Electronic Supplementary Information:

Nitrogen-doped nanoporous carbon nanosheets derived from plant biomass: An efficient catalyst for oxygen reduction reaction

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Calibration of reference electrodes and conversion to RHE.

The calibration of Hg/HgO and Ag/AgCl electrodes were performed in a standard three-electrode system with polished Pt wires as the working and counter electrodes, and the Hg/HgO or Ag/AgCl electrode as the reference electrode. Electrolytes are pre-purged and saturated with high purity H_2. Linear scanning voltammetry (LSV) is then run at a scan rate of 0.5 mV s^{-1}, and the potential at which the current crossed zero is taken to be the thermodynamic potential for the hydrogen electrode reactions. For example, in 0.1 M KOH, the zero current point is at -0.855 V, so E (RHE) = E (Hg/HgO) + 0.855 V; in 0.5 M H_2SO_4, the zero current point is at -0.226 V, so E (RHE) = E (Ag/AgCl) + 0.226 V.

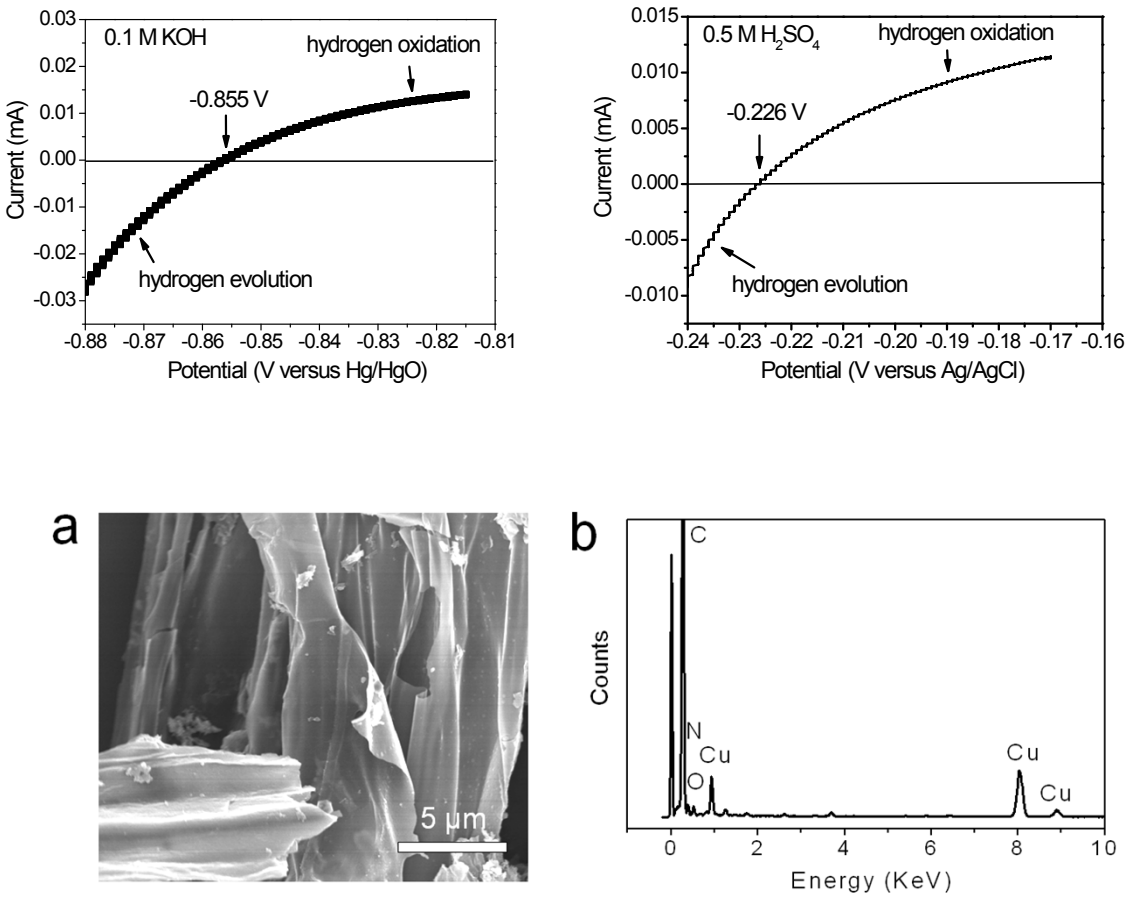

Fig. S1. (a) Magnified SEM image of NCS-800; (b) Elemental analysis image of the NCS-800 (square region marked with 1 in Fig. 2b).

