

## High energy flexible symmetric supercapacitor fabricated using N-doped activated carbon derived from palm flower

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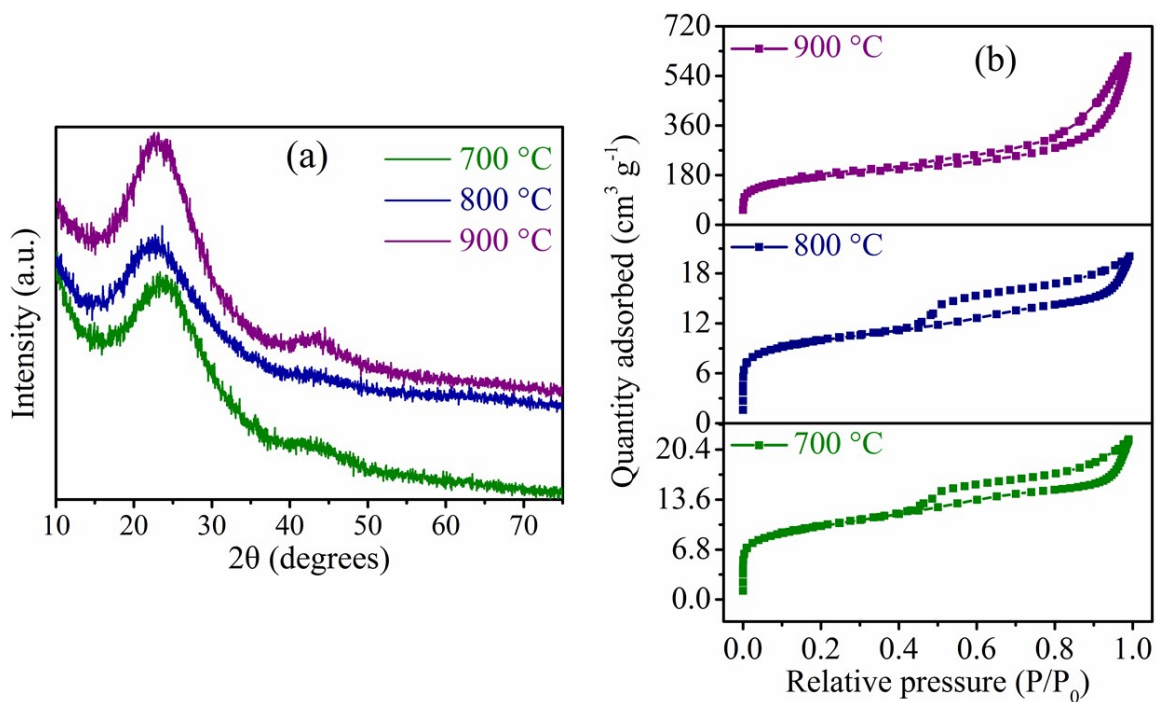
**Table S1** Surface areas of carbons extracted from palm flower residue using KOH solution and calcination at different temperatures.

Activation conditions of carbon [KOH] / calcination temperature	BET surface area (m <sup>2</sup> g <sup>-1</sup> )
2 M / 700 °C	786
2 M / 800 °C	796
2 M / 900 °C	610
1 M / 800 °C	625
2 M / 800 °C	796
3 M / 800 °C	492

