Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Electronic Supplementary Information (ESI) of

Modulating Coal-Derived Carbon toward Electrocatalytic Generation of Hydroxyl Radicals for Organic Contaminant Removal

Guoqiang Zhao, Tianci Chen, Aidong Tang,* Huaming Yang*

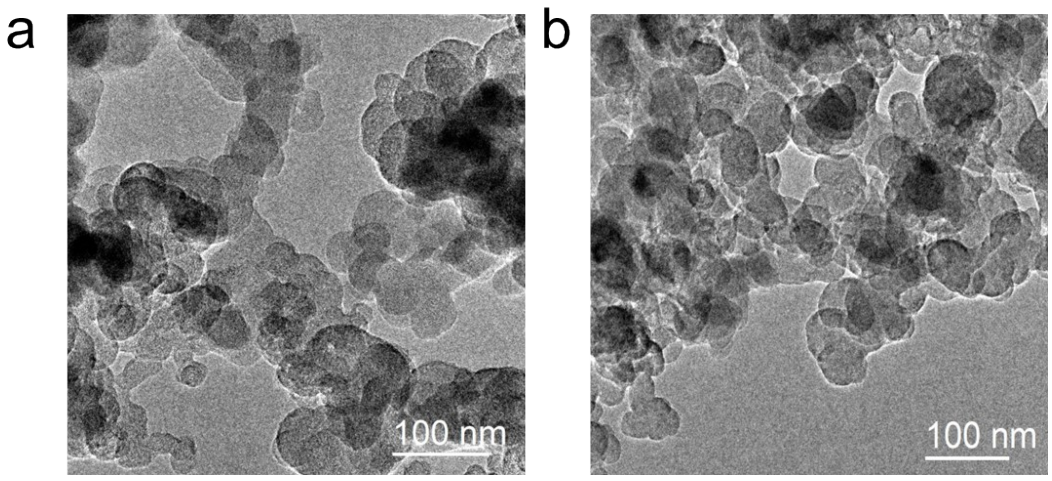

Figure S1. TEM image for CB.

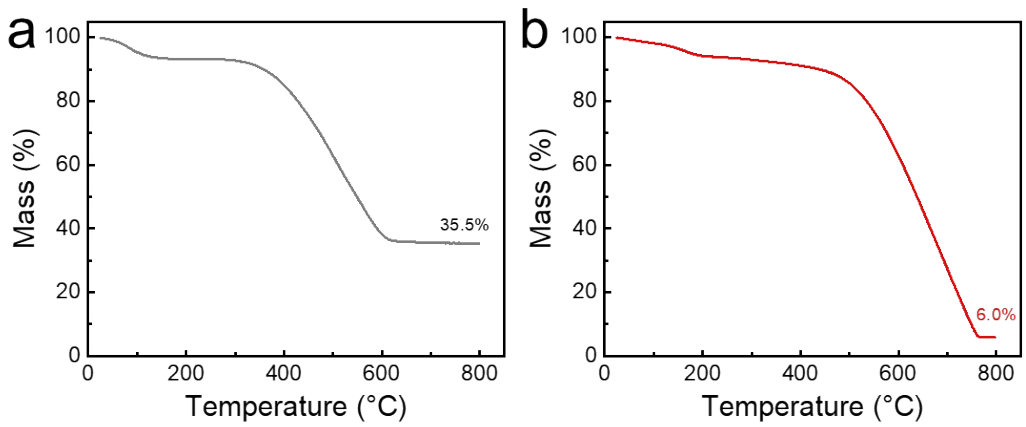

Figure S2. TG curves for (a) bituminous coal and (b) bitu@C (10 °C min^{-1} from 25 to 800 °C in air).

