Supporting Information

Highly porous willow wood-derived activated carbon for high performance supercapacitor electrodes

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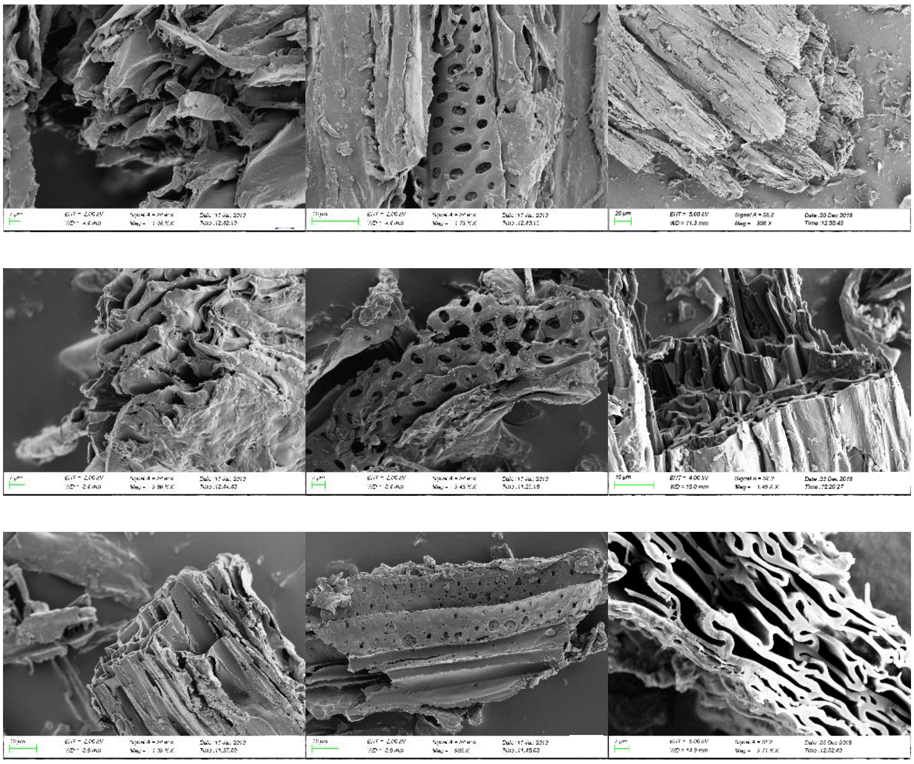
WW-KOH0

