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

Supplementary Information

Yogurt: A novel precursor for heavily nitrogen doped supercapacitor carbon

Malik Wahid,[a]Golu Parte[a],Deodatta Phase[b],Satishchandra Ogale[*a]

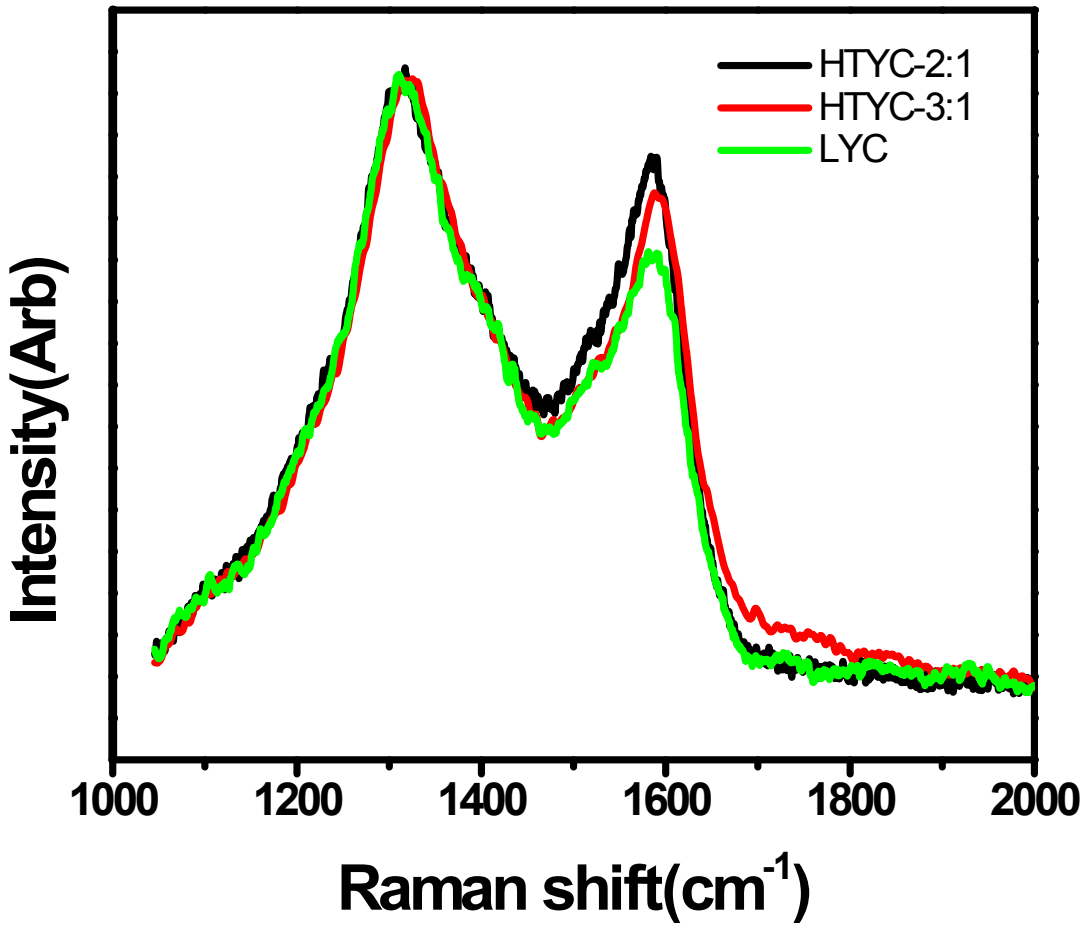

Fig. S1 Raman comparisons of different carbon forms prepared from yogurt under different activation conditions.