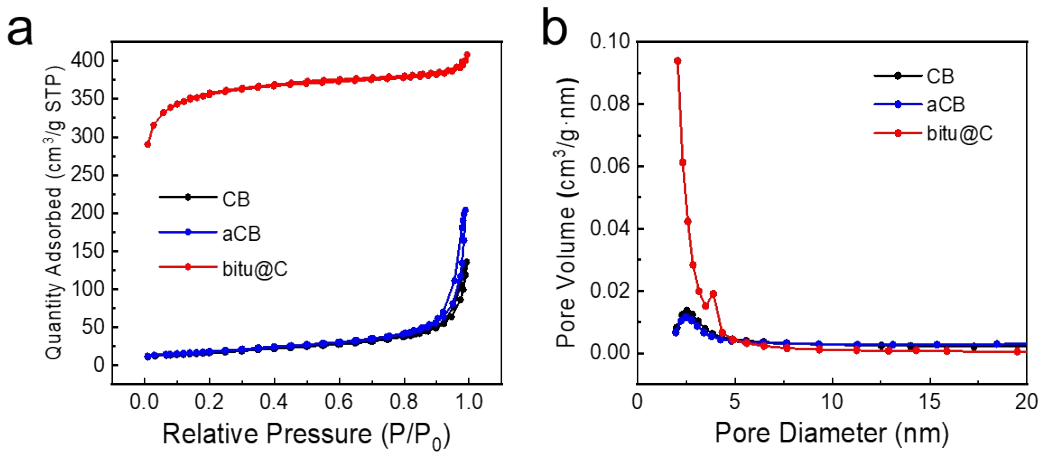

Figure S3. (a) The N_2 adsorption–desorption isotherm curves of CB, aCB, and bitu@C. (b) The pore-size distribution curve of CB, aCB, and bitu@C.

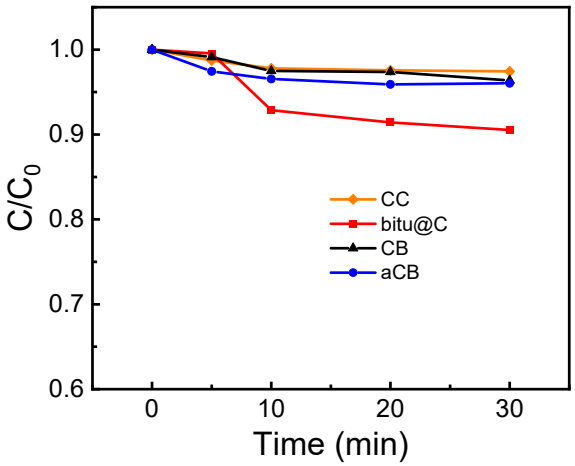

Figure S4. The relative concentration of AOII after the adsorption with different catalysts.

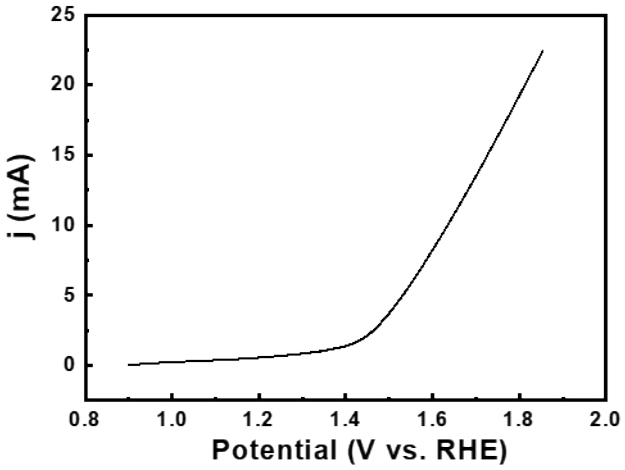

Figure S5. The LSV curve of the carbon rod electrode at the scan rate of 2 mV s^{-1}.

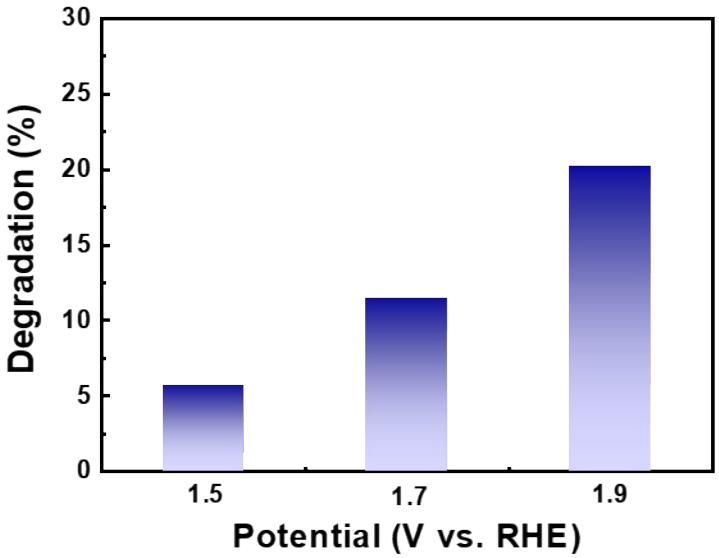

Figure S6. Contribution of the direct oxidation of AOII and the $2e^-$ water oxidation at the carbon rod electrode to the AOII degradation in 30 min at different potentials.