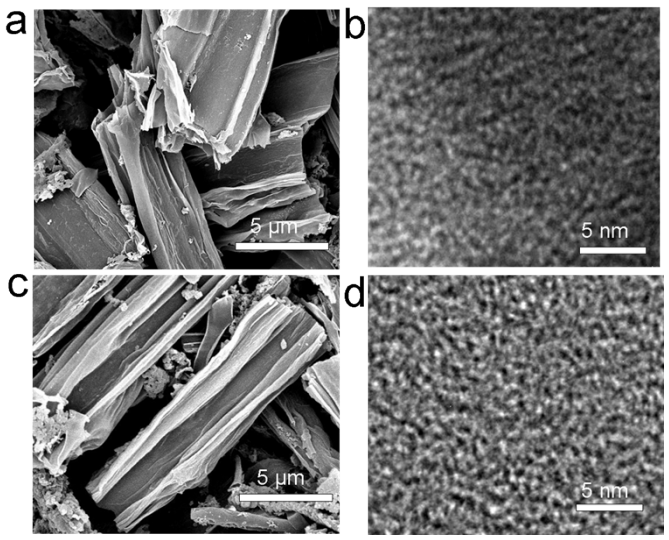

Fig. S2. (a-b) SEM and HRTEM images of the NCS-750; (c-d) SEM and HRTEM images of the NCS-850.

