Supporting Information

Manufacturing a super-active carbon using fast pyrolysis char from biomass and correlation study on structural features and phenol adsorption

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Table S1. Characterization of biomass feedstock.

Elemental analysis (wt%)*			Compositional analysis (wt%)		ICP-ES analysis (ppm by biomass)			
Yellow poplar	C	45.8						
	H	5.8	Holocellulose	74.0	K	630.4	P	101.2
	O	48.2	Lignin	30.0	Mg	170.4	Si	19.8
	N	0.2	Ash	0.45	Ca	908.6	Fe	35.1
Japanese red pine	C	50.7						
	H	6.1	Holocellulose	73.6	K	721.0	P	286.5
	O	43.2	Lignin	31.4	Mg	199.0	Si	96.9
	N	0.0	Ash	1.0	Ca	1481.7	Fe	96.5

* Oxygen ratio was calculated by difference.

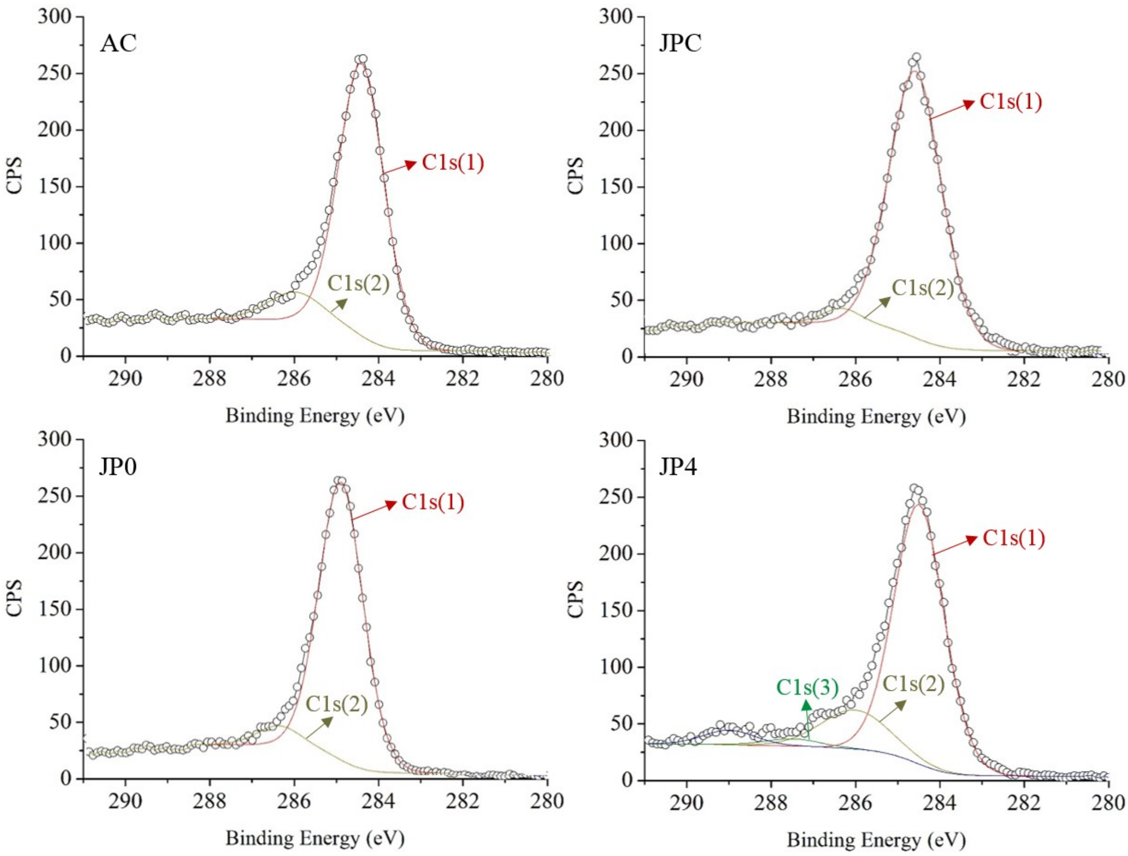

Figure S1. XPS scans of C1s photoelectron envelopment for feedstock and carbon products.

