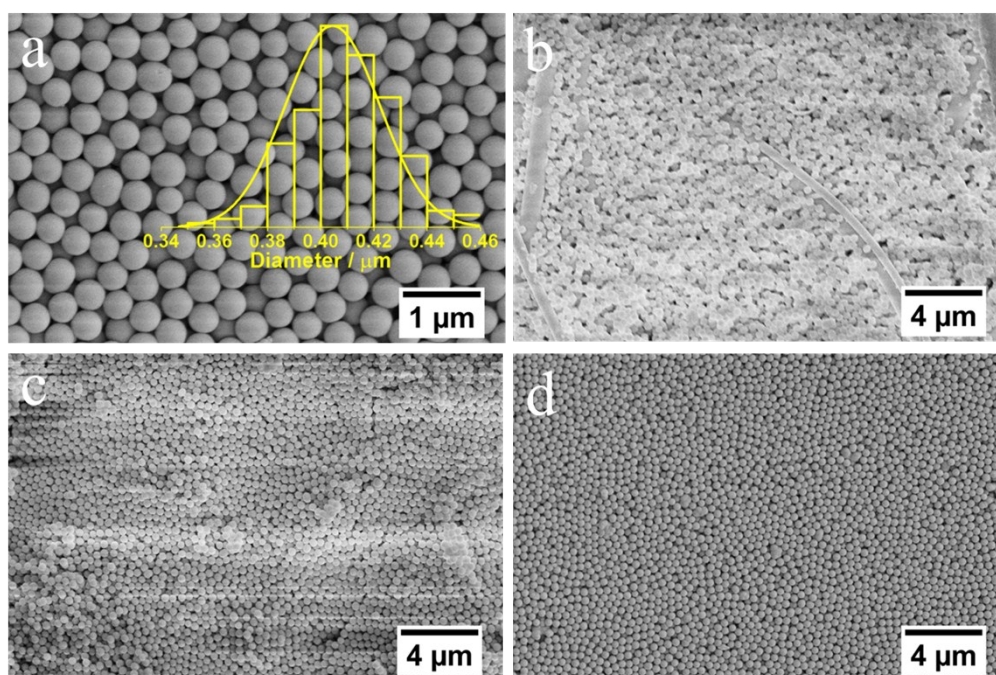


Fig.S1 SEM images of the GF separator dipped in the SiO₂ gel nanoparticle suspension: a— SiO₂ gel nanoparticles and size distribution; b— dipping once; c— dipping twice; d— dipping thrice.

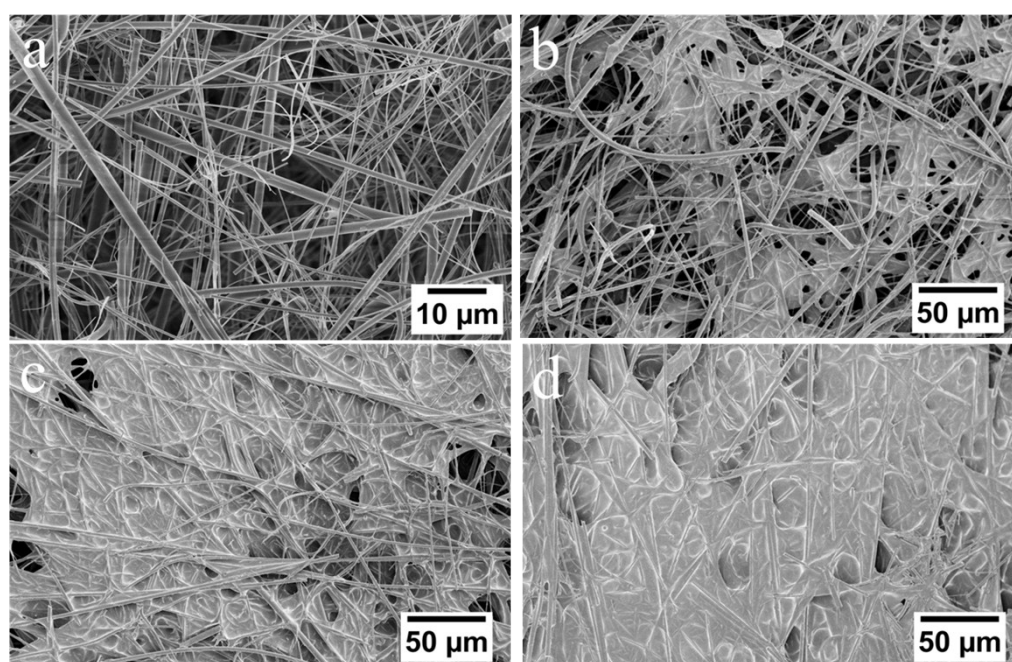


Fig.S2 SEM images of the GF separator brushed with the PU NMP solution: a— GF fiber network; b—coating once; c—coating twice; d—coating thrice.