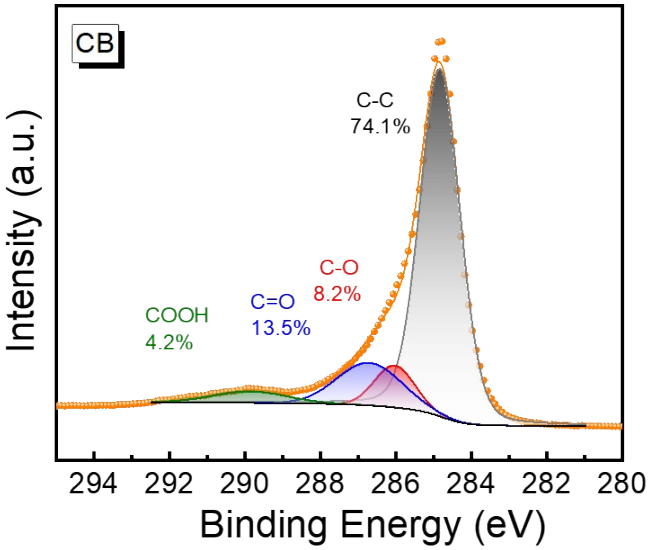

Figure S7. C 1s XPS spectra for CB.

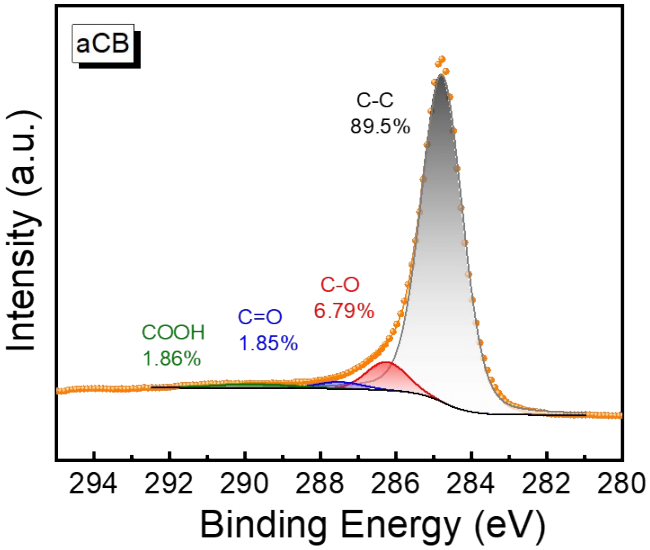

Figure S8. C 1s XPS spectra for aCB.

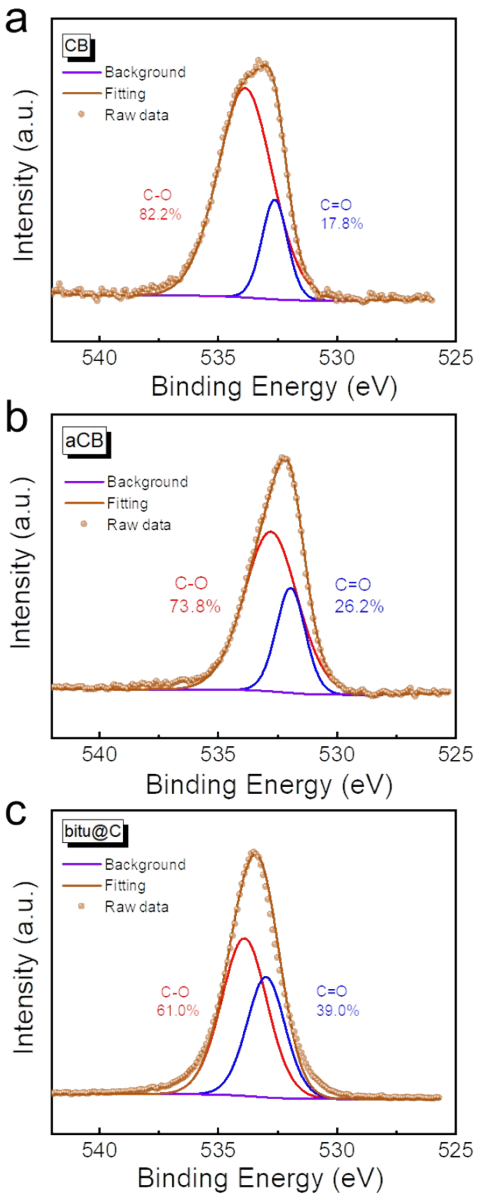

Figure S9. O 1s XPS spectra for CB, aCB, and bitu@C.