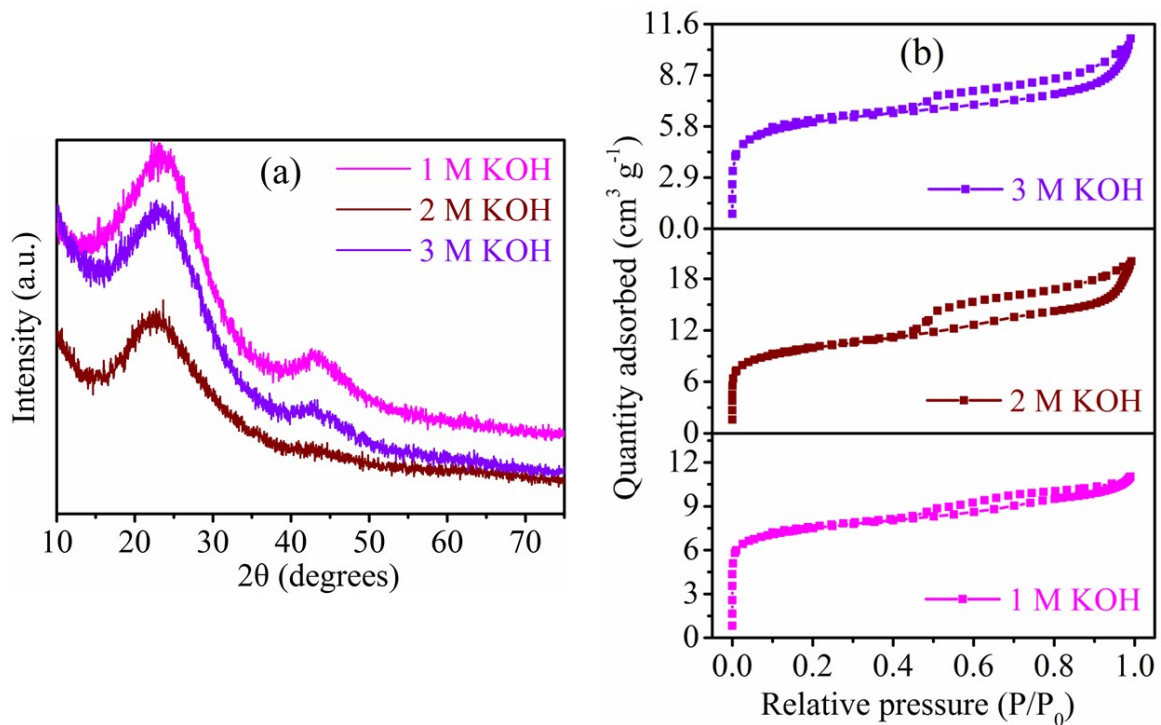
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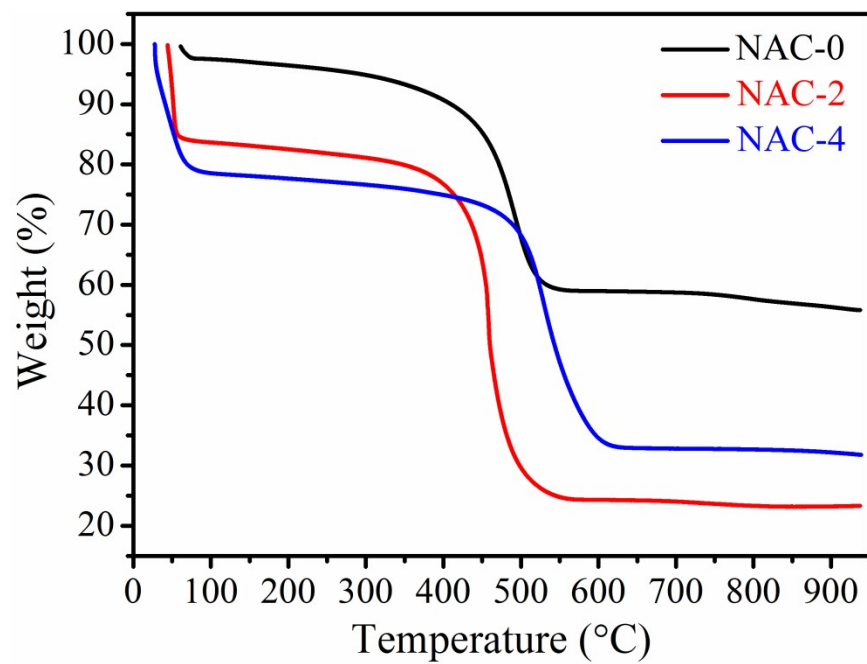
[grrao@iitm.ac.in](mailto:grrao@iitm.ac.in) (G. Ranga Rao).