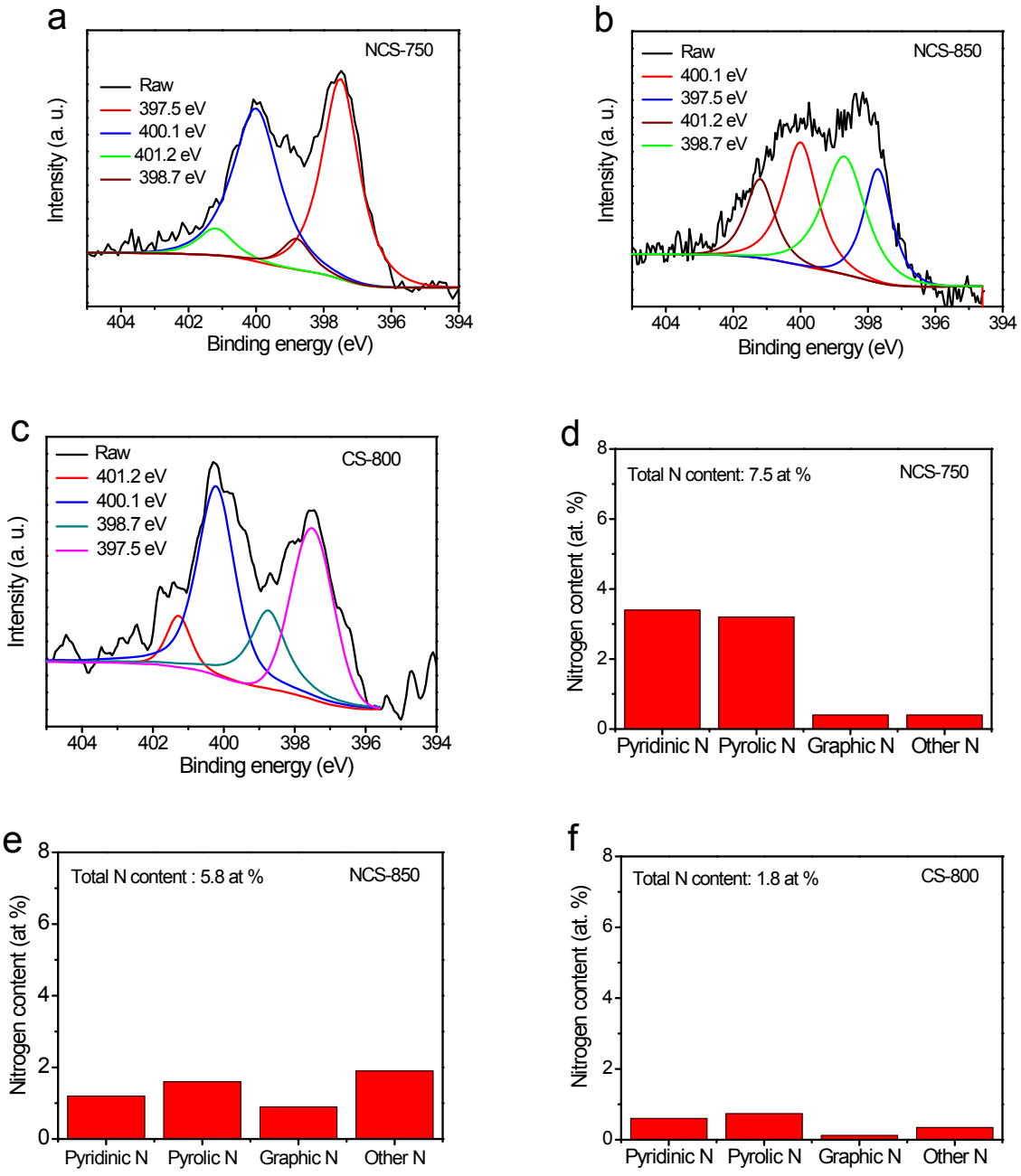

Fig. S3. (a-c) The high-resolution N1s XPS spectra of the NCS-750, NCS-850 and CS-800; (d-f) The content of different types of nitrogen in the NCS-750, NCS-850 and CS-800.

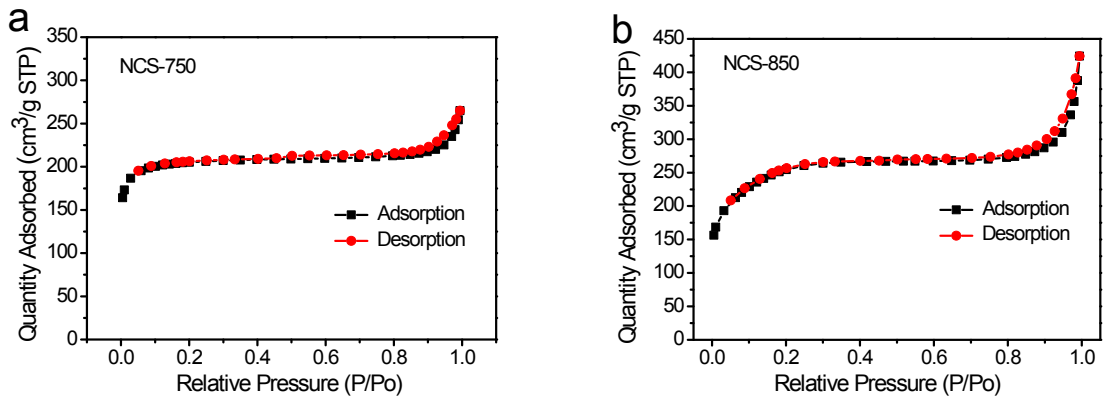

Fig. S4. (a-b) Nitrogen adsorption-desorption isotherms of the NCS-750 and NCS-850.

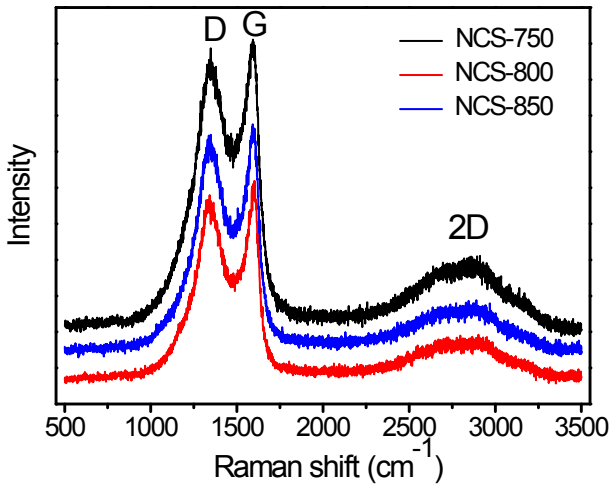

Fig. S5. Raman spectra of the NCS-750, NCS-800 and NCS-850.

