

## Supporting Information

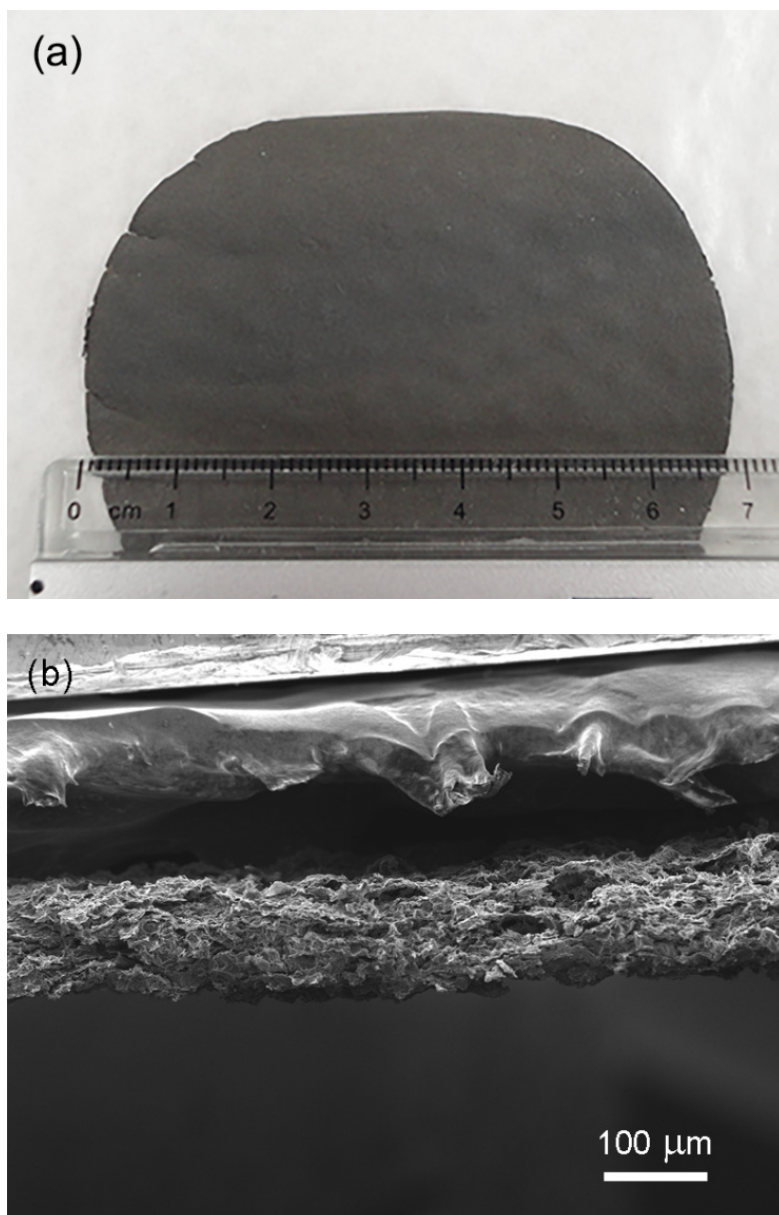
### **Free-Standing Graphene-based Porous Carbon Films with Three-Dimensional Hierarchical Architecture for Advanced Flexible Lithium-Sulfur Batteries**