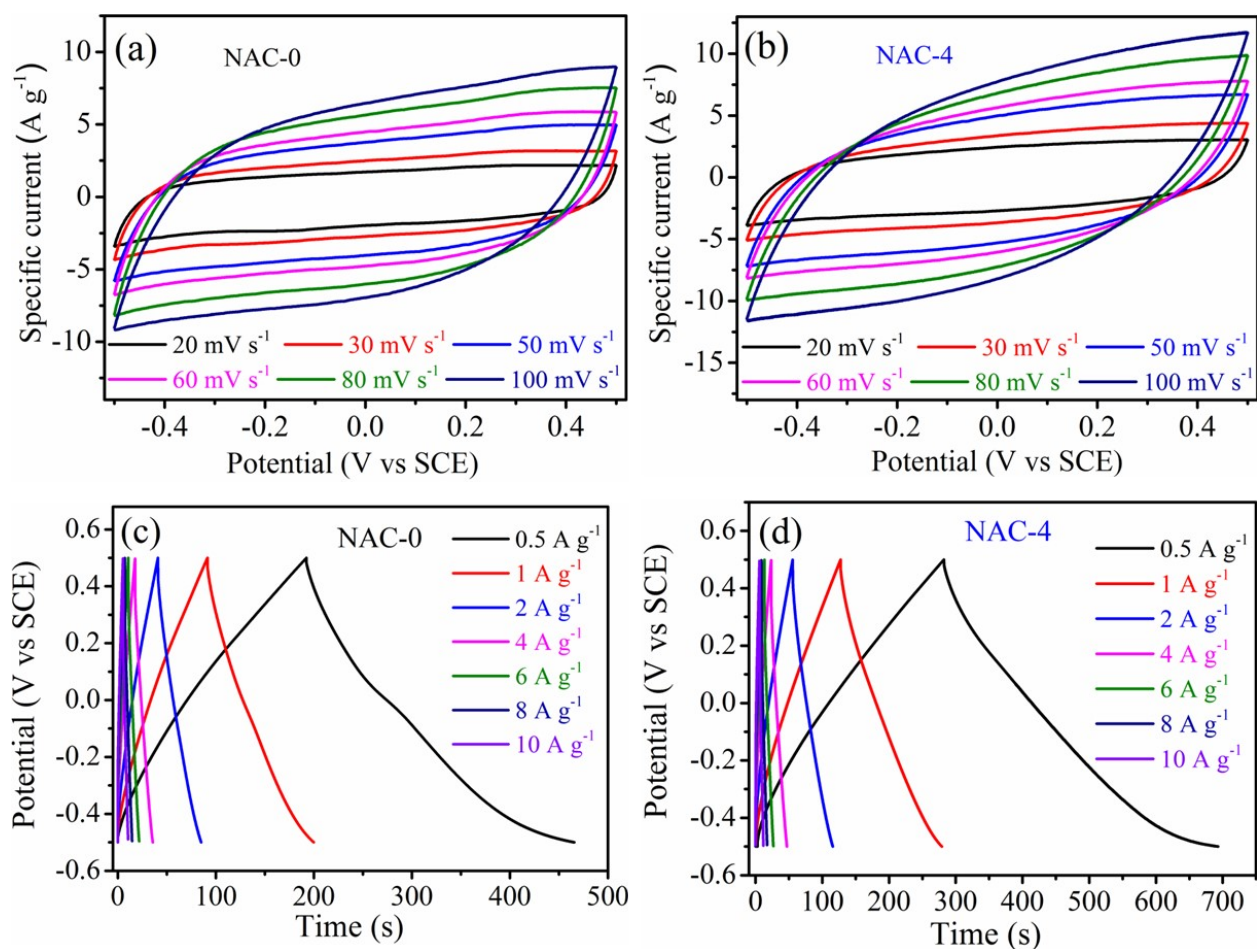
**Fig. S1** (a) PXRD patterns and (b) BET isotherms of activated carbons obtained by activation of palm flower using 2 M KOH under autoclave conditions at 160 °C and calcined at different furnace temperatures in nitrogen flow.