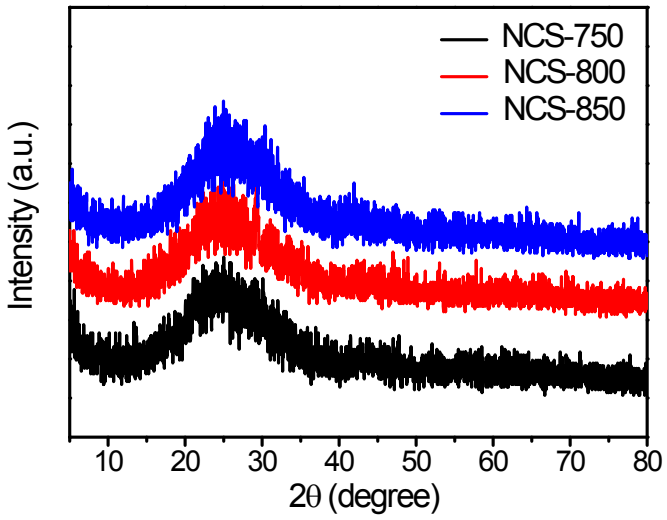

Fig. S6. X-ray diffraction of the NCS-750, NCS-800 and NCS-850.

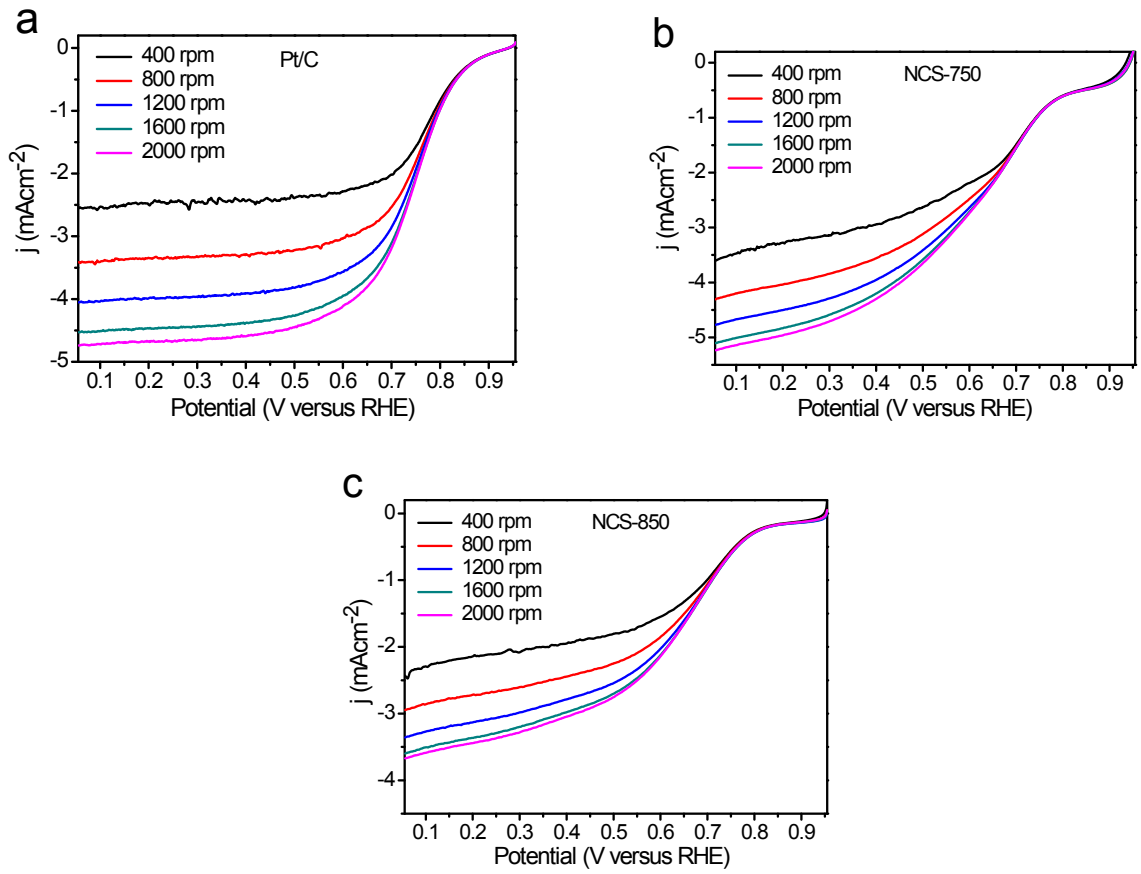

Fig. S7. RDE voltammograms for the ORR at the Pt/C electrode (a), NCS-750 electrode (b) and NCS-850 electrode (c) at the various rotation speeds in O_2-saturated 0.1 M KOH solution**.**