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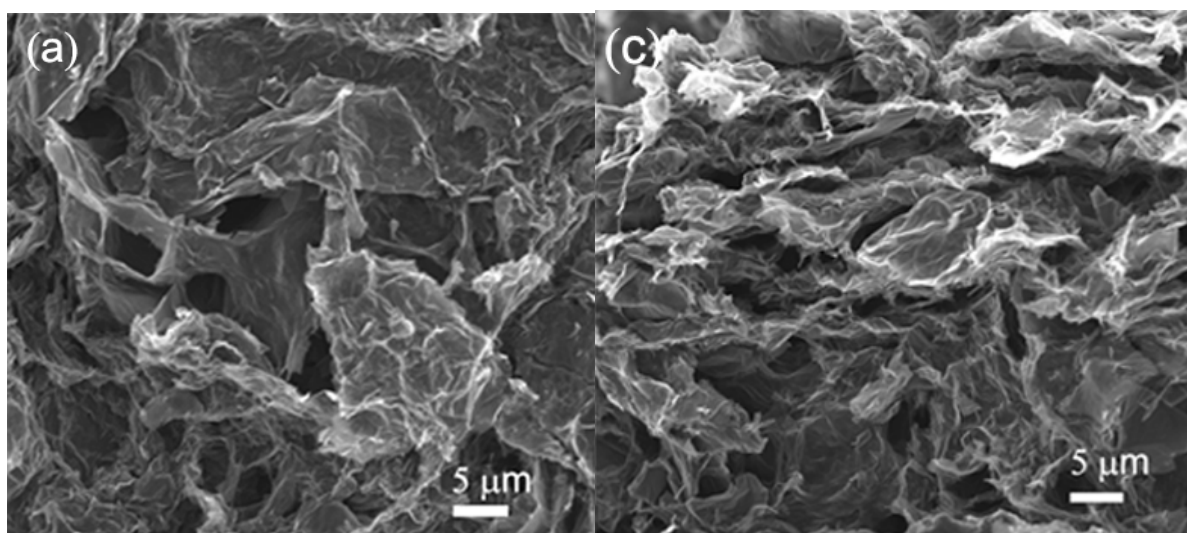
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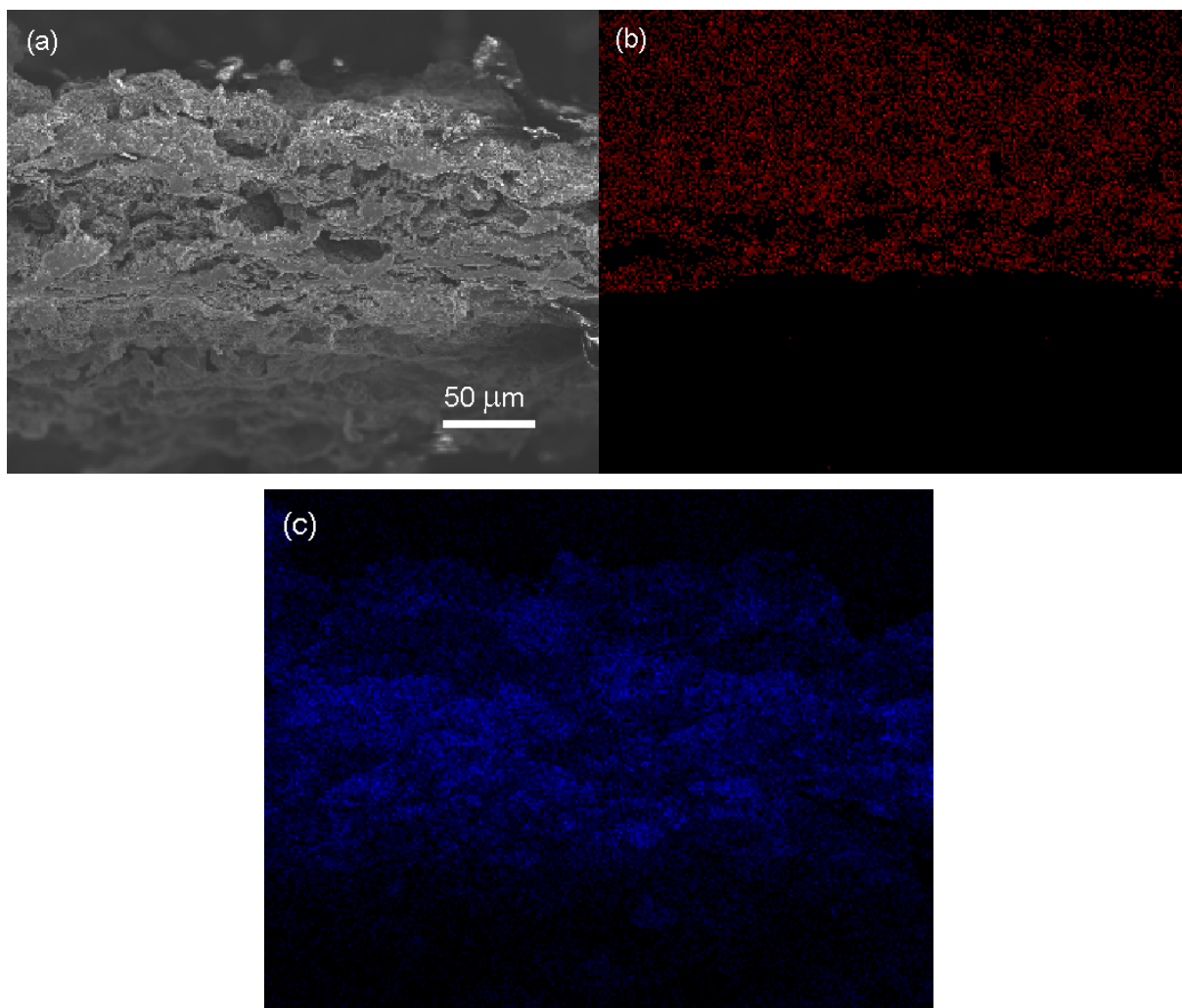
Keywords: Graphene, Porous carbon, Free-standing films, Hierarchical architecture, Lithium-sulfur batteries.