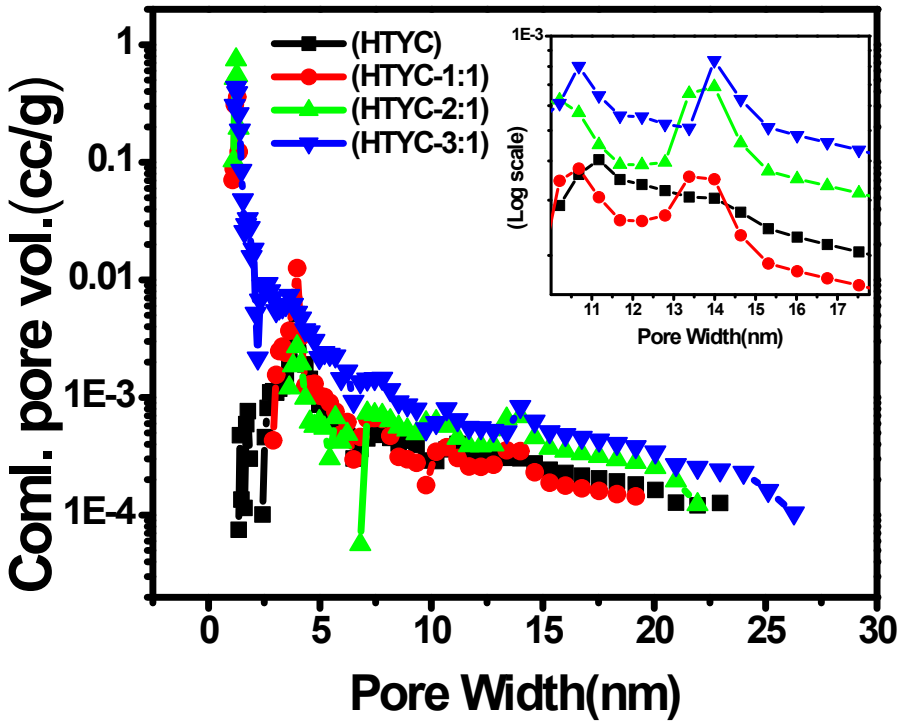

Fig.S2 Log sacle plot of pore size distribution of HTYC samples prepared under different activation conditions.

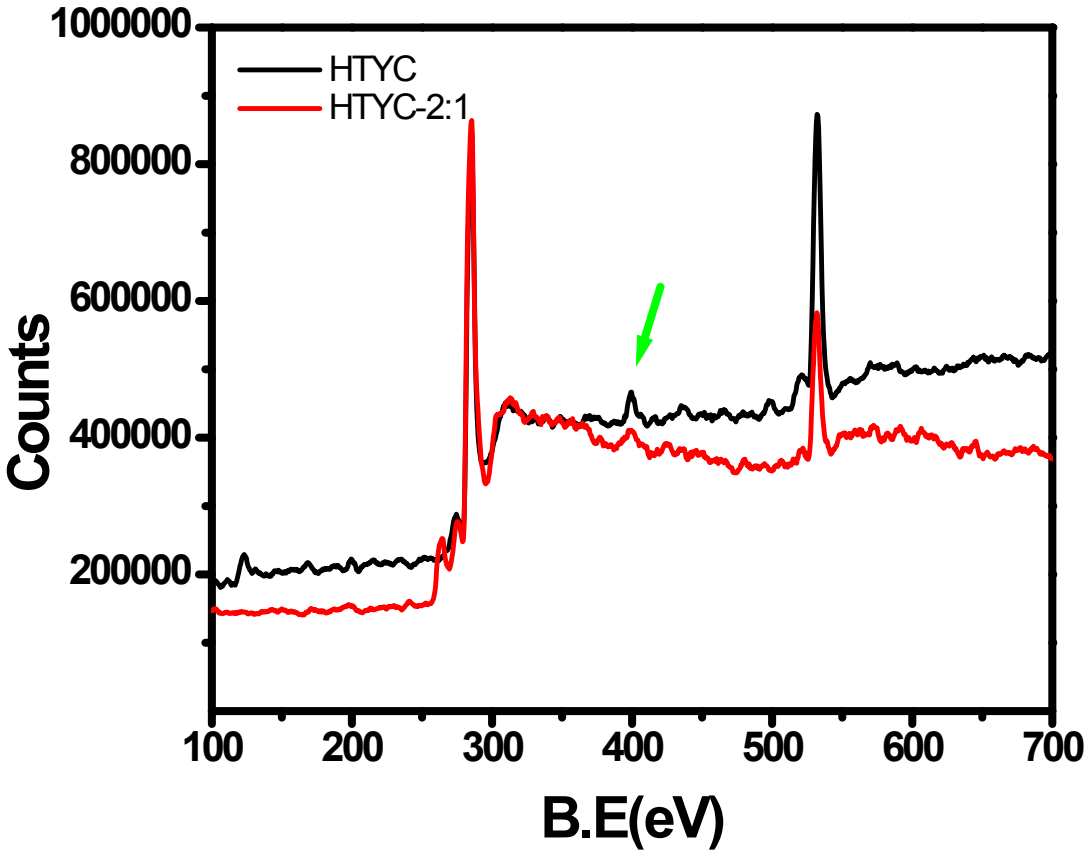

Fig. S3 Survey spectra of HTYC and HTYC-2:1 showing presence of Nitrogen.

