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Electronic Supplementary Information

Free-standing Carbon Nanofiber Interlayer for High-performance Lithium-Sulfur Batteries

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#Equal Contribution

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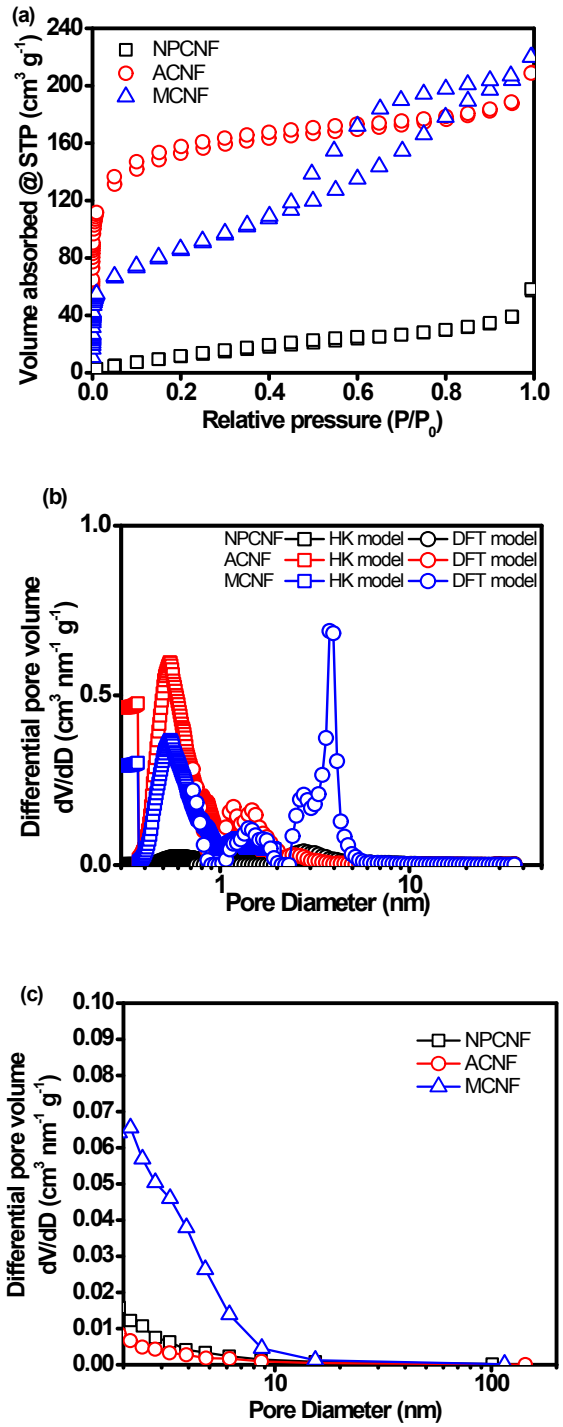

Fig. S1. Porosity measurements of NPCNF, ACNF, and MCNF nanofibers: (a) nitrogen sorption isotherms, (b) pore size distribution with Horvath-Kawazoe (HK) and density functional theory (DFT) method, (c) pore size distribution with Barrett-Joyer-Halenda (BJH) method.