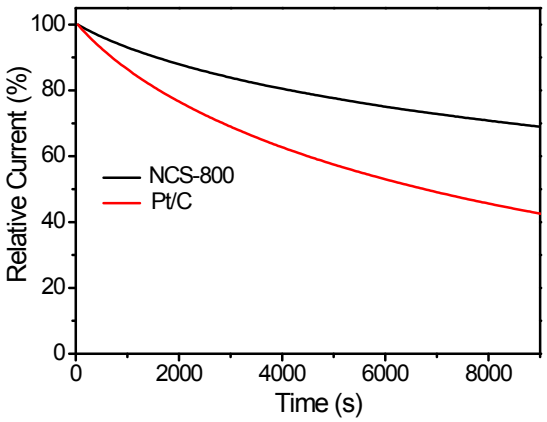

Fig. S8. Current-time (i-t) chronoamperometric response of the NCS-800 and Pt/C electrodes at 0.75 V (vs RHE) in O_2-saturated 0.1 M KOH solution at a rotation rate of 800 rpm.

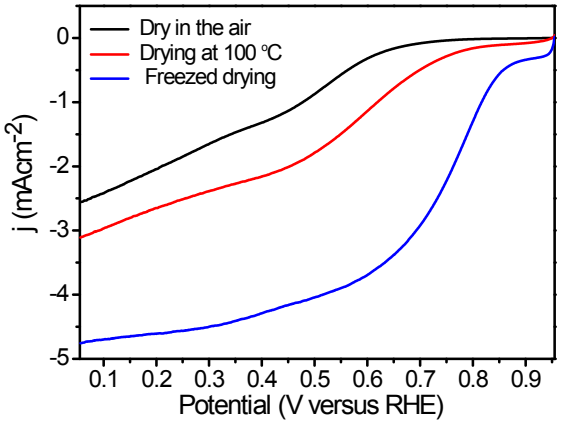

Fig. S9. RDE voltammograms in O_2-saturated 0.1 M KOH solution at room temperature (rotation speed 1600 rpm, sweep rate 20 mV s^{-1}) for the products by dry in the air, by drying at 100 °C and by freezed drying (NCS-800).