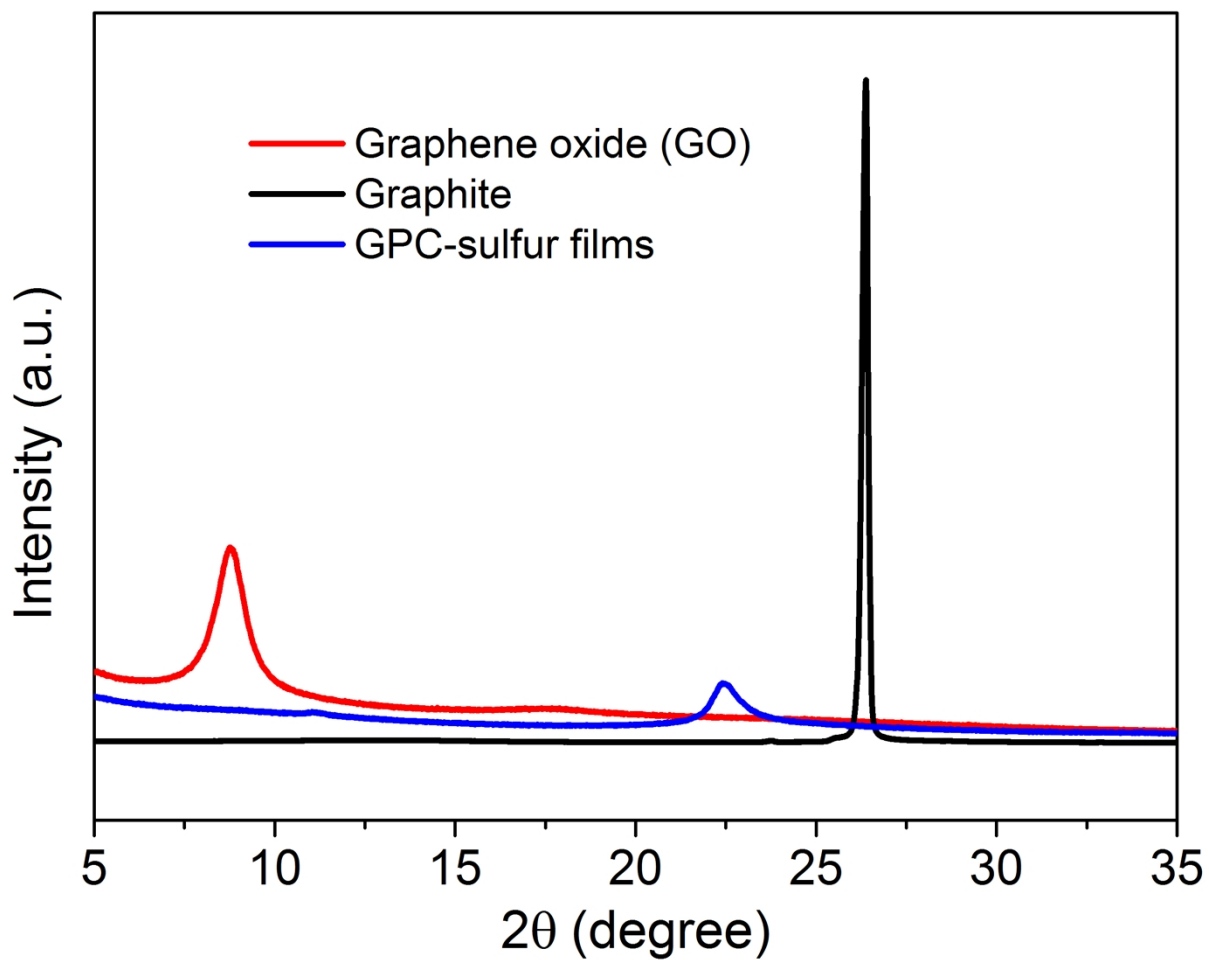
**Figure S1.** (a) Optical and (b) SEM photographs of free-standing GPC-sulfur films.