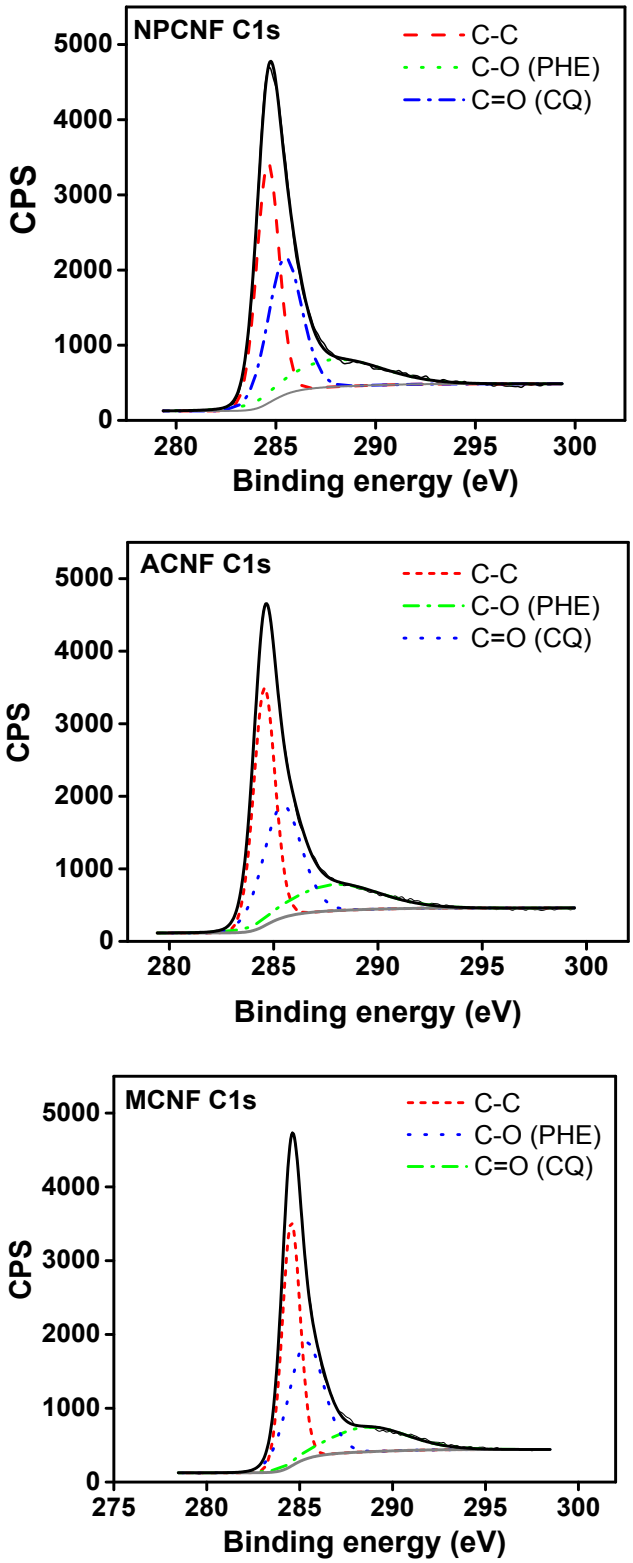

Fig. S2. Deconvoluted C1s XPS peaks for NPCNF, ACNF, and MCNF interlayers.

