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Supplementary information

# Three-dimensional porous graphene-like synthesized from biocarbon via low-temperature graphitization for supercapacitor

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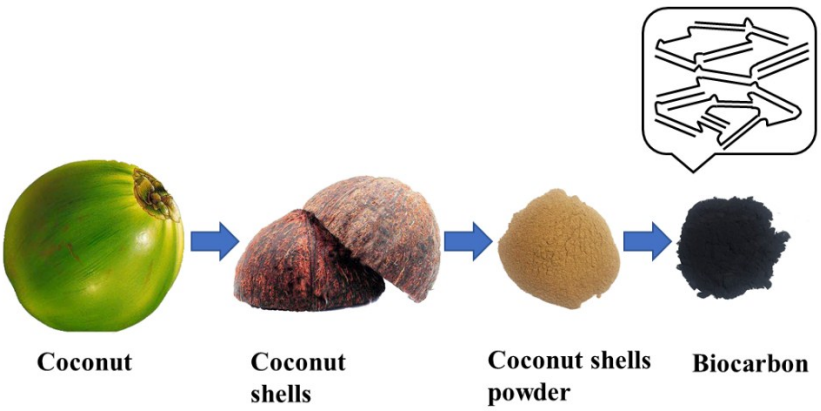


**Fig. 1S.** Synthetic procedure of the biocarbon used herein.

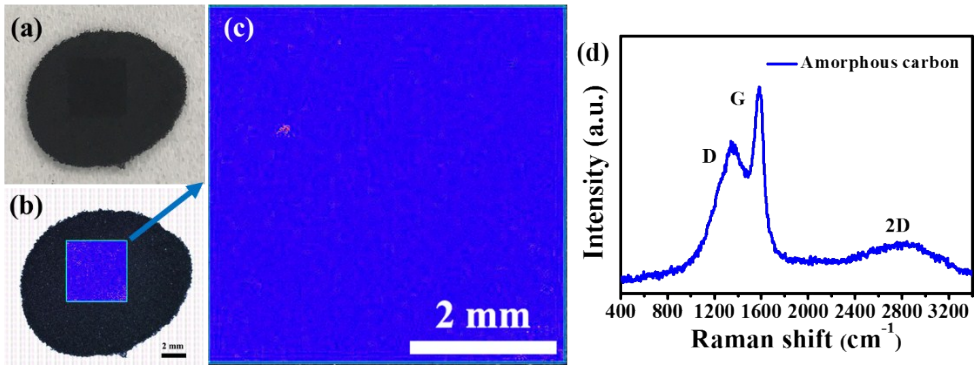


**Fig. 2S.** Raman mapping of the biocarbon used herein.

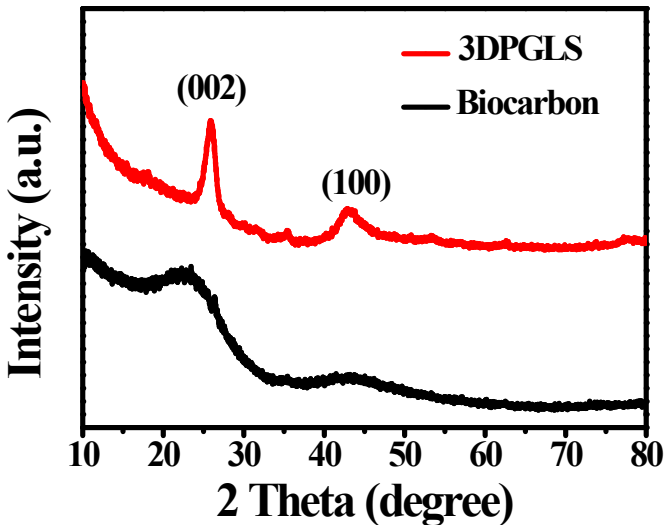


**Fig. 3S.** XRD patterns of the 3DPGLS and biocarbon samples.

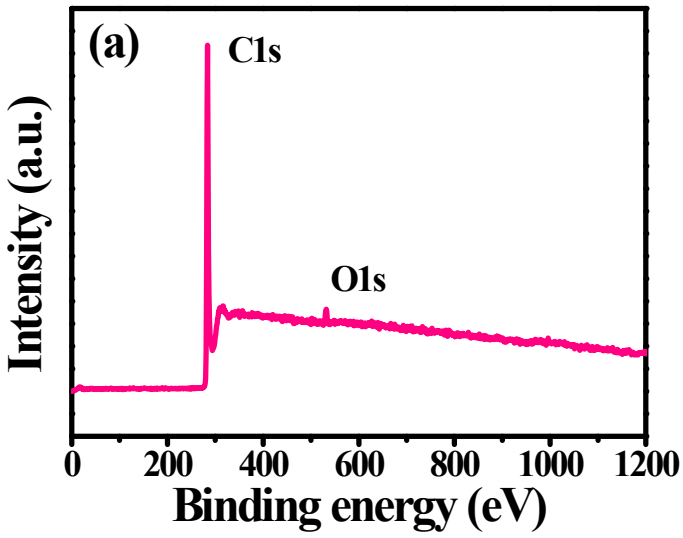


**Fig. 4S.** XPS spectra of the 3DPGLS sample.

| Sample | Yield<br>% | Tapping density<br>g/cm$^3$ | $S_{BET}$<br>m$^2$/g | Conductivity<br>S/cm |
|---|---|---|---|---|
| 3DPGLS | 32.93% | 0.24 | 1506.19 | 32.14 |

