

## Supporting information

### Structural and Electrochemical Evolution of Water Hyacinth-Derived Activated Carbon with Gamma Irradiation Pretreatment for Supercapacitor Applications

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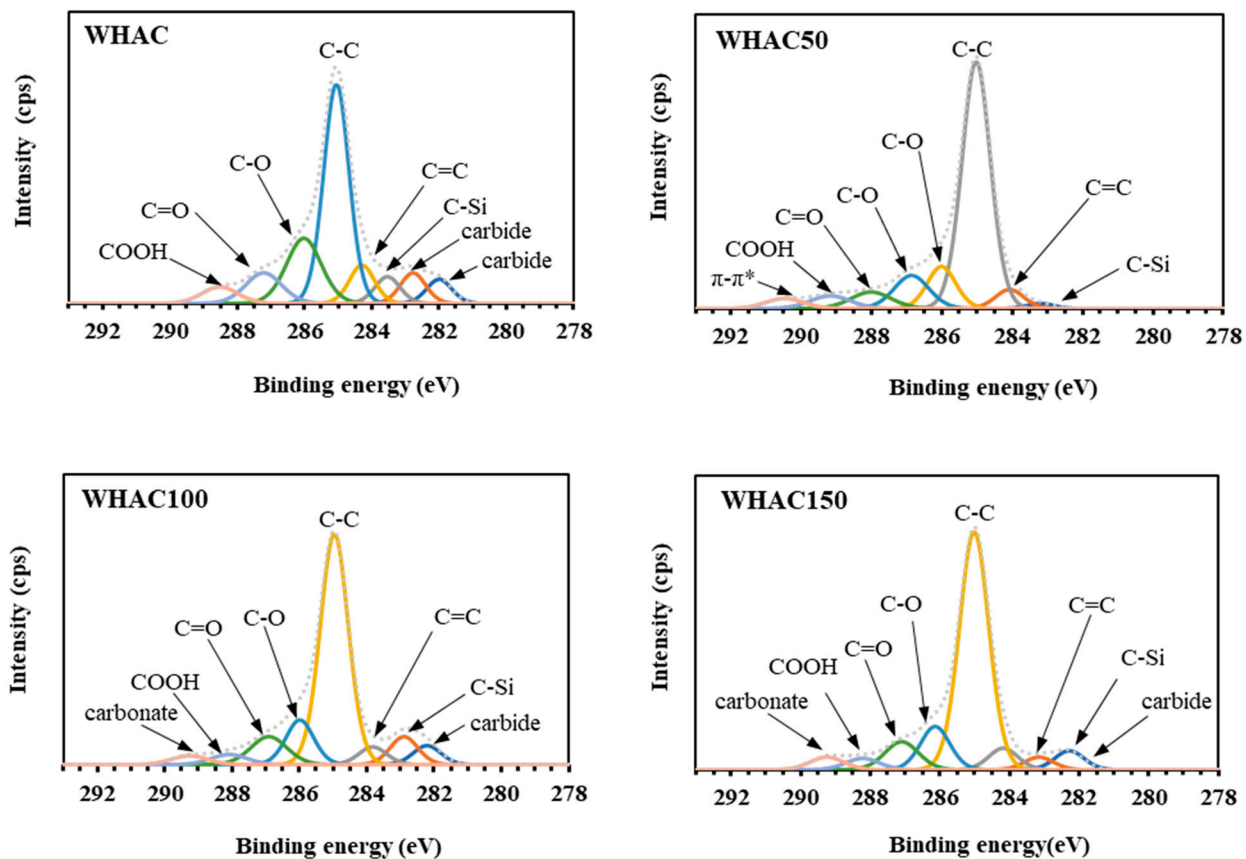
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**Table S1.** The summarized C 1s and O 1s XPS spectra result for WHAC series.

Samples	Spectrum	Assignment	Binding Energy(eV)	%Component
WHAC	C 1s	Carbide	282.0	4.9
		Carbide	282.8	6.2
		C-Si	283.5	5.3
		C=C (sp <sup>2</sup> )	284.3	7.7
		C-C (sp <sup>3</sup> )	285.1	44.5
		C-O	286.0	18.1
		C=O	287.2	8.7
		carbonates	288.5	4.6
	O 1s	C-O	529.8	9.3
		C=O, COOH	531.3	21.3
		C-OH; C-O-C	532.5	36.4
		COOCO	533.7	26.3
		Chemisorbed water/O <sub>2</sub>	532.2	6.6
WHAC50	C 1s	C-Si	283.2	1.1
		C=C (sp <sup>2</sup> )	284.1	4.6
		C-C (sp <sup>3</sup> )	285.0	60.9
		C-O	286.0	10.4
		C-O	286.9	10.1
		C=O	288.0	5.5
		Carbonate	289.2	4.3
		$\pi$ - $\pi^*$ (sp <sup>2</sup> )	290.5	3.1
	O 1s	C=O, COOH	531.0	12.2

		C-OH; C-O-C	532.5	37.2
		COOCO	533.2	32.2
		COOH	534.3	18.4
WHAC100	C 1s	Carbide	282.2	4.8
		C-Si	282.9	7.1
		C=C (sp <sup>2</sup> )#	283.8	4.6
		C-C (sp <sup>3</sup> )	284.9	56.8
		C-O	286.0	11.1
		C=O	286.9	9.1
		COOH/COOR	288.1	3.5
		Carbonate	289.3	3.0
	O 1s	C-O	529.8	13.5
		C=O, COOH	531.1	26.8
		C-OH, C-O-C	532.4	38.9
		COOCO	533.7	20.8
WHAC150	C 1s	Carbide	282.3	4.6
		C-Si	283.1	3.3
		C=C (sp <sup>2</sup> )	284.2	5.5
		C-C (sp <sup>3</sup> )	285.0	60.6
		C-O	286.1	10.9
		C=O	287.1	8.0
		COOH/COOR	288.2	3.4
		Carbonate	289.3	3.8
	O 1s	C-O	529.7	6.2
		C=O, COOH	531.1	19.7
		C-OH, C-O-C#	532.3	51.1
		COOCO	533.6	23.0



**Figure S1.** High-resolution XPS spectra of C1s for WHAC, WHAC50, WHAC100, and WHAC150.