Supporting Information

Bridging the Performance Gap between Electric Double Layer Capacitors and Batteries with High-Energy/High-Power Carbon Nanotube-based Electrodes

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Table S1. Textural properties of CNT and activated CNxT samples.

Sample	Surface area[a] (m^2 g^{-1})	Pore volume[b] (cm^3 g^{-1})	Pore size[c] (Å)
CNT	470 (373)	0.39 (0.18)	8/12
CN2600	1479 (1400)	0.83 (0.67)	6/9/11
CN2700	2102 (1987)	1.18 (0.95)	6/9/13
CN2800	2925 (2538)	1.56 (1.18)	6/8/11/21
CN2900	2676 (801)	1.88 (0.36)	7/12/27/34

The values in the parenthesis refer to (a) micropore surface area and (b) micropore volume. (c) Pore size distribution maxima obtained from NLDFT analysis.

Table S2. Best-fit parameters obtained by fitting the experimental Nyquist plots obtained from EIS of the EDLCs containing the CN2T samples and aqueous H_2SO_4 electrolyte to the equivalent circuit shown in Figure 4C in the main manuscript.

	CN2600	CN2700	CN2800	CN2900
R1 / Ω	13.5	12.99	7.904	3.427
Y / F	0.0314	0.0313	0.033	0.038
n	0.86	0.89	0.91	0.97
R2 / Ω	33.9	10.2	8.50	5.50
Wo1-R / Ω	6.57	4.47	3.83	3.60
Wo1-T	0.062	0.053	0.047	0.038
Wo1-P	0.37	0.45	0.46	0.45

Table S3. Best-fit parameters obtained by fitting the experimental Nyquist plots obtained from EIS of the EDLCs containing the CN2T samples and [EMIM][BF_4] and [BMIM][BF_4] to the equivalent circuit shown in Figure 4C in the main manuscript.

	CN2900	
	[EMIM][BF_4]	[BMIM][BF_4]
R1 / Ω	9.82	19.9
Y / F	0.015	0.020
n	0.82	0.80
R2 / Ω	36.8	37.8
Wo1-R / Ω	98.0	129
Wo1-T	0.388	1.78
Wo1-P	0.28	0.3