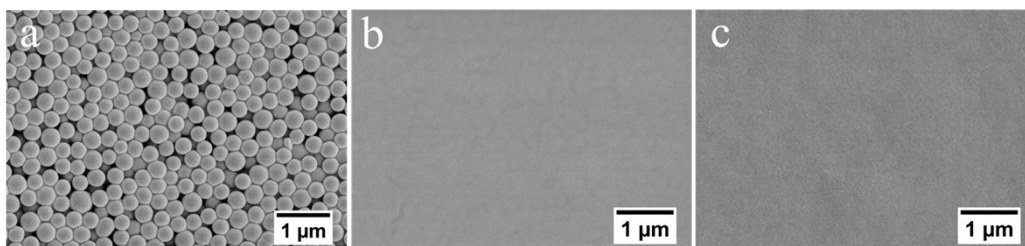


Fig.S3 SEM images of the SiO₂/GF separator brushed with the PU NMP solution once (a), twice (b) and thrice (c)

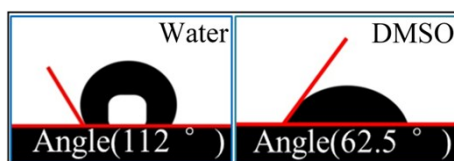


Fig.S4 Contact angle measurement on the PU/GF separator by water and DMSO droplets

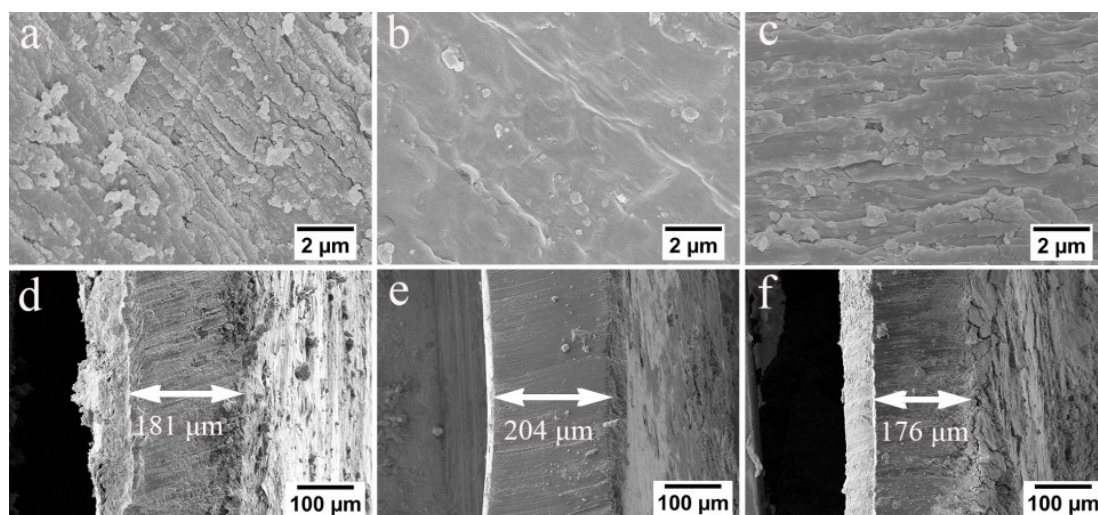


Fig.S5 Surface and cross-section SEM micrographs of the Li anode at 30th cycles in the cell with the GF separator (a and d), and the Li anodes at 60th cycles with the SiO₂/GF (b and e) and PU/GF separators (c and f)

Table S1 Loading amounts of SiO₂ nanoparticles and PU in the PU/SiO₂/GF separators

Separator samples	Weight of GF (g)	Weight of SiO ₂ /GF (g)	*Loading of SiO ₂ (g)	Weight of PU/SiO ₂ /GF (g)	#Loading of PU (g)
1	0.0321	0.1205	0.0885	0.1554	0.0349
2	0.0321	0.1210	0.0889	0.1551	0.0341
3	0.0318	0.1210	0.0892	0.1544	0.0334
4	0.0322	0.1208	0.0886	0.1551	0.0343
5	0.0319	0.1212	0.0893	0.1556	0.0344
6	0.0321	0.1220	0.0899	0.1552	0.0332
7	0.0320	0.1226	0.0906	0.1560	0.0334
8	0.0322	0.1200	0.0878	0.1546	0.0360
9	0.0319	0.1225	0.0906	0.1548	0.0323
10	0.0320	0.1205	0.0885	0.1561	0.0356
Average value (g)	0.0320	0.1212	0.0892	0.1552	0.0342

* The loading amount of SiO₂ nanoparticles is calculated by: $W_{SiO_2} = W_{SiO_2/GF} - W_{GF}$

The loading amount of PU is estimated by: $W_{PU} = W_{PU/SiO_2/GF} - W_{SiO_2/GF}$