**Figure S2.** (a) Top-view and (b) cross-sectional magnified images of GPC-sulfur films.



**Figure S3.** (a) SEM image of GPC-sulfur films and their elemental maps of (b) carbon and (c) sulfur.



**Figure S4.** XRD patterns of graphite, GO, and GPC-sulfur films.

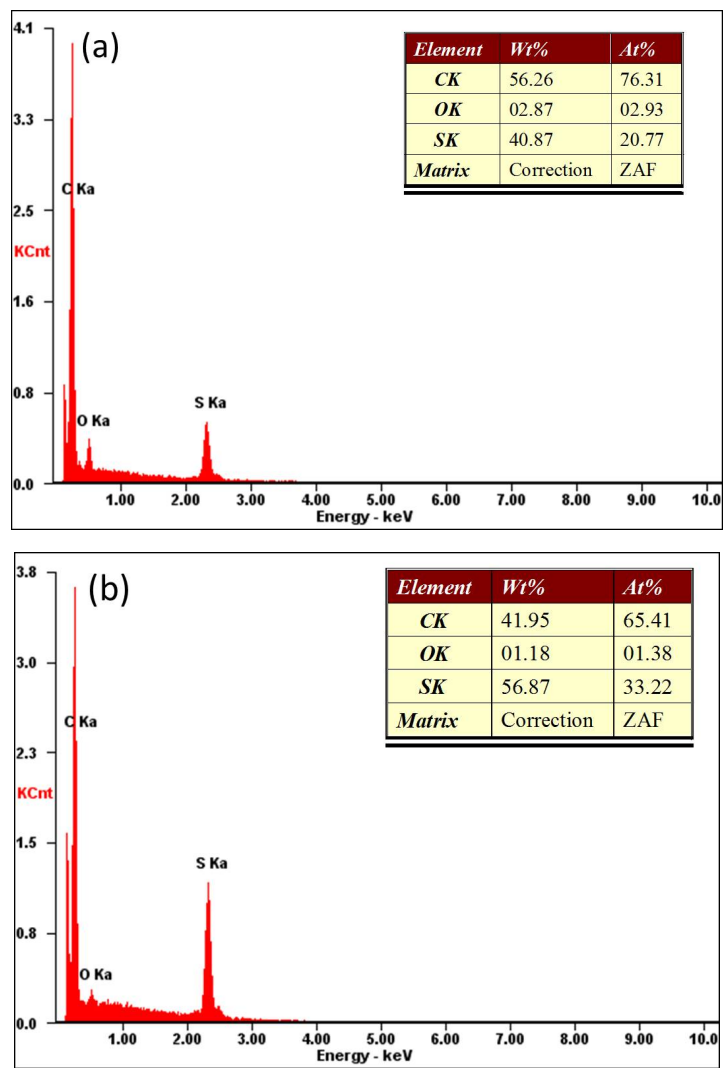
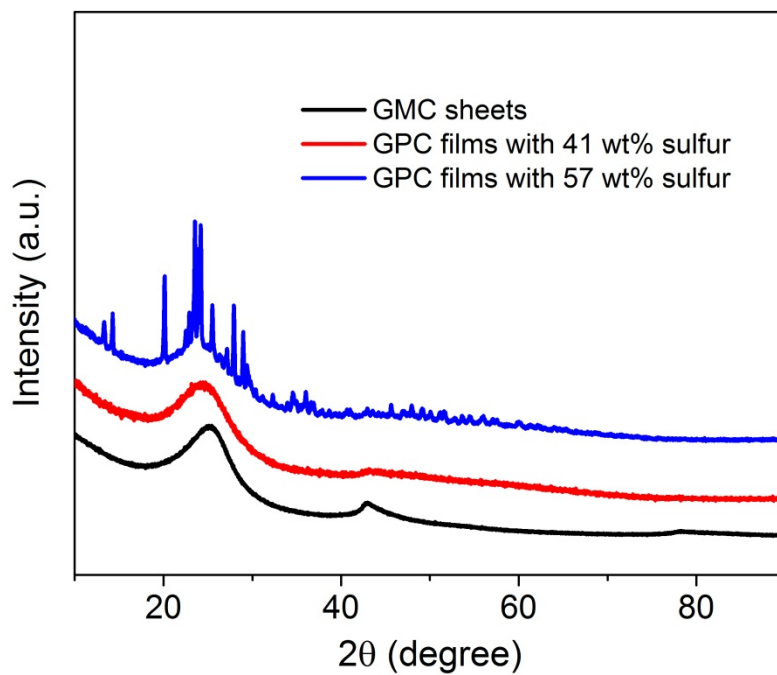
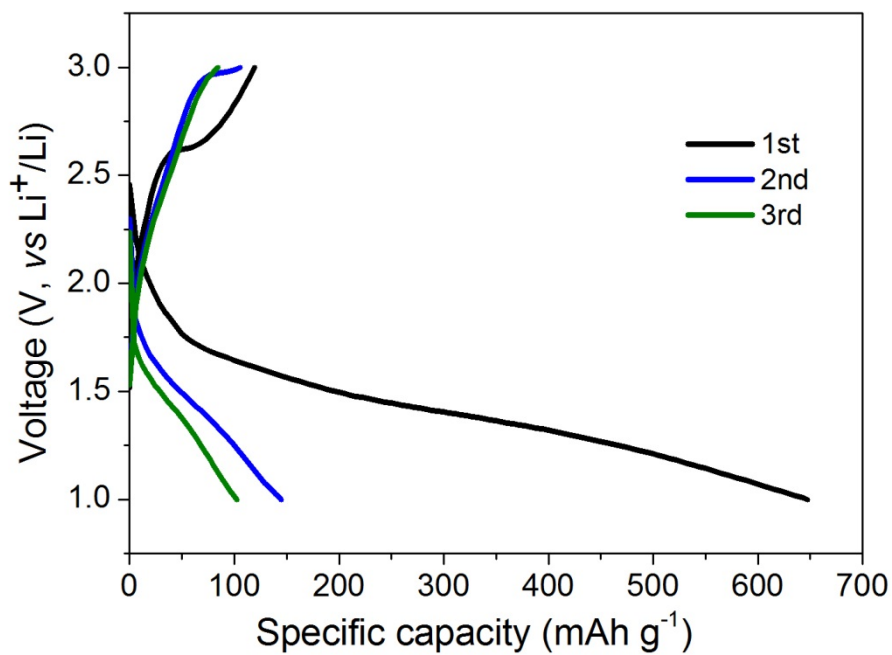


