materials

# Supplementary Information

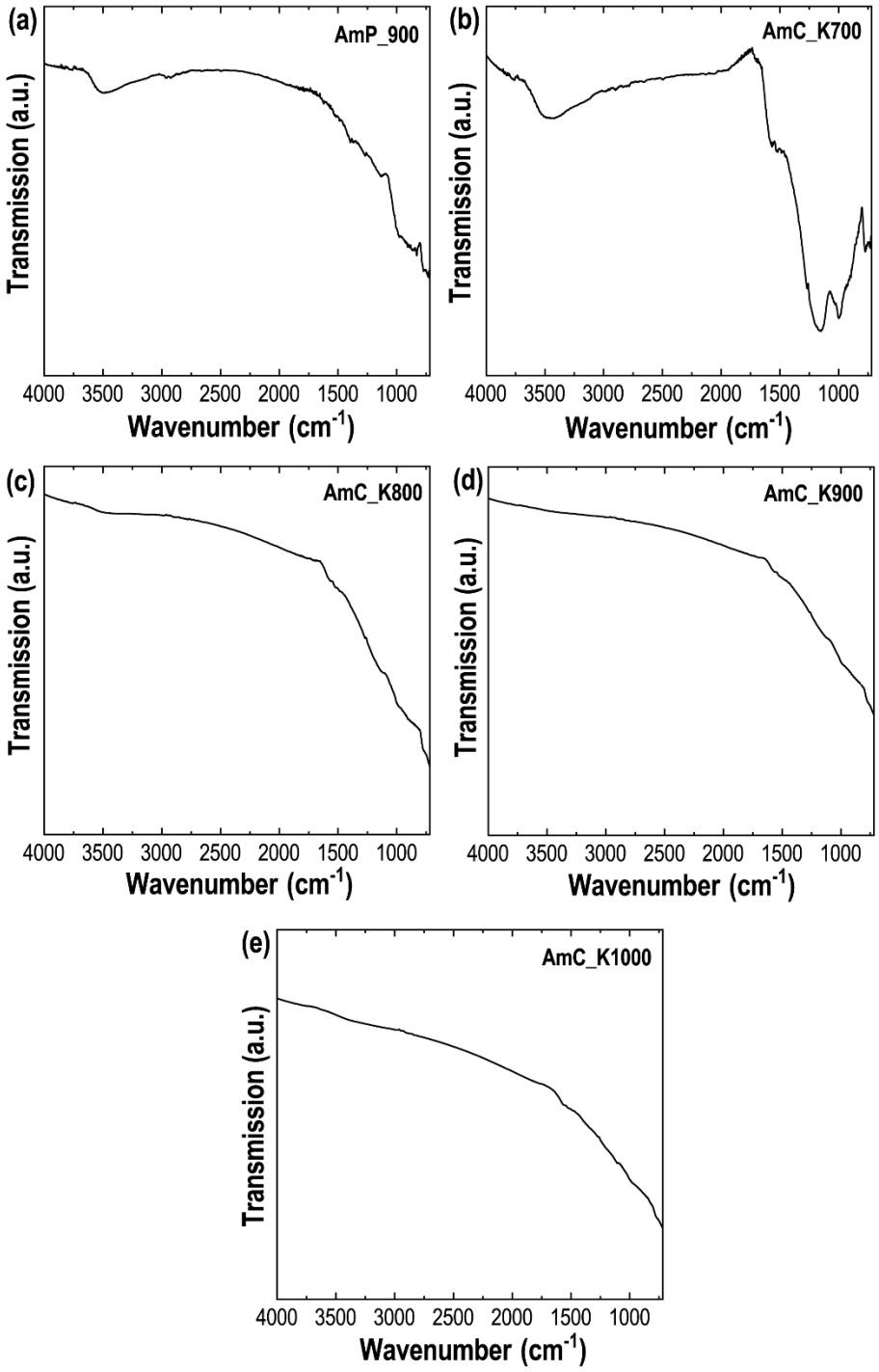



**Figure S1.** FTIR spectra of Amala seed derived porous carbon materials: (**a**) directly carbonized ample, AmP_900, and KOH activated carbons: (**b**) AmC_K700, (**c**) AmC_K800, (**d**) AmC_K900, and (**e**) AmC_K1000.