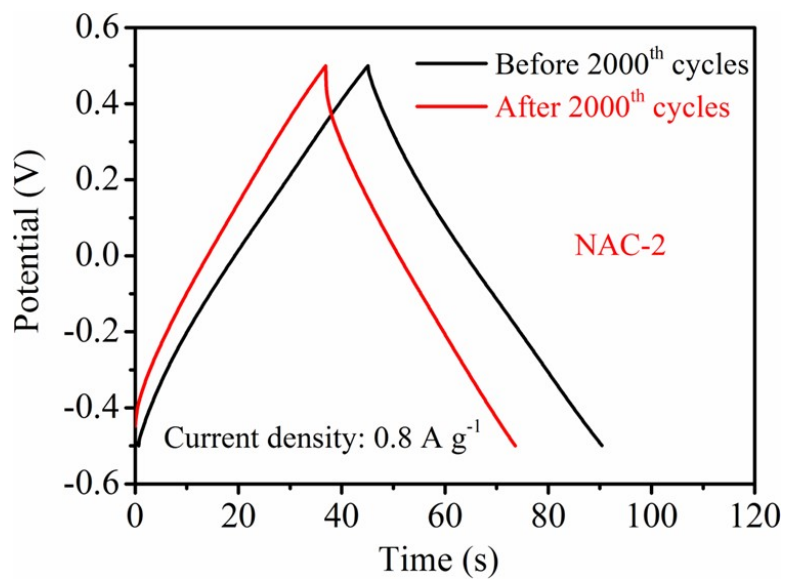
**Fig. S2** (a) PXRD patterns and (b) BET isotherms of activated carbons obtained by activation of palm flower using 1, 2, and 3 M KOH under autoclave conditions at 160 °C and calcined at 800 °C fixed furnace temperature in nitrogen flow.



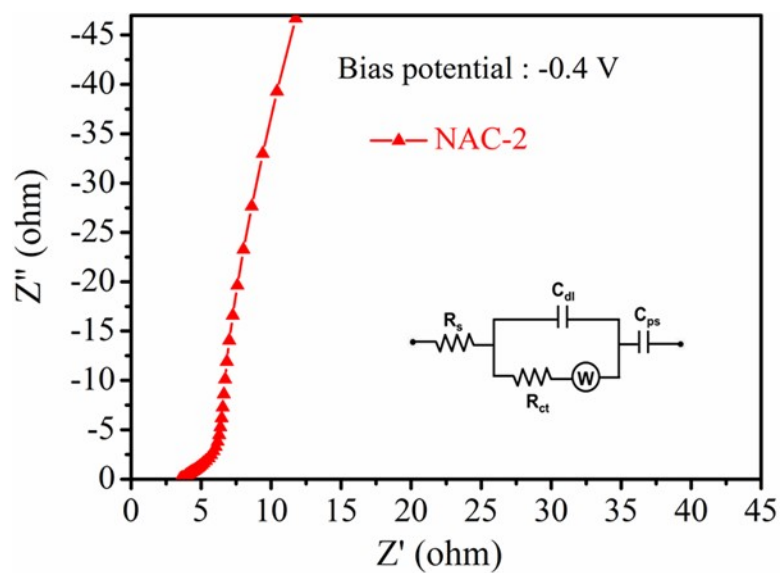
**Fig. S3** TGA curves of nitrogen doped activated carbons recorded in air atmosphere.



