Electronic supplementary information for

Human hair-derived nitrogen and sulfur co-doped porous carbon materials for gas adsorption

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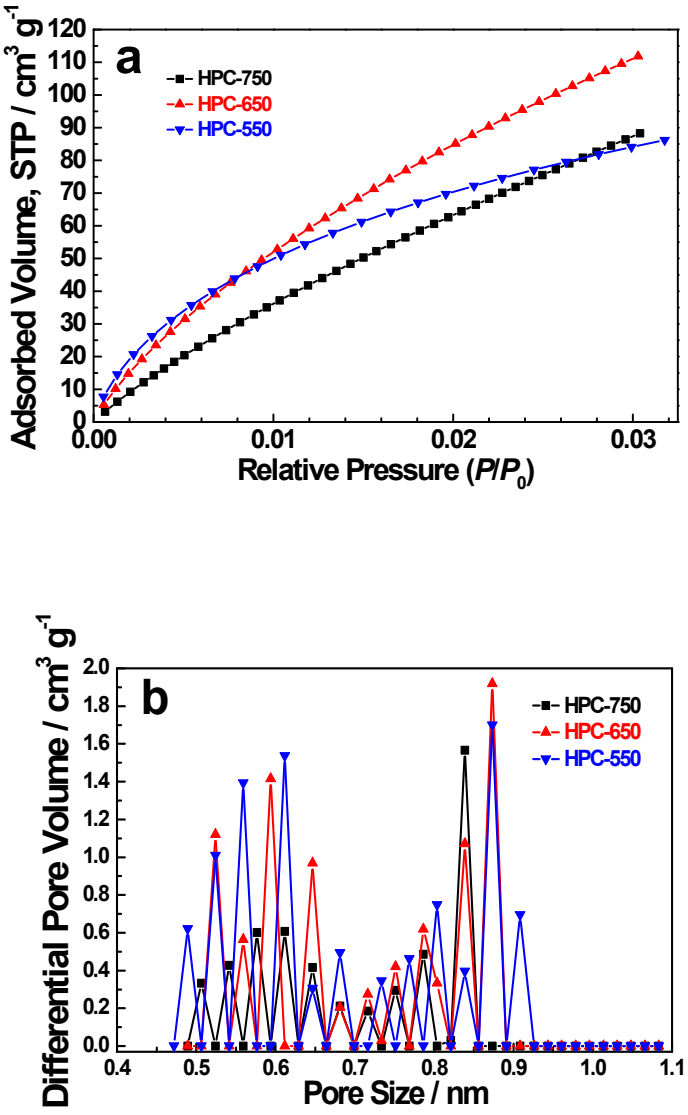

Fig. S1. Carbon dioxide adsorption isotherms (a) and the DFT pore size distribution profiles (b) of HPC-*x* materials.

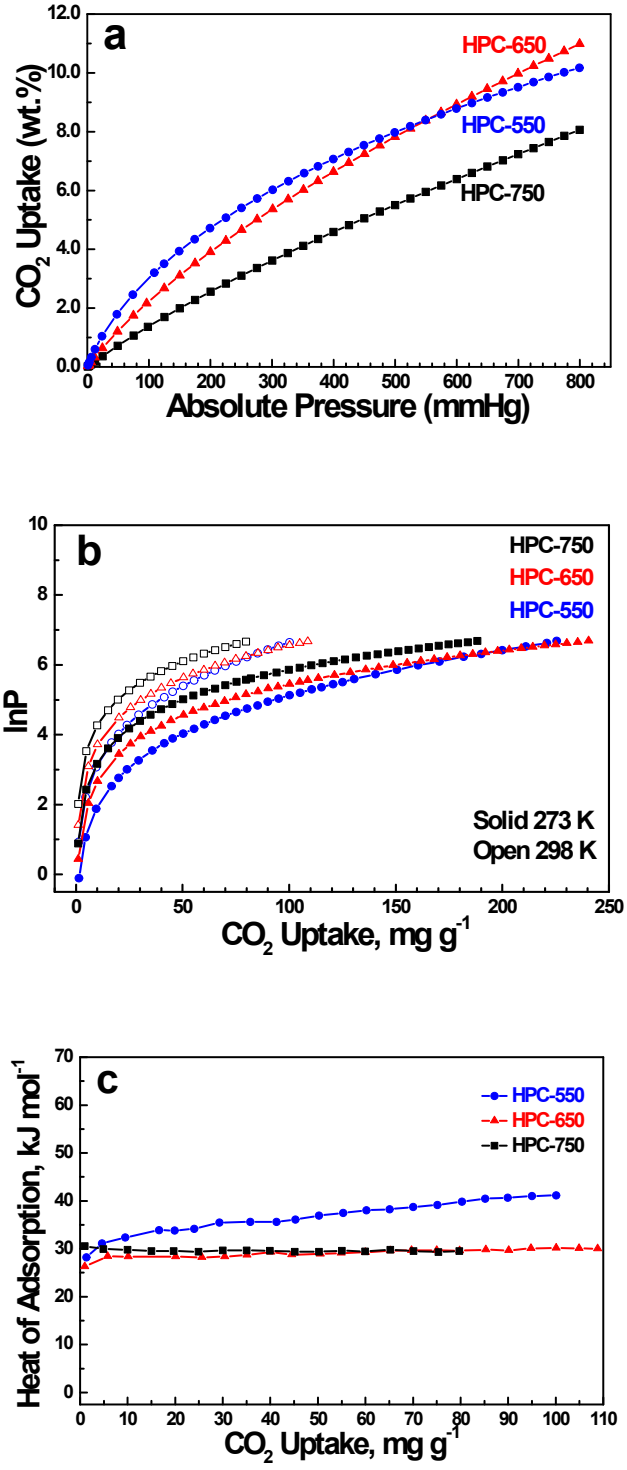

Fig. S2. (a) CO_2 adsorption isotherms of HPC-750 (square), HPC-650 (up triangle), and HPC-550 (circle) at different temperatures (273 and 298 K), (b) Virial analysis of CO_2 adsorption data (273 and 298 K) and (c) isosteric heat of CO_2 adsorption.

The binding energies of CO_2 in HPC-*x* are reflected ∂in the isosteric heat of

adsorption, Q_{st}, defined as

$$Q_{st} = RT^2 \left(\frac{\partial \ln P}{\partial T} \right)_q \quad (1)$$

These values were determined using the pure component isotherm fits. Fig. S1 presents data on the loading dependence of Q_{st} in HPC-*x*.

Table S1. The CO_2 adsorption capacities at different temperatures (at 1.0 bar) and CO_2 adsorption heat of the HPC-*x* materials.

Sample	CO_2 (wt %)[a] 273 K	CO_2 (wt %)[b] 298 K	CO_2 adsorption heat (kJ mol^{-1})[c]
HPC-550	18.8	8.1	28.6~41.3
HPC-650	24.0	11.0	26.5~30.4
HPC-750	22.6	10.2	29.7~30.7

[a] CO_2 gravimetric uptake capacities at 273 K and 1.0 bar. [b] CO_2 gravimetric uptake capacities at 298 K and 1.0 bar. [c] CO_2 adsorption heat is based on the Clausius–Clapeyron equation.