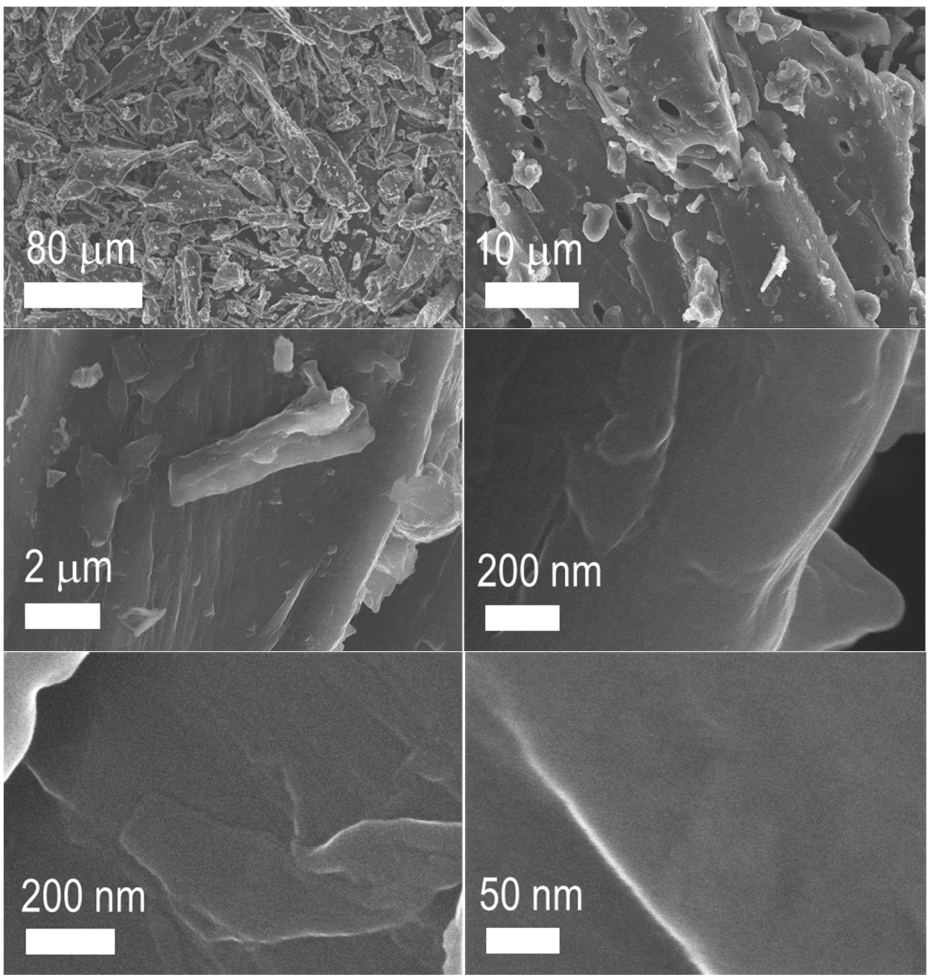



**Figure S2.** Additional SEM images of the directly carbonized Amala seed