**Table S1**. Characteristics of the 3DPGLS sample.

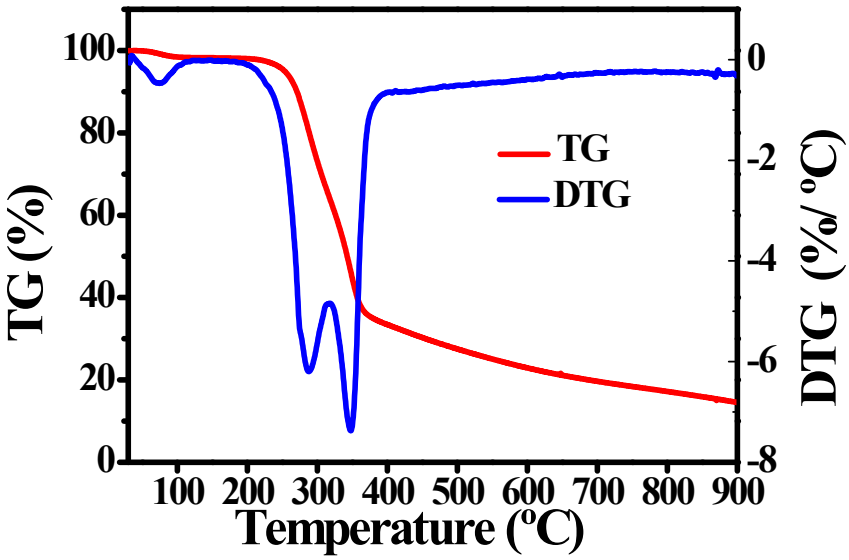


**Fig. 5S.** TG and DTG curves of the biomass sample used herein.

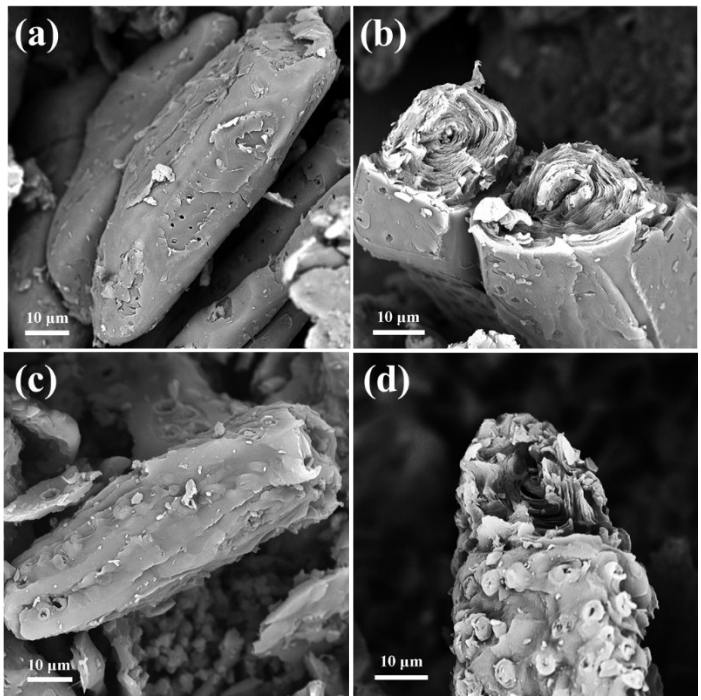


**Fig. 6S.** SEM images biomass tracheid (a) and its section (b), and biocarbon (c) and its section (d).

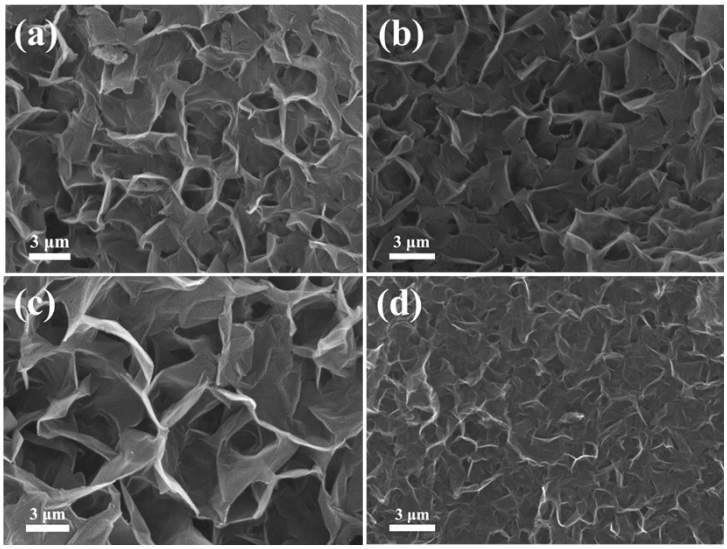


