Supporting Information

# A novel bi-functional double-layer rGO-PVDF/PVDF composite nanofiber membrane separator with enhanced thermal stability and effective polysulfide inhibition for high-performance lithium-sulfur batteries

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Table S1. Elemental analysis and electrical conductivity results of rGO.

| Sample | Carbon (wt.%) | Hydrogen (wt.%) | Nitrogen (wt.%) | Oxygen (wt.%) | Conductivity (S $cm^{-1}$) |
|---|---|---|---|---|---|
| **rGO** | 85.51 | 1.11 | 0.71 | 12.67 | 2.1 |

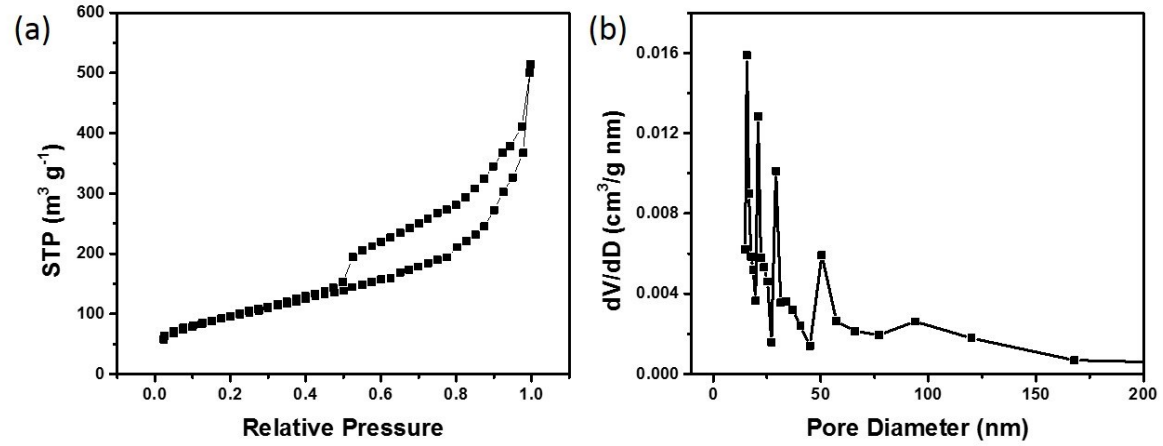


Figure S1. (a) Nitrogen adsorption-desorption isotherms of rGO powders. (b) BJH pore-size distributions of rGO powders.

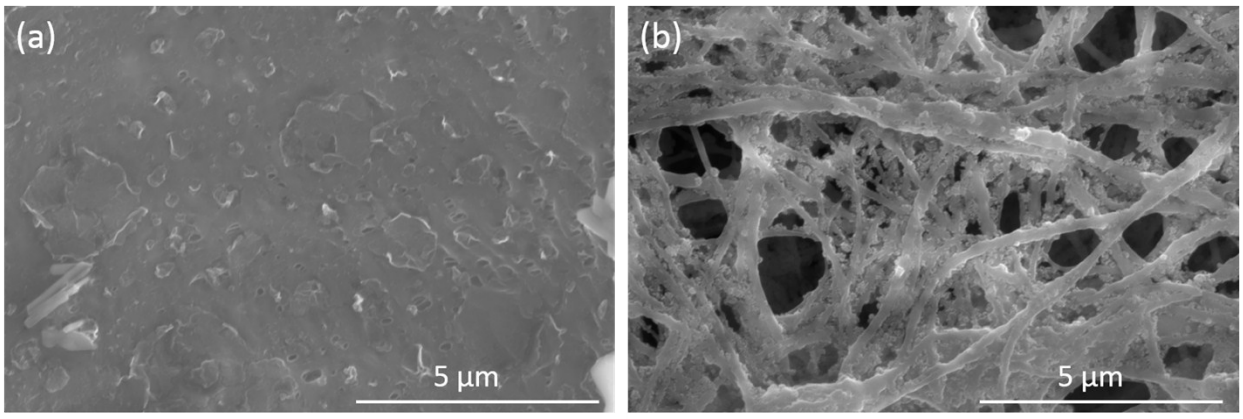


Figure S2. SEM images of (a) PP and (b) rGO-PVDF/PVDF-2 separators towards Li metal side after 100 cycles at 1C.

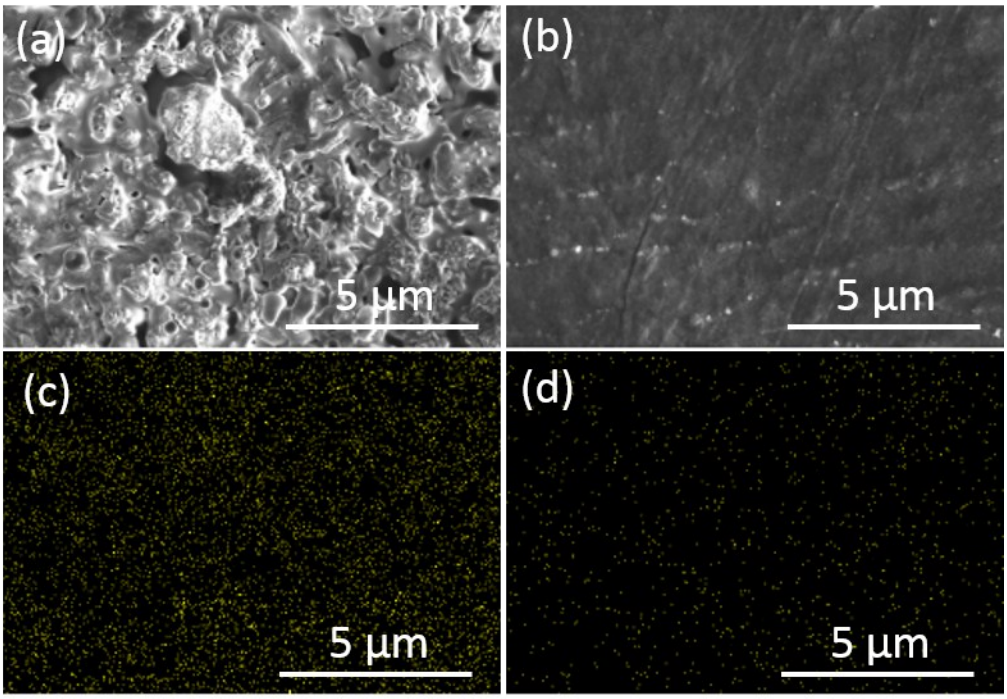


Figure S3. SEM images of Li metal anode surface with (a) PP and (b) rGO-PVDF/PVDF-2 separators after 200 cycles at 1C, (c, d) corresponding S mapping of (a, b), respectively.