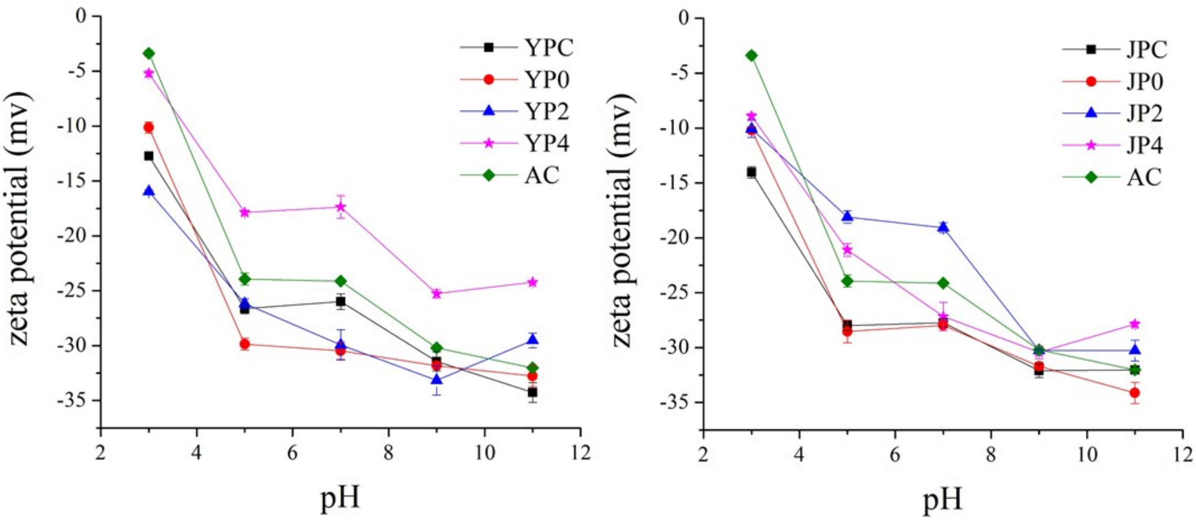

Figure S2. Zeta potential curves of carbon products at different pH.

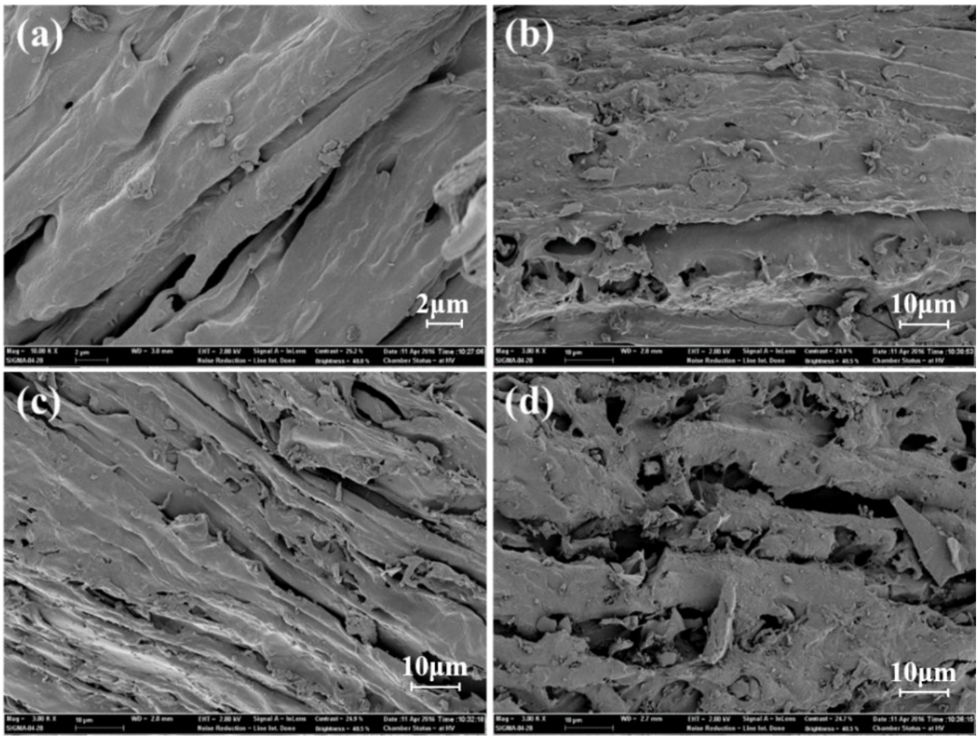

Figure S3. The morphological changes of pyrolysis char and activated carbon products ((a): YPC, (b): YP4, (c): JPC, (d): JP4).

