Supplementary Information

Sustainable Biomass Glucose-Derived Porous Carbon Spheres with High Nitrogen Doping: As a Promising Adsorbent for $CO_2/CH_4/N_2$ Adsorptive Separation

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Table S1. The gas adsorption performance for porous materials from reported results.

samples	CO_2 uptake (mmol g^{-1})	CH_4 uptake(mmol g^{-1})	Ref.
	25 °C	25 °C	
ACSs-N	**3.03**	**0.93**	**This work**
NPCs-2-500	2.5	----	S1
WNPC-3	2.78	----	S2
AC-PAIN-F	2.69	----	S3
STC-2.5	1.3	----	S4
500-2	3.5	----	S5
SNMC-2-600	4.24	1.57	S6
OTSS-1-550	3.1	0.5	S7
sOMC	2.0	0.9	S8
Ni formate	----	0.82	S9
Cu(hfipbb)(H_2hfipbb)0.5	0.86	0.47	S10
Cu(Me-4py-trz-ia)	----	1.12	S11
MOF-177	----	0.56	S12
MOF-5	----	0.13	S12

Table S2. Summary of the gas capacities of the ACSs-N under high pressure.

Sample	CO_2 uptake (mmol g^{-1})	CH_4 uptake (mmol g^{-1})	N_2 uptake (mmol g^{-1})
0 °C	5.87	3.86	2.60
25 °C	5.25	3.40	2.12
45 °C	4.82	3.03	1.78

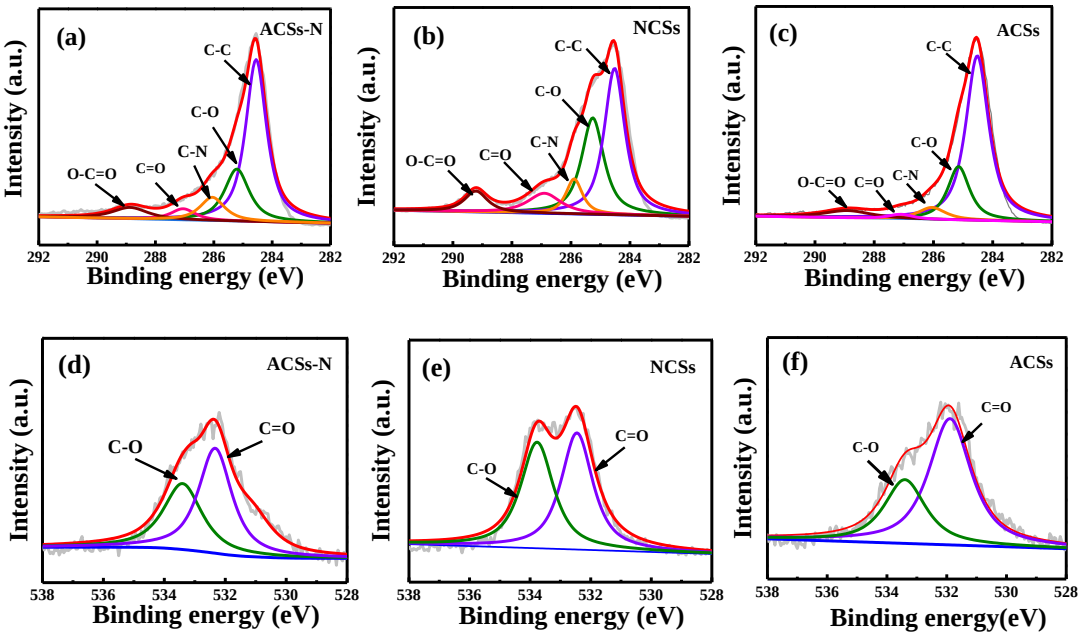

Figure S1. XPS high-resolution of (a,b,c) C1s and (d,e,f) O1s for the porous carbon samples ACSs-N, NCSs and ACSs.

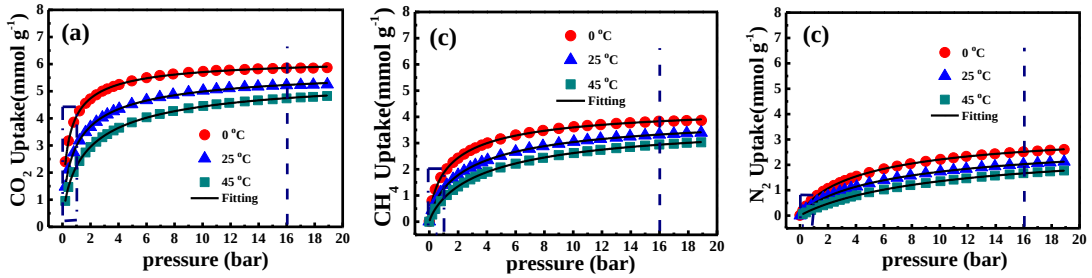

Figure S2. Adsorption isotherms of (a) CO2, (b) CH4, and (c) N2 on ACSs-N at high pressure. The marker points represent the experimental data, while the black solid lines correspond to Langmuir-Freundlich equation fittings.

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