carbon (AmP_900).

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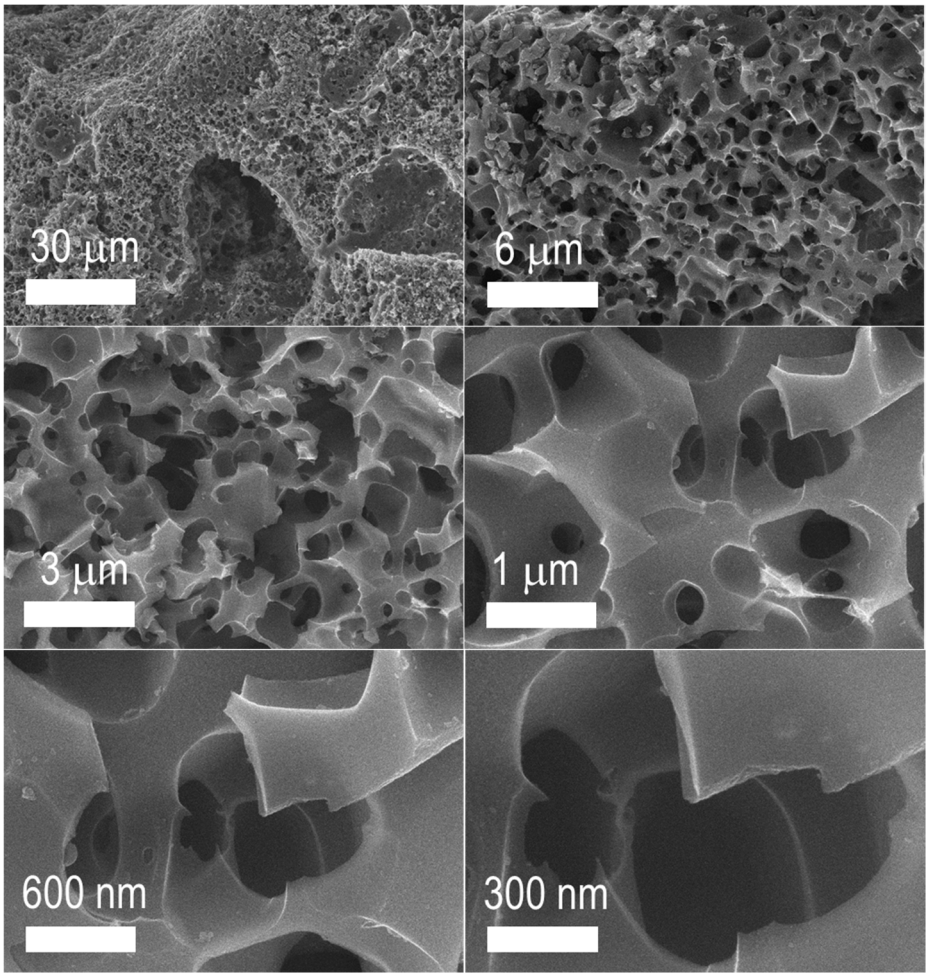