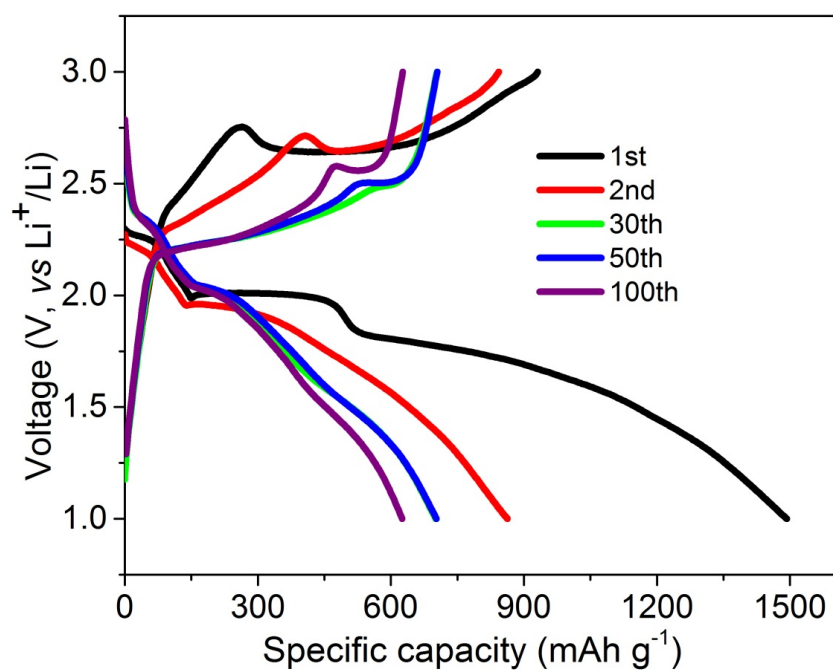
Figure S5. EDX patterns of GPC films with 41 and 57 wt% sulfur.



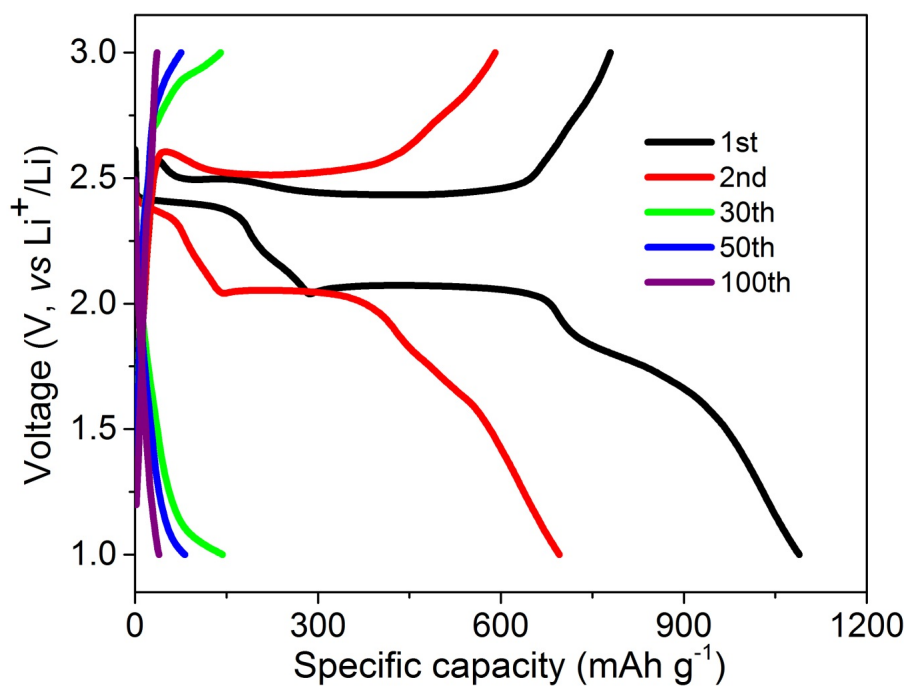
**Figure S6.** XRD patterns of GMC sheets; GPC films with 41 and 57 wt%.



**Figure S7.** The discharge-charge voltage profiles of GPC films without sulfur at 0.2C.



**Figure S8.** The discharge-charge voltage profiles of GPC films with 57 wt% sulfur at 0.2C.



**Figure S9.** The discharge-charge voltage profiles of graphene-based films with 52 wt% sulfur at 0.2C.