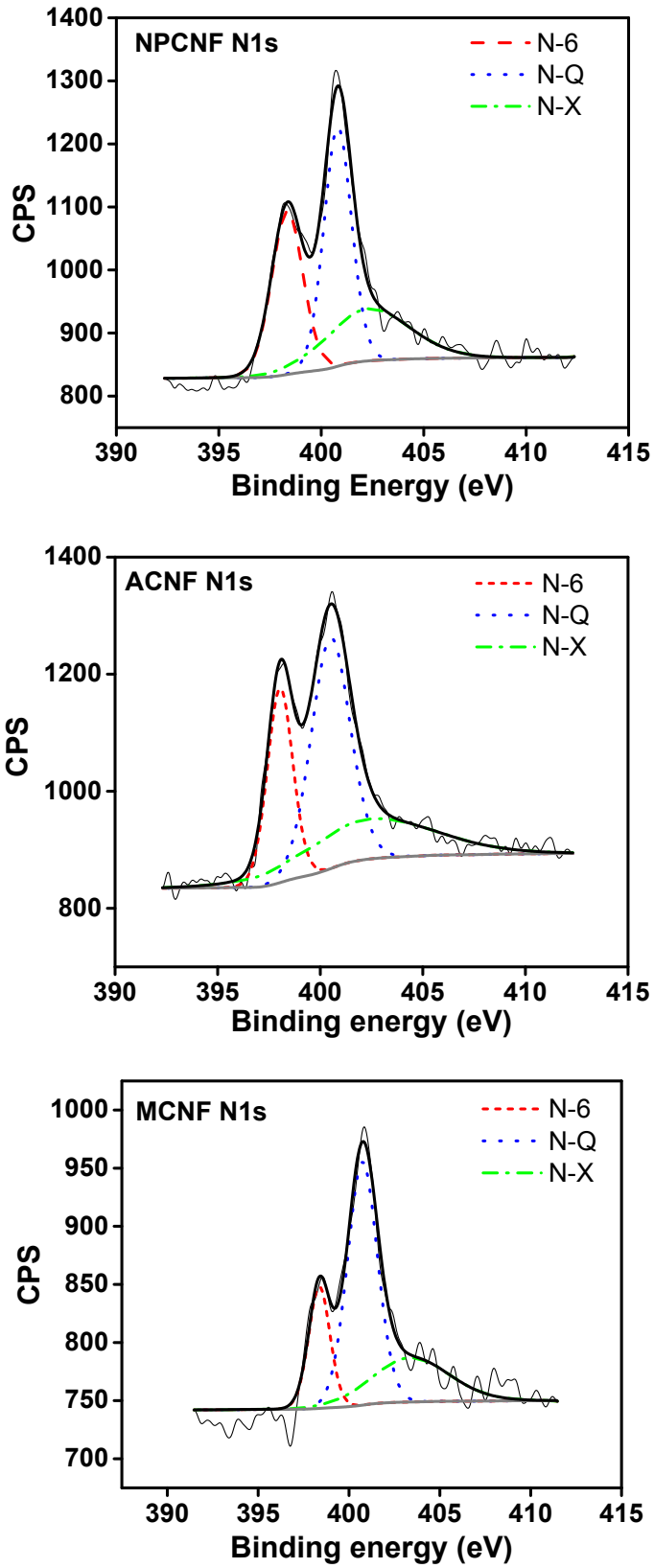

Fig. S3. Deconvoluted N1s XPS peaks for NPCNF, ACNF, and MCNF interlayers.