**Figure S3.** Additional SEM images of KOH-activated Amala seed carbon (AmC_K700).

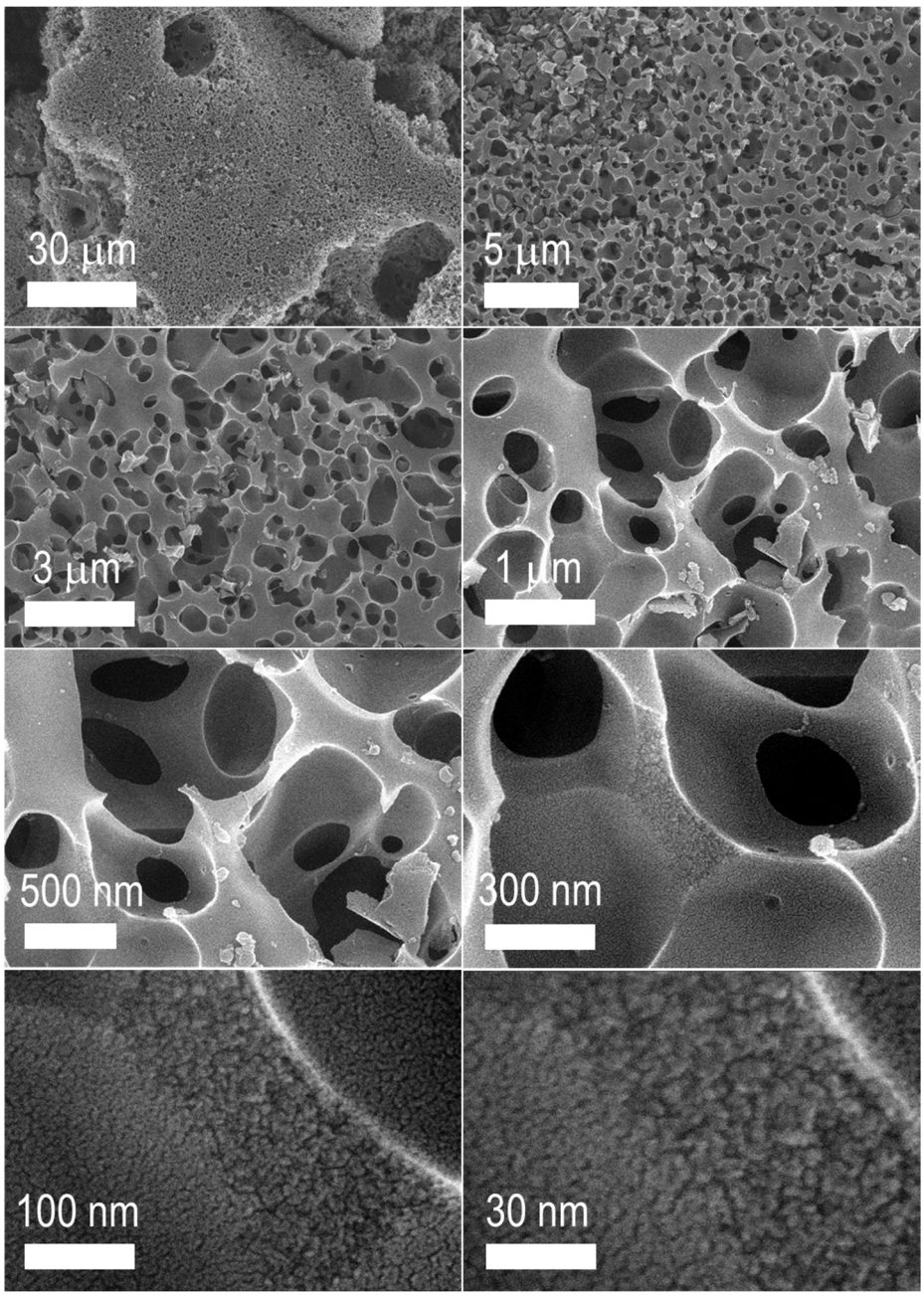



**Figure S4.** Additional SEM images of AmC_K800.

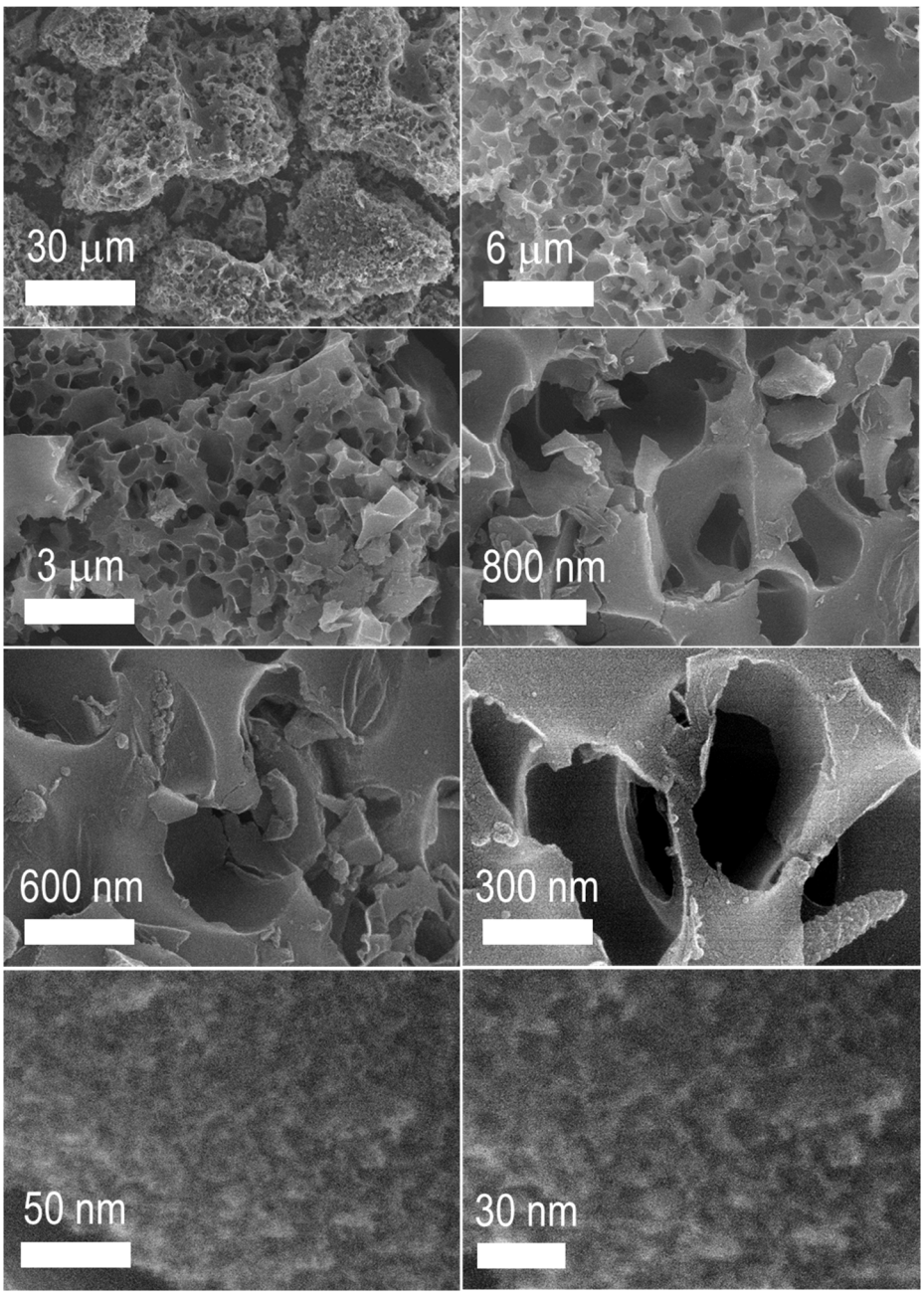