**Fig. 7S.** SEM images of 3DPGLS samples obtained from different biocarbons: walnut shell (a), pistachio shell (b), apricot shell (c), and hazelnut shell (d).

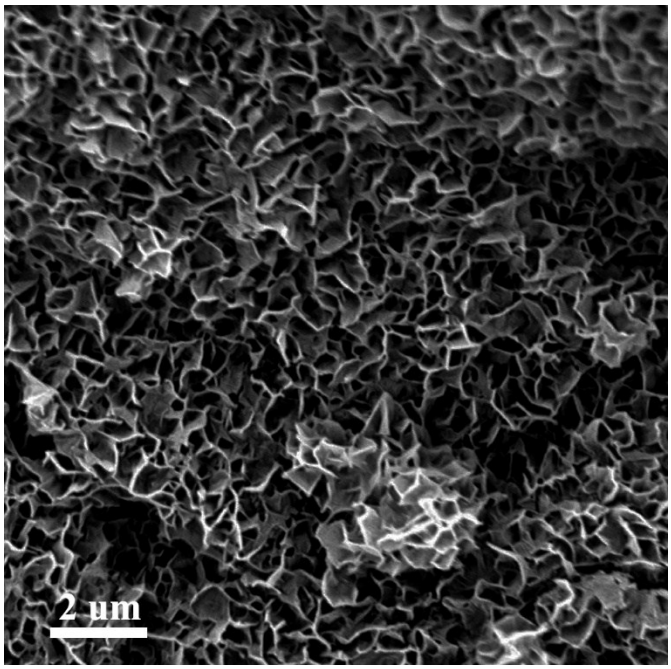


**Fig. 8S.** SEM image of 3DPGLS using $Na_2CO_3$ as a catalyst.