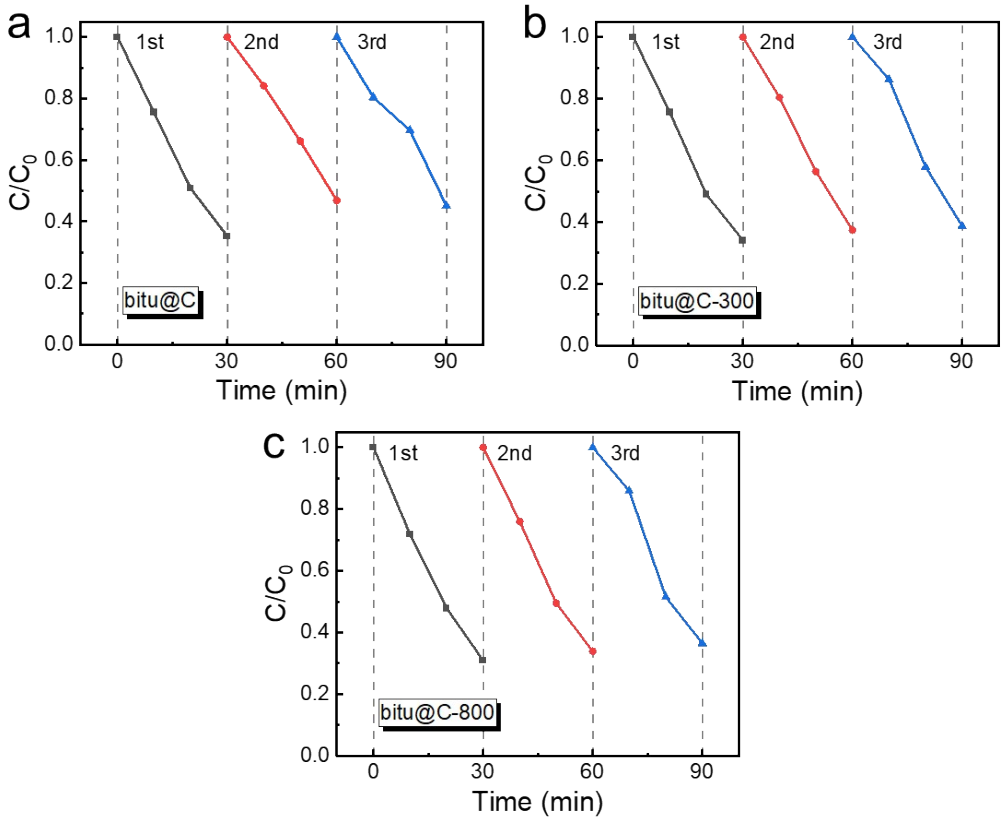

Figure S10. Three consecutive AOII degradation tests of a) bitu@C, b) bitu@C-300, and c) bitu@C-800. The electrolyte was changed every 30 min.