**Figure S5.** Additional SEM images of AmC_K900.

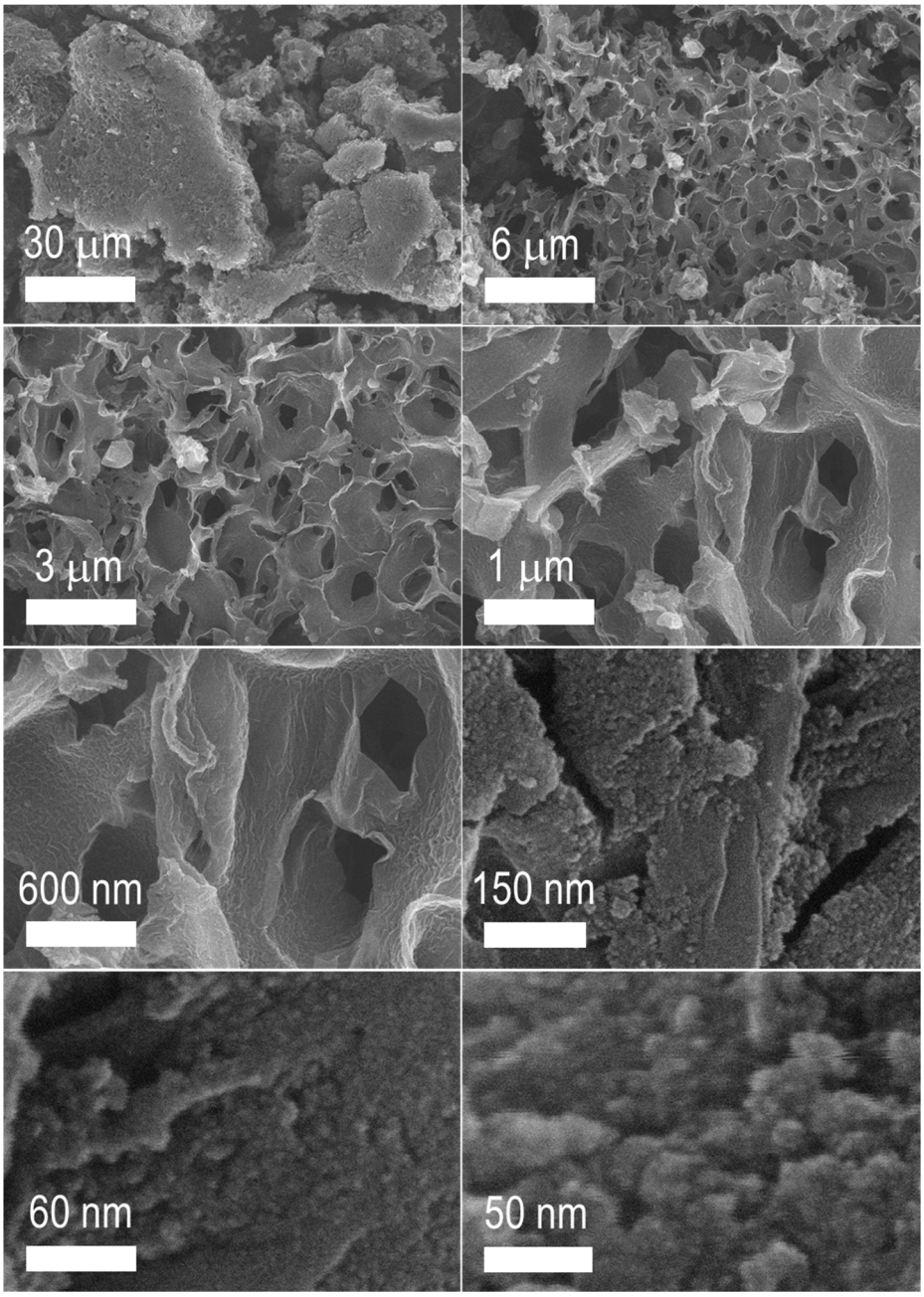



**Figure S6.** Additional SEM images of AmC_K1000.

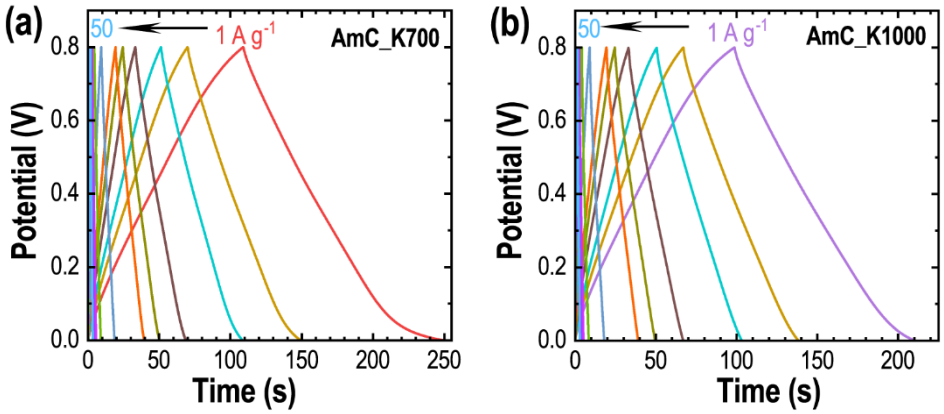



**Figure S7.** GCD curves recorded at different current density from 1 to 5 A $g^{-1}$ for the electrode prepared using, (**a**) AmC_K700 sample; (**b**) AmC_K1000 sample.