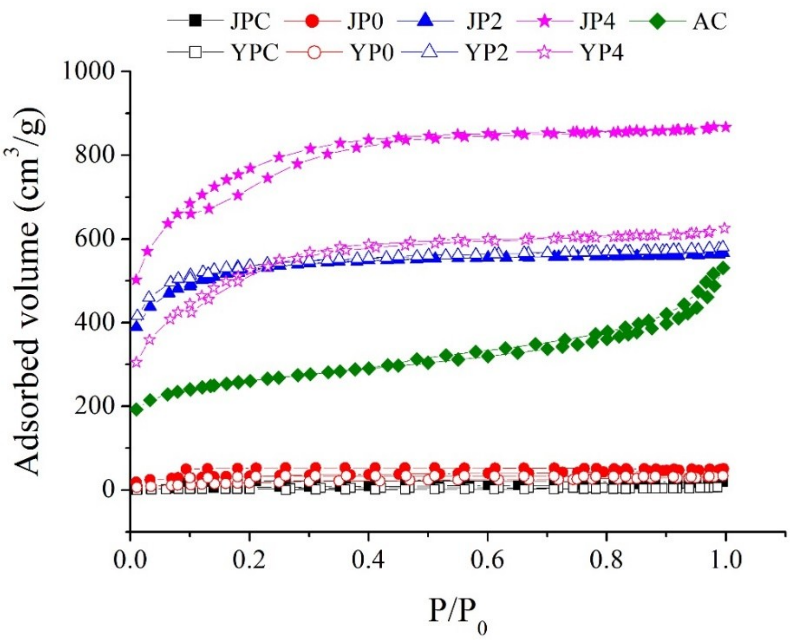

Figure S4. N_2 adsorption-desorption isotherms of the produced activated carbon and commercial activated carbon in this study.

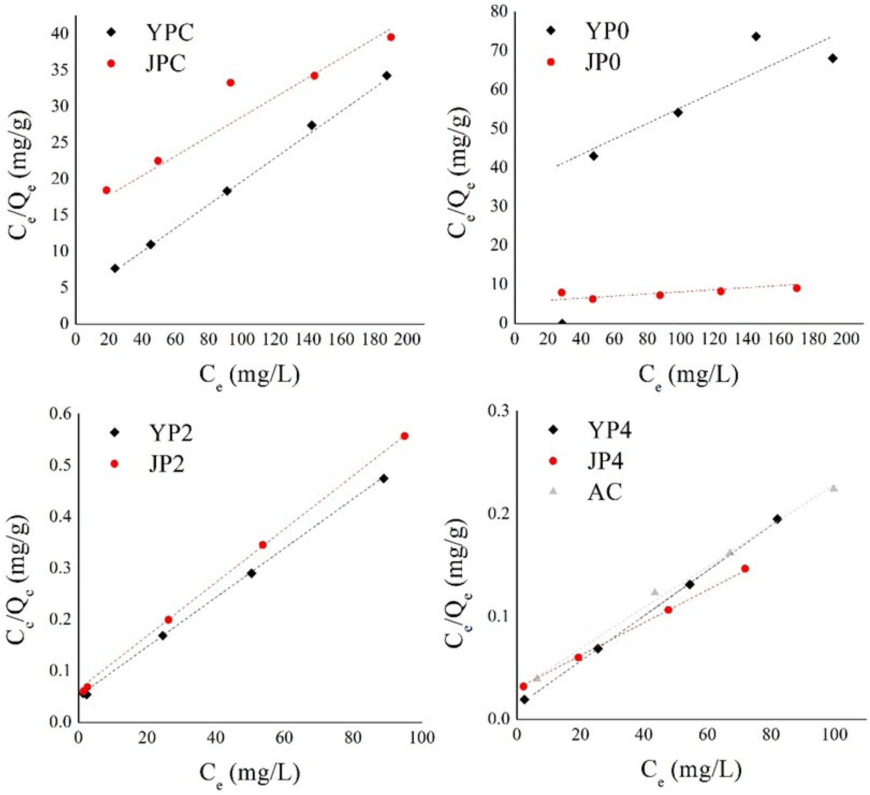

Figure S5. Adsorption isotherm for phenol onto activated carbon derived from fast pyrolysis char under different KOH ratios (The dotted line : Langmuir fits).