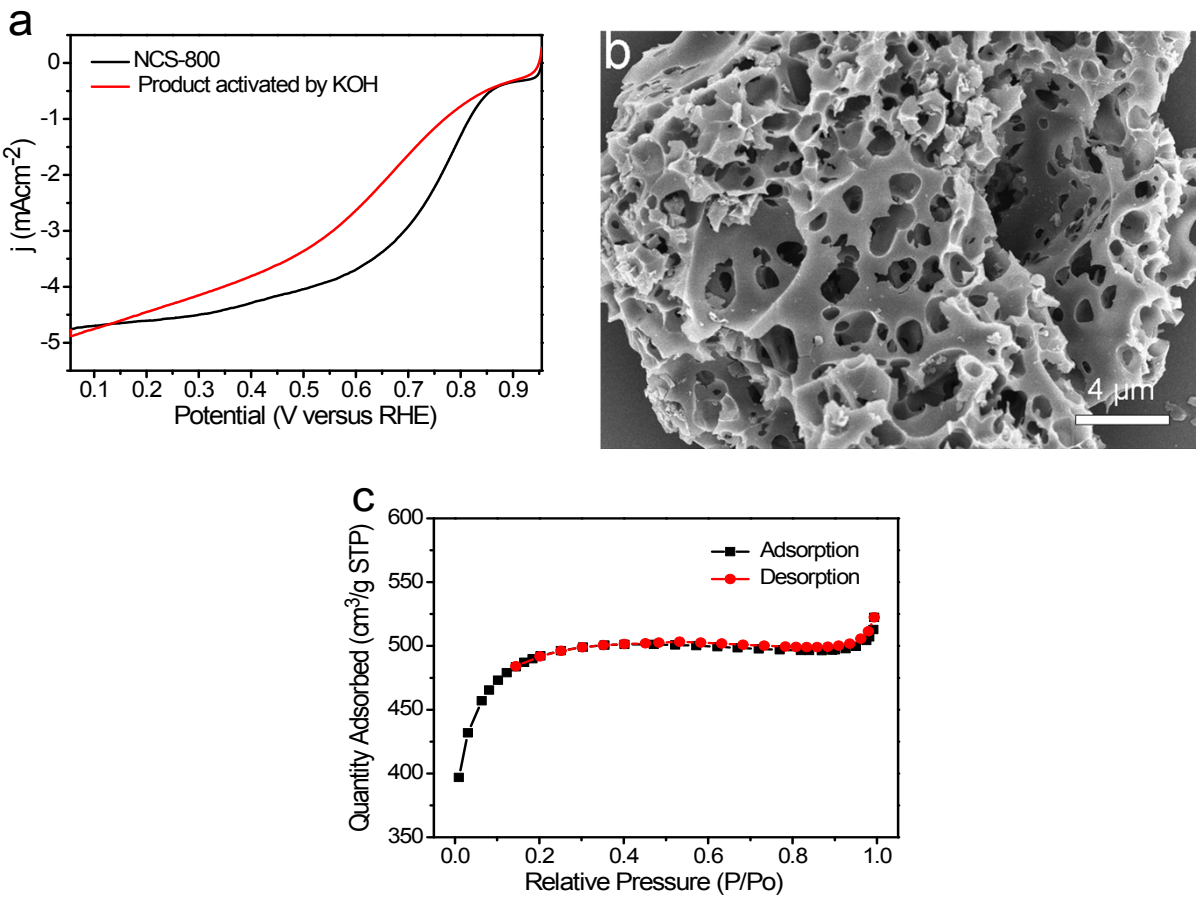

Fig. S10. (a) RDE voltammograms in O_2-saturated 0.1 M KOH solution at room temperature (rotation speed 1600 rpm, sweep rate 20 mV s^{-1}) for the NCS800 and the typical product activated by KOH before NH_3 treatment; (b-c) SEM image and nitrogen adsorption-desorption isotherm of the typical product activated by KOH.

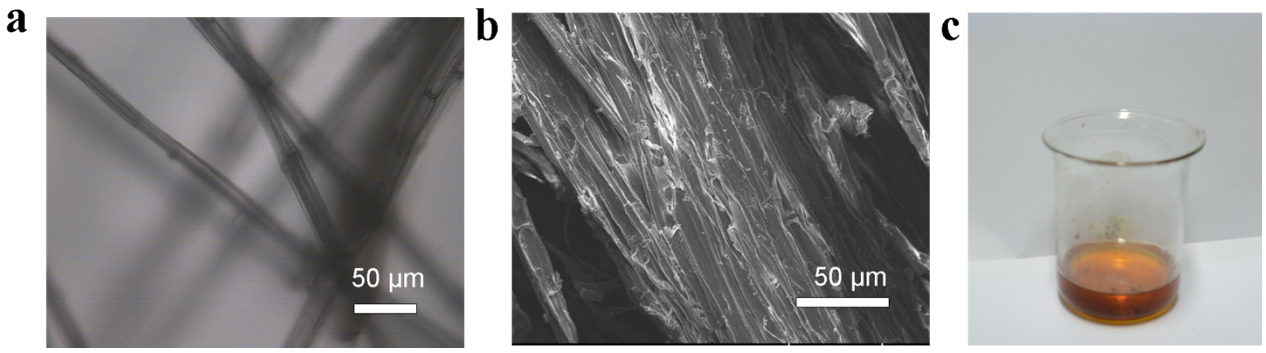

Fig. S11. (a) Optical microscope images of the *Typha orientalis* fibers (b) SEM images of the carbonaceous aerogel; (b) Photograph of the *Typha orientalis* oil collected after the annealing in NH_3 atmosphere.

Table S1. BET surface area, total pore volume and micropore volume of the products of NCS-750, NCS-800 and NCS-850.

Products	BET surface area (m^2/g)	Total pore volume (cm^3/g)	Micropore volume (cm^3/g)
NCS-750	692	0.36	0.27
NCS-800	646	0.36	0.24
NCS-850	898	0.52	0.16