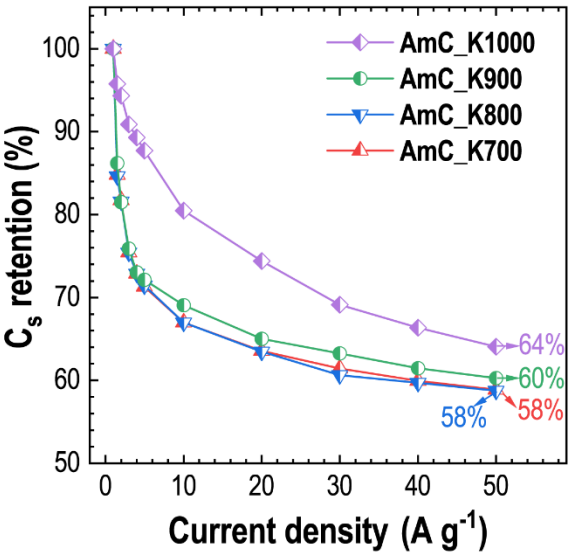



**Figure S8.** Capacitance retention performance of AmC_K700, AmC_K800, AmC_K900, and AmC_1000.

**Table S1.** The electrochemical supercapacitance performance of KOH-activated Amala seed carbon with similar other carbon materials derived from different biomasses.

| Carbon Source | Electrolyte | Current Density (A $g^{-1}$) | Specific Capacitance (F $g^{-1}$) | Reference |
|---|---|---|---|---|
| Tobacco straw (ZnO templated) | 6 M KOH | 1 | 220 | [1] |
| Tobacco waste (KOH-activated) | 6 M KOH | 0.5 | 356.5 | [2] |
| Betelnut shells | 1 M KOH | 1 | 290 | [3] |
| African maize Cob ($H_2SO_4$-activated) | 6 M KOH | 0.25 | 456 | [4] |
| Date seed (KOH-activated) | 1 M $H_2SO_4$ | 1 | 386 | [5] |
| Lignocellulose carbon | 1 M NaCl | 1 | 172.9 | [6] |
| Washnut seed (KOH-activated) | 1 M $H_2SO_4$ | 1 | 288.7 | [7] |
| Lotus seed ($ZnCl_2$-activated) | 1 M $H_2SO_4$ | 1 | 272.9 | [8] |
| Lapsi seed ($ZnCl_2$-activated) | 1 M $H_2SO_4$ | 1 | 284.0 | [9] |
| *Aloe vera* (KOH-activated) | 1 M $H_2SO_4$ | 0.5 | 410 | [10] |
| Bio-decomposited product ($K_2CO_3$-activated) | 6 M KOH | 0.05 | 209 | [11] |
| Lotus leaf (KOH-activated) | 6 M KOH | 0.5 | 425 | [12] |
| Washnut seed ($ZnCl_2$-activated) | 1 M $H_2SO_4$ | 1 | 225.1 | [13] |
| Jackfruit seed ($ZnCl_2$-activated) | 1 M $H_2SO_4$ | 1 | 261.3 | [14] |
| Pine Sawdust ($CO_2$-activated) | 6 M KOH | 1 | 225 | [15] |
| *Citrus bergamia* peels ($H_3PO_4$ and $Mn(NO_3)_2$-activated) | 6 M KOH | 0.1 | 289 | [16] |
| Prosopis juliflora wood (KOH-activated) | 6 M KOH | 0.5 | 588 | [17] |
| Corncob (KOH-activated) | 6 M KOH | 0.5 | 382 | [18] |
| Cotton fiber (NaOH-activated) | 3 M KOH | 0.3 | 222 | [19] |
| Cottonseed hull (KOH-activated) | 6 M KOH | 0.5 | 304 | [20] |
| Biomass-derived lignin | 6 M KOH | 0.5 | 348 | [21] |
| Kraft lignin ($CO_2$-activated) | 6 M KOH | 0.1 | 155 | [22] |
| salvia splendens (NaCl-activated) | 6 M KOH | 1 | 294 | [23] |
| Quinoa (KOH-activated) | 6 M KOH | 1 | 330 | [24] |
| Wood sawdust (KOH-activated) | 6 M KOH | 0.5 | 225 | [25] |
| Wood | 1 M $H_2SO_4$ | 0.5 | 260 | [26] |
| Amala seed (KOH-Activated) | 1 M $H_2SO_4$ | 1 | 272 | This work |

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