WW-KOH1

WW-KOH3



WW-KOH6

WW-KOH9

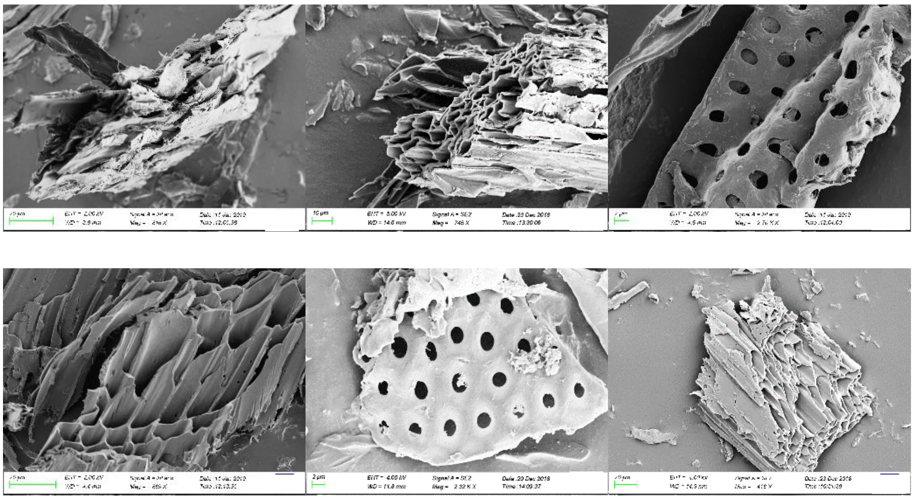


Figure S1 SEM images of the prepared samples showing different morphologies

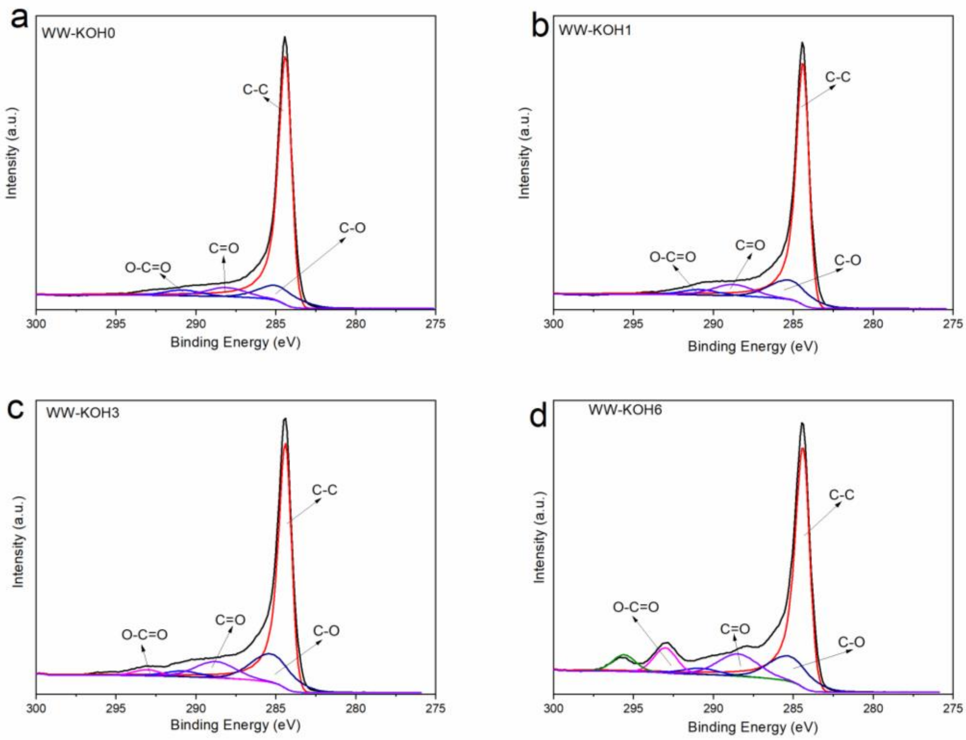


Figure S2 C1s for (a) WW-KOH0, (b) WW-KOH1 (c) WW-KOH3 (d) KOH6

Table S1 XPS surface characteristics of the activated carbon samples

Samples	Atomic concentration, at%					
	C	O	C=C	C-O	C=O	O-C=O
WW-KOH0	93.15	5.15	71.35	14.74	8.93	4.98
WW-KOH1	93.38	5.58	66.11	18.35	10.92	4.62
WW-KOH3	88.57	8.87	59.14	23.27	13.47	4.13
WW- KOH6	82.42	12.40	59.82	19.13	16.86	4.18
WW-KOH9	85.50	11.27	60.75	21.06	13.95	4.24

Table S2 Comparison of electrochemical performance of WW derived carbon with other biomass sources in aqueous electrolytes in a three-electrode configuration system.

Material	Activating reagent	SSA, $m^2 g^{-1}$	Capacitance, $F g^{-1}$ (current density/scan rate)	Electrolyte	Ref.
Pistachio shells	KOH/CO_2	2145	122 (25 mV s^{-1})	0.5 M H_2SO_4	[1]
Neem leaves	-	1 230	400 (0.5 A g^{-1})	1 M H_2SO_4	[2]
Eggplant	-	950	~70 (20 A g^{-1})	6 M KOH	[3]
Corncob	Steam	1 210	314 (5 mV s^{-1})	6 M KOH	[4]
Laminaria japonica	KOH	1 986	381 (1 A g^{-1})	6 M KOH	[5]
Rhus typhina fruits	KOH	2 675	474 (1 A g^{-1})	6 M KOH	[6]
Batata leaves and stalks	KOH	3 114	350 (1 A g^{-1})	6 M KOH	[7]
Nori	$ZnCl_2$	832	220 (0.1 A g^{-1})	6 M KOH	[8]
Willow catkins	KOH	1 533	298 (0.5 A g^{-1})	6 M KOH	[9]
Kraft pulp	KOH	2 045	374 (1 A g^{-1})	6 M KOH	[10]

Perilla frutescens	-	655	270 (0.5 A g^{-1})	6 M KOH	11
Dry elm samara	KOH	1 171	470 (1 A g^{-1})	6 M KOH	12
Water bamboo	KOH	2 352	268 (1 A g^{-1})	6M KOH	13
Corn grain	KOH	3 199	257 (1 mA cm^{-2})	6M KOH	14
Sugar cane bagasse	$ZnCl_2$	1 892	268 (2 mV s^{-1})	6M KOH	15
Sun flower seed shell	KOH	2 509	311 (0.25 A g^{-1})	30wt.% KOH	16
Auricularia	$ZnCl_2$	1 607	347 (1 A g^{-1})	6M KOH	17
Lignin	KOH	907	165 (0.05 A g^{-1})	1 M H_2SO_4	18
Celtuce leaves	KOH	3 404	421 (0.5 A g^{-1})	2M KOH	19
Coconut shell	Steam	1 532	228 (5 mV s^{-1})	6M KOH	20
Pomelo peel	KOH	2 725	342 (0.2 A g^{-1})	6M KOH	21
Banana fibers	$ZnCl_2$	1 097	74 (500 mA g^{-1})	1M Na_2SO_4	22
Coconut shell	$ZnCl_2$	1 874	268 (1 A g^{-1})	6M KOH	23
Shiitake mushroom	H_3PO_4/KOH	2 988	306 (1 A g^{-1})	6M KOH	24
Cashmere	KOH	1 358	236 (1 A g^{-1})	6M KOH	25
Ginkgo shell	KOH	1 775	178 (500 mV s^{-1})	6M KOH	26
Cotton	KOH	1 563	314 (0.1 A g^{-1})	6 M KOH	27
Fungus	KOH	1 103	374 (0.5 A g^{-1})	6 M KOH	28
Tea leaves	KOH	2 841	330 (1 A g^{-1})	6 M KOH	29
Brussel sprouts	KOH	2 410	255 (0.5 A g^{-1})	6 M KOH	30
Argan seed shells	KOH	2 100	335 (125 mA g^{-1})	1 M H_2SO_4	31
Willow wood	KOH	2 800	394 (1 A g^{-1})	6 M KOH	This work

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