The XPS measurement for HTYC-2:1 was made in UHV (2 X 10e-10 mbar) condition using a custom built ambient pressure XPS system from Prevac and equipped with VG Scienta monochromator (MX650) using AlK_{α} anode (1486.6 eV). The photoelectron are energy analyzed by using VG Scienta's R3000HP differentially pumped analyzer. The spectra were recorded at pass energy of 50 eV. (Ref: K. Roy, C. P. Vinod, C. S. Gopinath, J. Phys. Chem. C. 2013, 117, 4713).

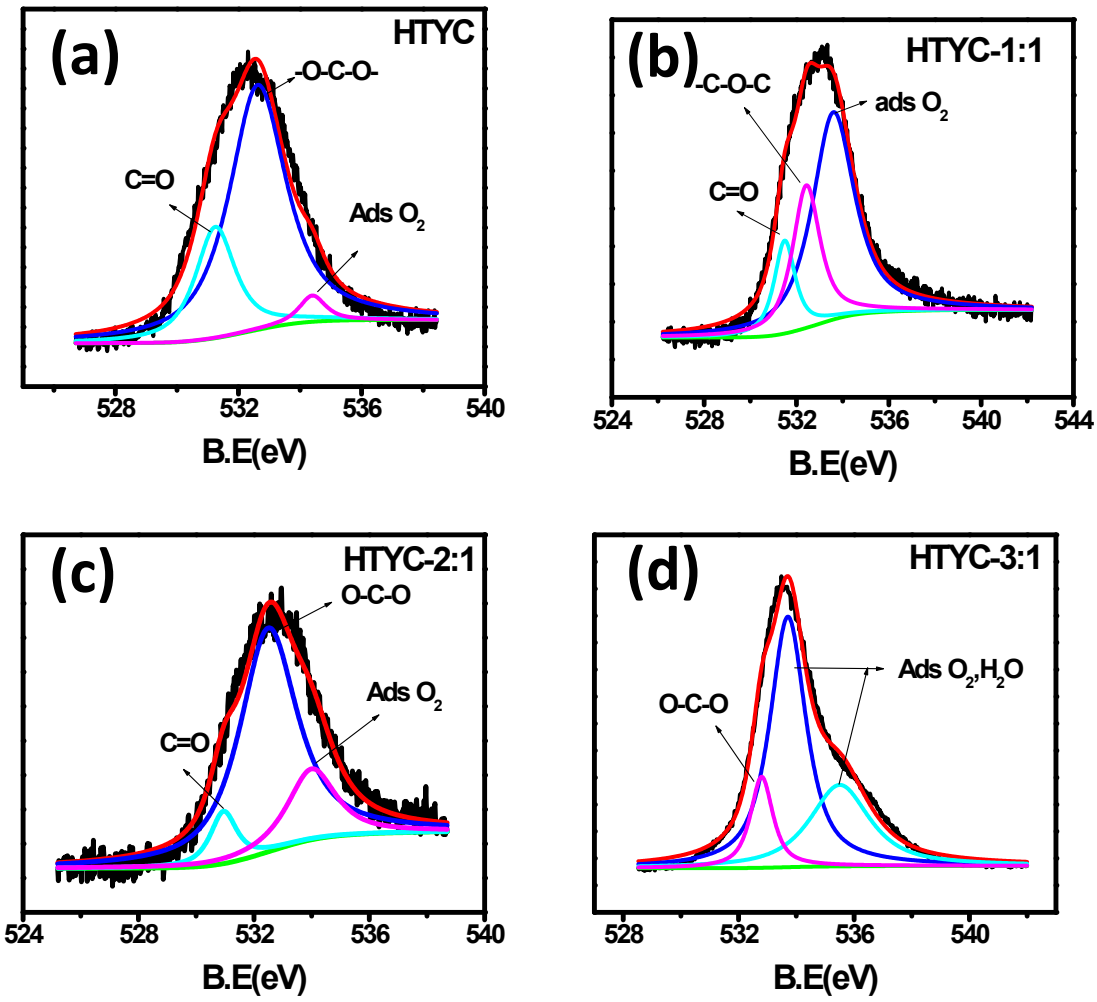

Fig. S4 Oxygen 1S XPS spectra of HTYC samples synthesized by activation with KOH at 800^{0}C (a)HTYC (b) HTYC-1:1 (c) HTYC-2:1(d) HTYC-3:1