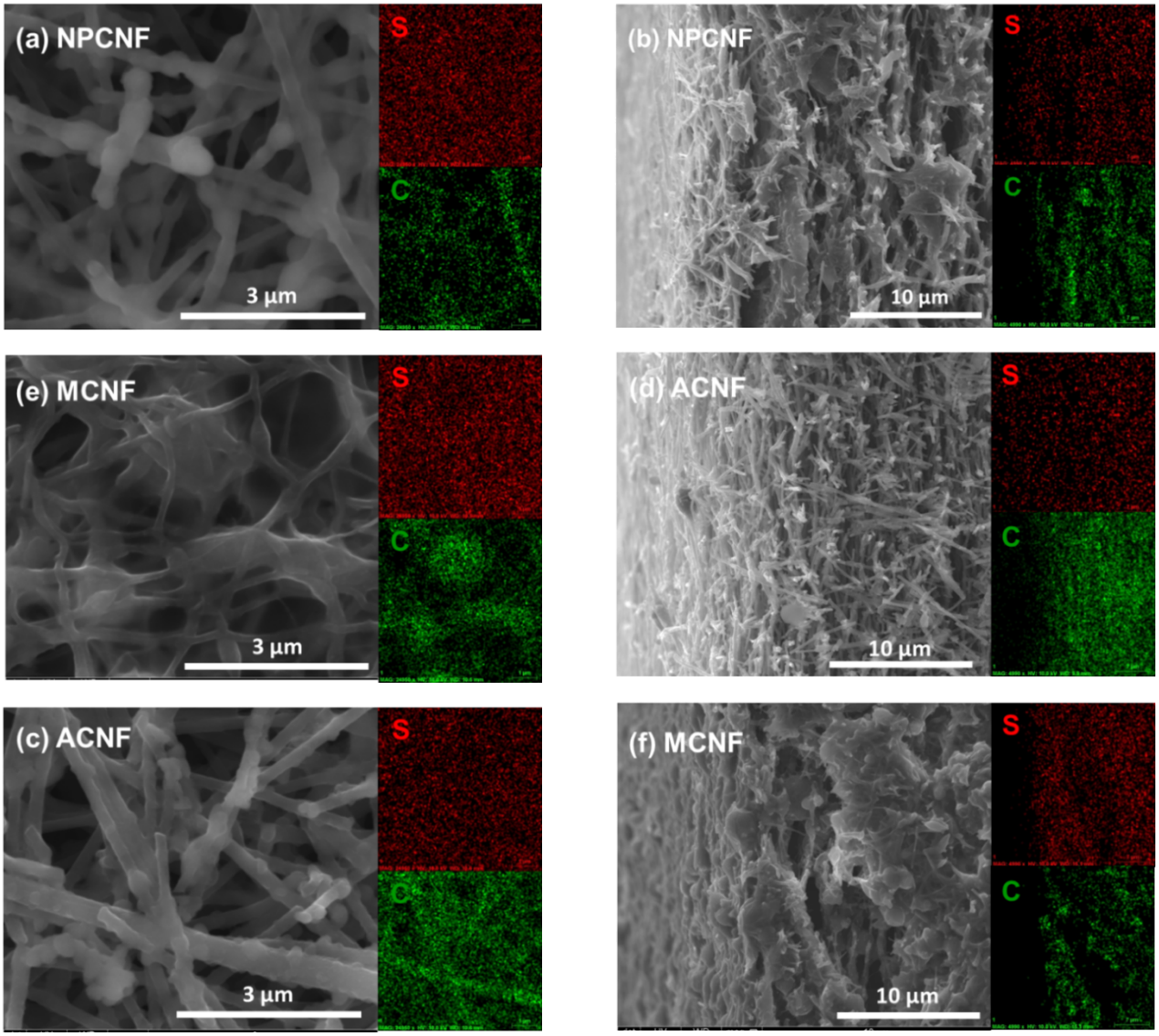

Fig. S4. SEM and EDS mapping of (a,c,e) surface and (b, d, f) cross-section of NPCNF, ACNF, and MCNF interlayers after 100 discharge cycles showing uniform distribution of sulfur throughout the nanofiber matrix.

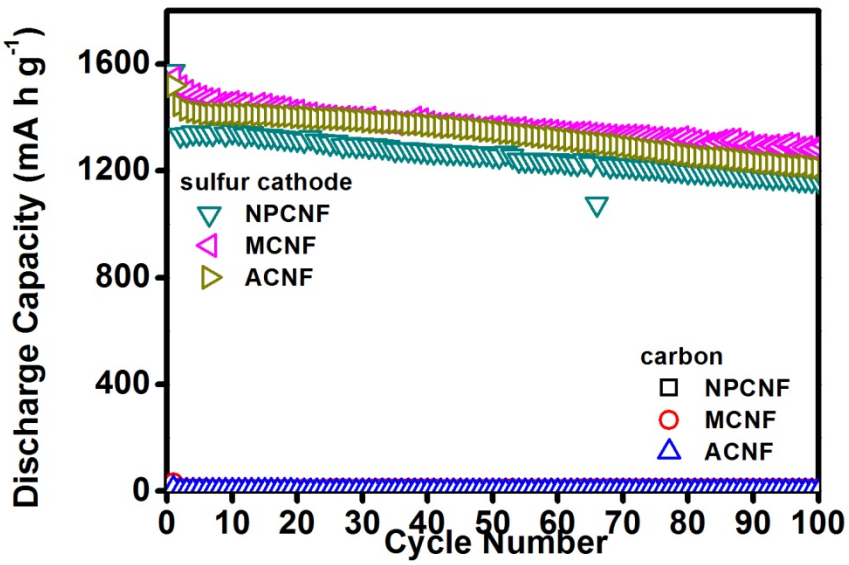

Fig. S5. Control testing on the interlayers alone at the same current density as the complete Li-S cell (with interlayer) and comparison with Li-S cells with interlayers showing the negligible contribution of the capacity from carbon nanofiber interlayer.