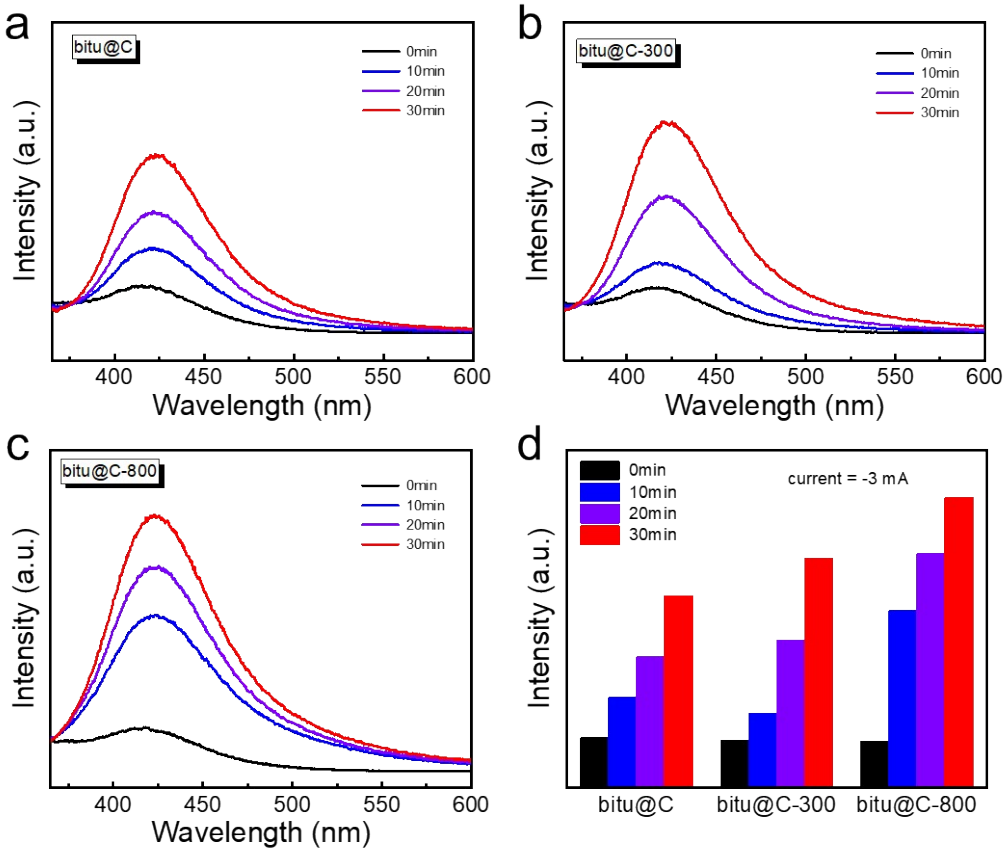

Figure S11. (a-c) UV-vis spectra of the electrolyte using a) bitu@C, b) bitu@C-300, and c) bitu@C-800 as the catalysts. The working current was set at 3 mA. (d) Value of the peak intensity of the fluorescent product.

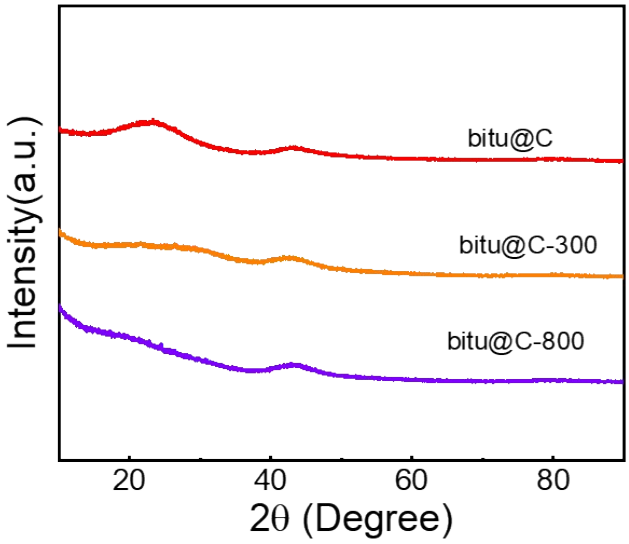

Figure S12. XRD patterns for bitu@C, bitu@C-300, and bitu@C-800.