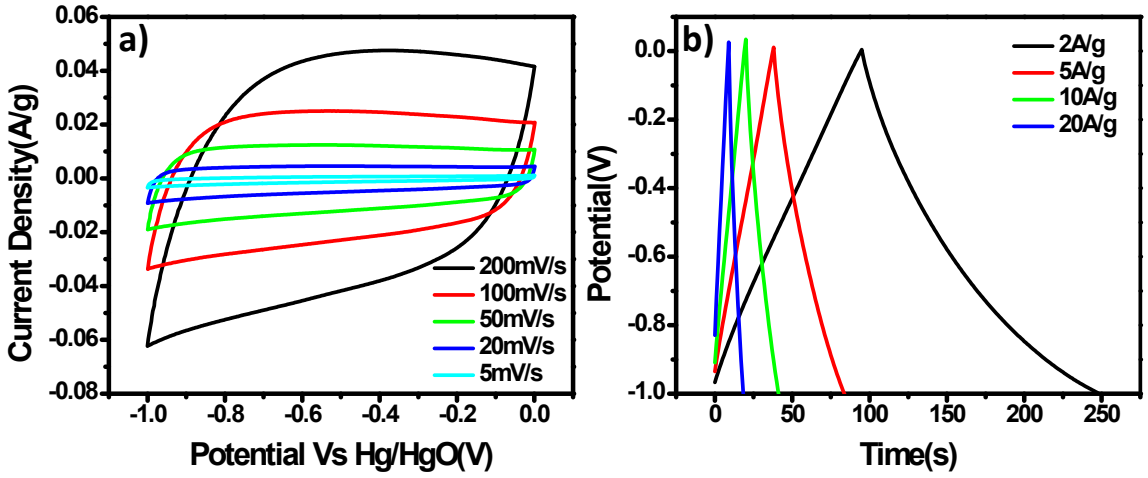

Fig. S5 Electrochemical performance of HTYC-2:1 in 6M KOH solution in a three electrode cell using Hg/HgO as reference electrode and carbon paper as counter electrode.**a**) Shows the CV plots in scan rate range of 5mV/s to 200mV/s and **b)** Shows the charge discharge plots at the currents ranging from 2A/g to 20A/g.

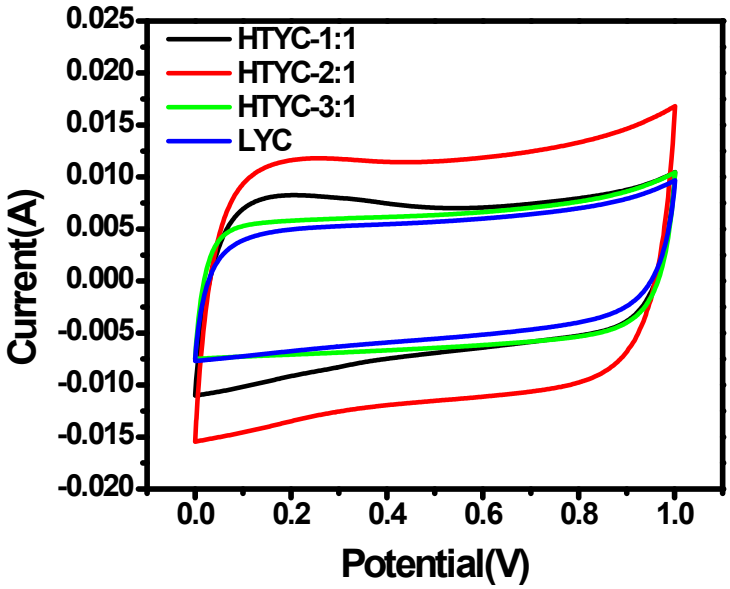

Fig. S6 Comparative CV plot for different carbons prepared from yogurt under different activation conditions.