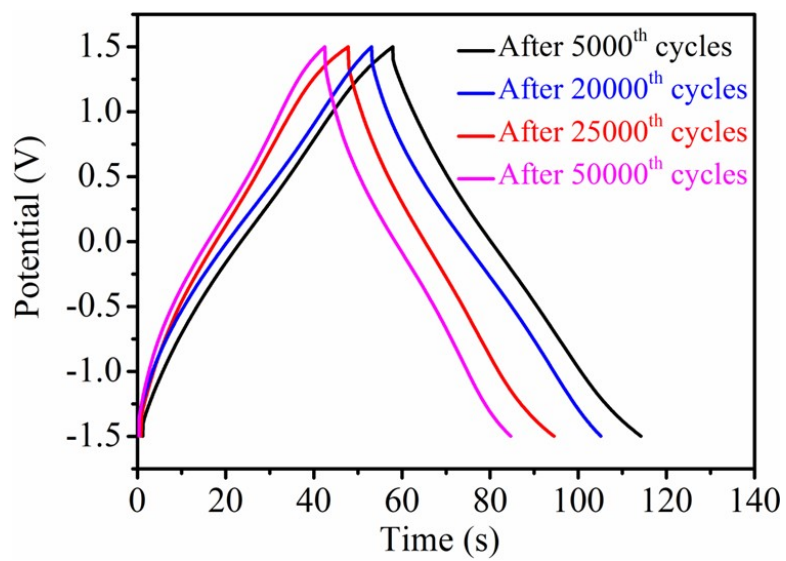
**Fig. S4** CV profiles of (a) NAC-0 and (b) NAC-4 electrodes at different scan rates. GCD profiles of (c) NAC-0 and (d) NAC-4 electrodes at different current densities.



**Fig. S5** Charge-discharge curves of NAC-2 electrode before and after 2000 galvanostatic charge-discharge (GCD) cycles at 0.8 A g<sup>-1</sup>.

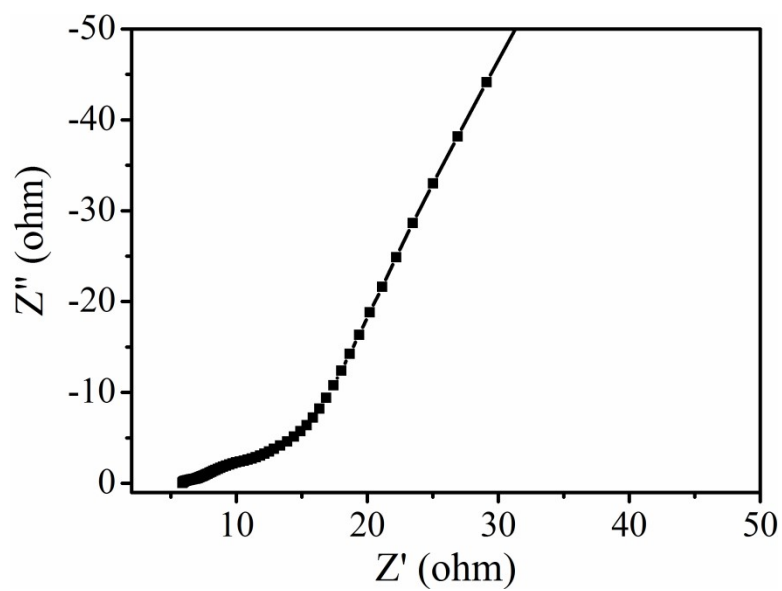


**Fig. S6** Nyquist plot of NAC-2 electrode at -0.4 V and inset shows the equivalent circuit fit.



**Fig. S7** Charge-discharge curves of the fabricated symmetric device at different intervals of cyclic tests.





**Fig. S8** Nyquist plot of NAC-2 electrode at -0.4 V in 0.1 M  $\text{H}_2\text{SO}_4/\text{PVA}$  solid electrolyte.