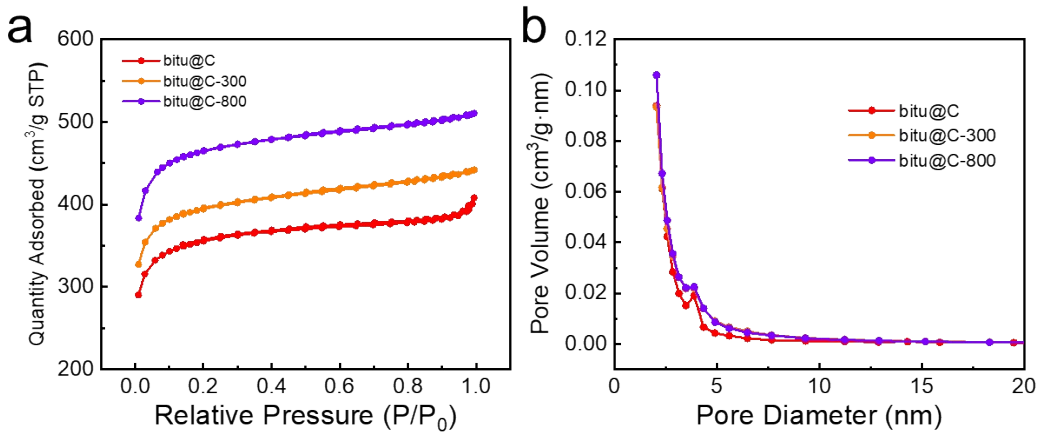

Figure S13. (a) The N_2 adsorption–desorption isotherm curves and (b) the corresponding pore-size distribution curves of bitu@C-300, and bitu@C-800.

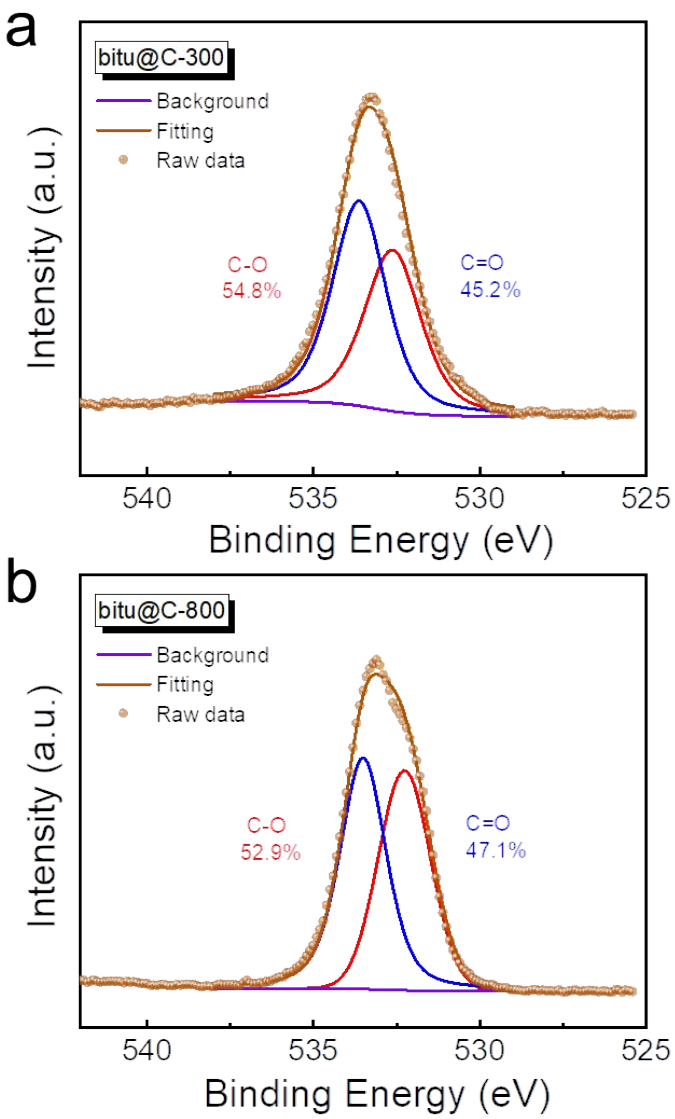

Figure S14. O 1s XPS spectra for (a) bitu@C-300 and (b) bitu@C-800.

Table S1. The calculated specific surface area (S_{BET}), pore volume, and average pore size based on the N_2 adsorption–desorption isotherm curves for CB, aCB, and bitu@C-300.

Sample	S_{BET}/ ($m^2 \cdot g^{-1}$)	Pore volume/($cm \cdot g^{-3}$)	Average pore size/nm
CB	59.41	0.21	13.27
aCB	65.60	0.32	17.89
bitu@C	1091.48	0.14	3.99

Table S2. The calculated specific surface area (S_{BET}), pore volume, and average pore size based on the N_2 adsorption–desorption isotherm curves for bitu@C-300 and bitu@C-800.

Sample	S_{BET}/ ($m^2 \cdot g^{-1}$)	Pore volume/($cm \cdot g^{-3}$)	Average pore Size/nm
bitu@C-300	1207.54	0.15	3.54
bitu@C-800	1415.61	0.15	3.41