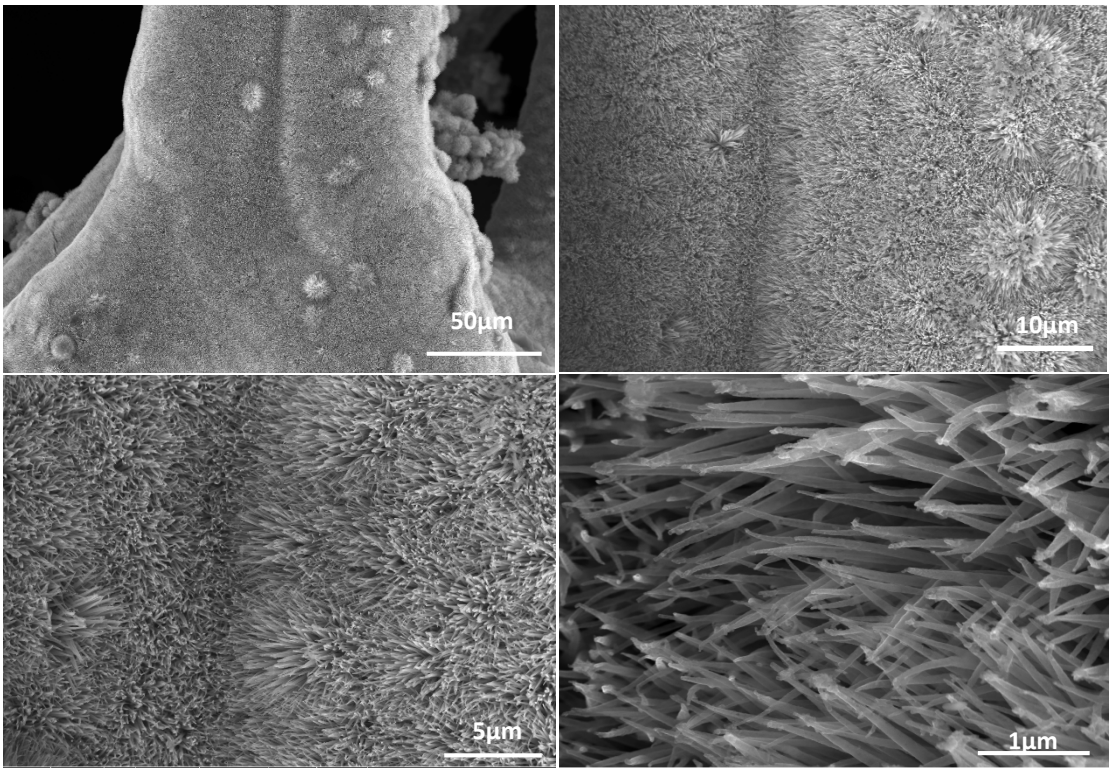

Fig. S7 FE-SEM images of NCS used as counter electrode in the asymmetric testing of HTYC carbon material.

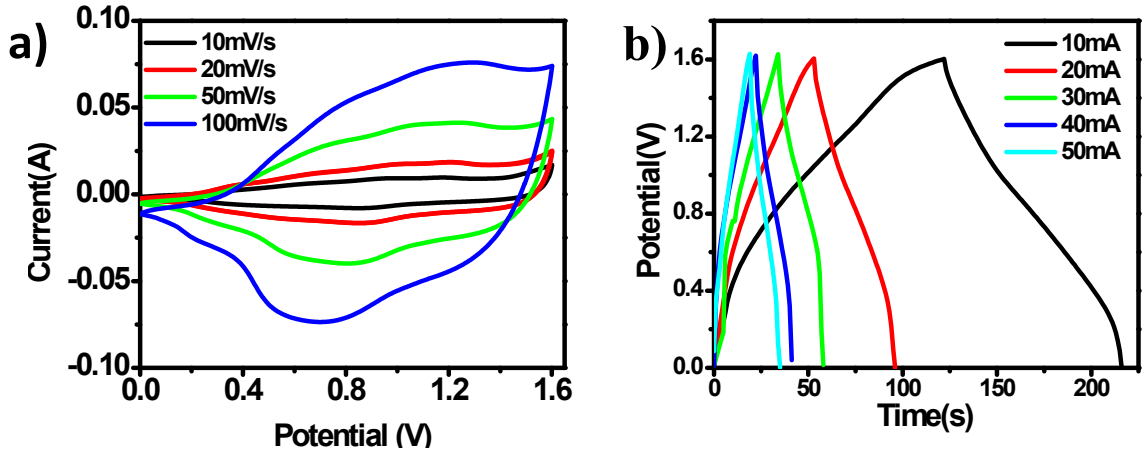

Fig. S8 Electrochemical Performance of asymmetric cell having NCS as anode and HTYC-2:1 as cathode. **a)** Cyclic voltammetry plots at different scan rates in 3M KOH **b)** Charge discharge plots at currents ranging from 10mA to 50 mA