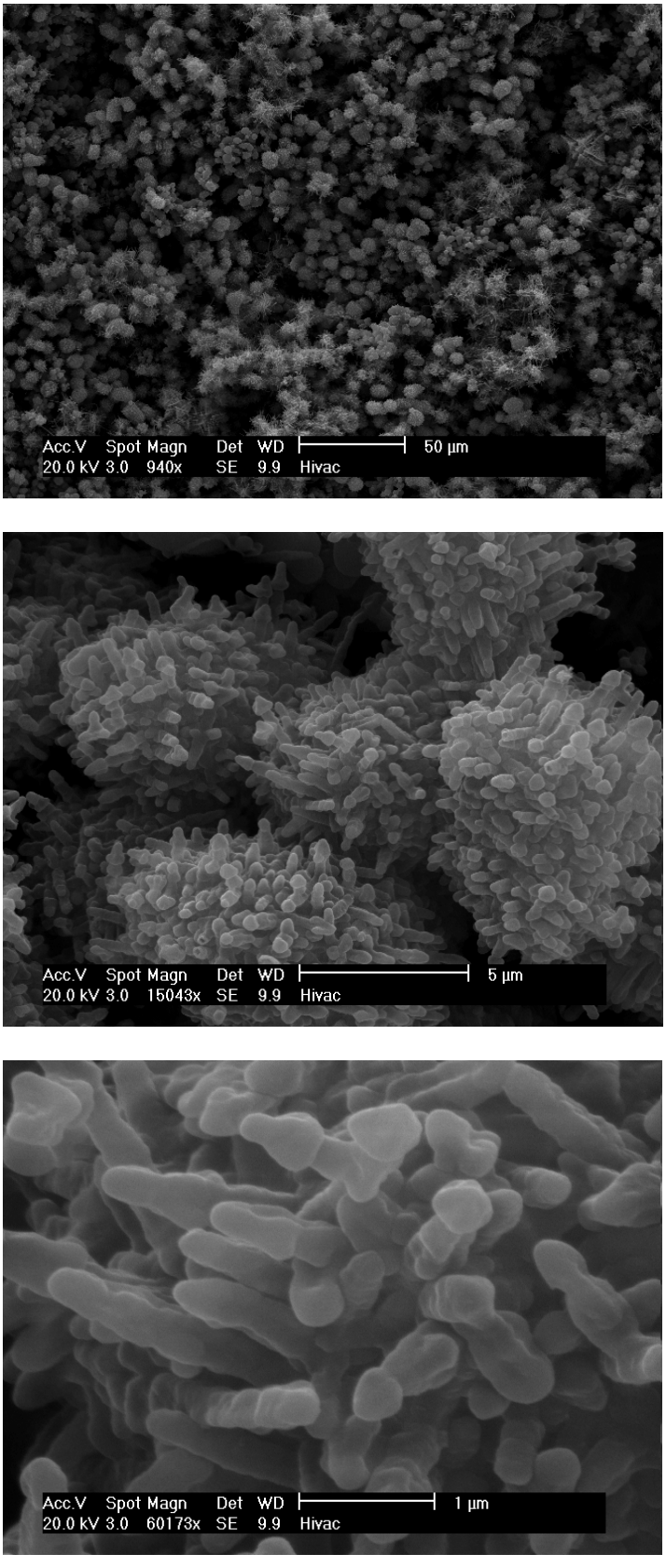

Figure S1. SEM images of as-synthesised CNT yield.

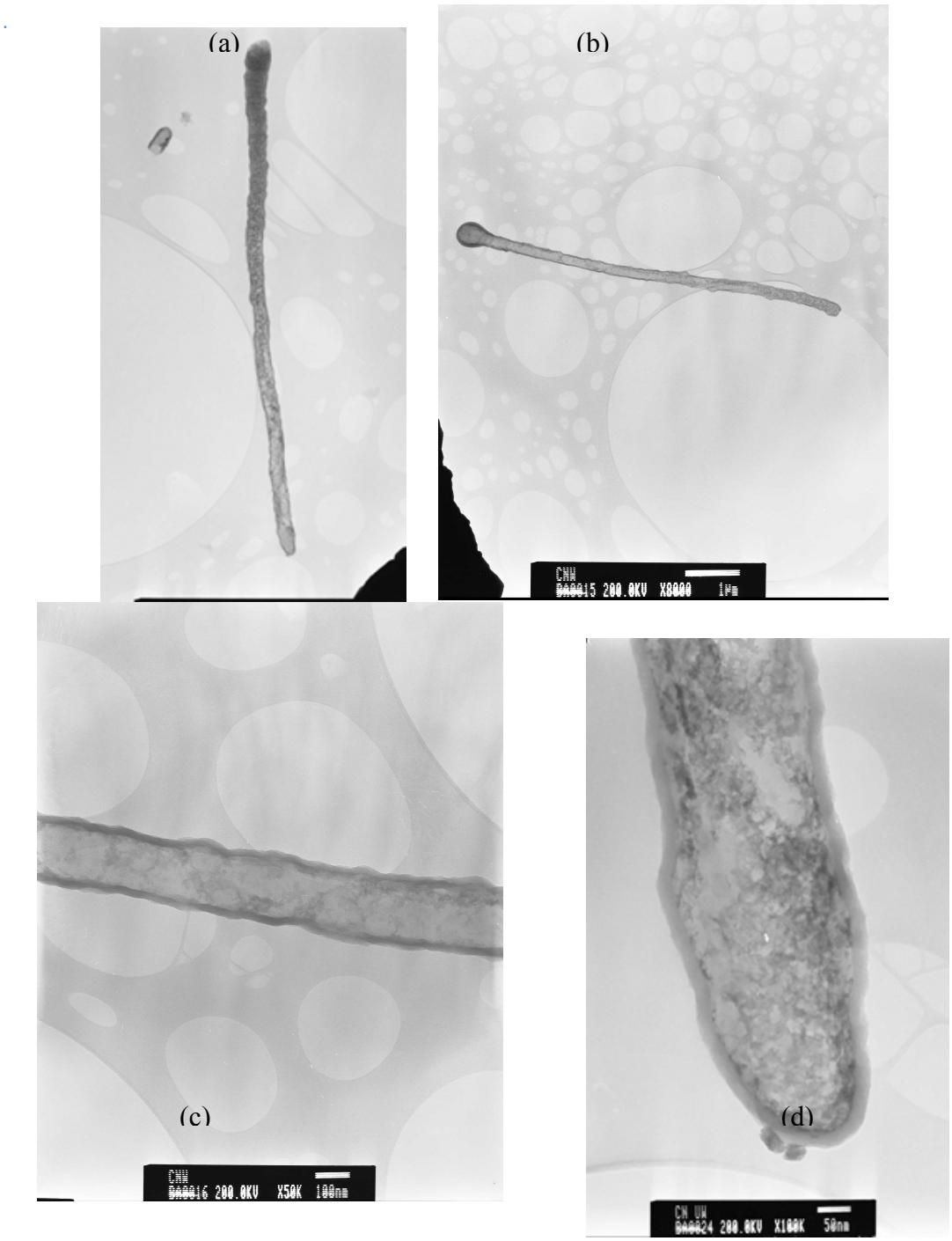

Figure S2. TEM images of isolated as-synthesised CNTs. The scale bar is 1 μm in (a) and (b), 100 nm in (c) and 50 nm in (d).

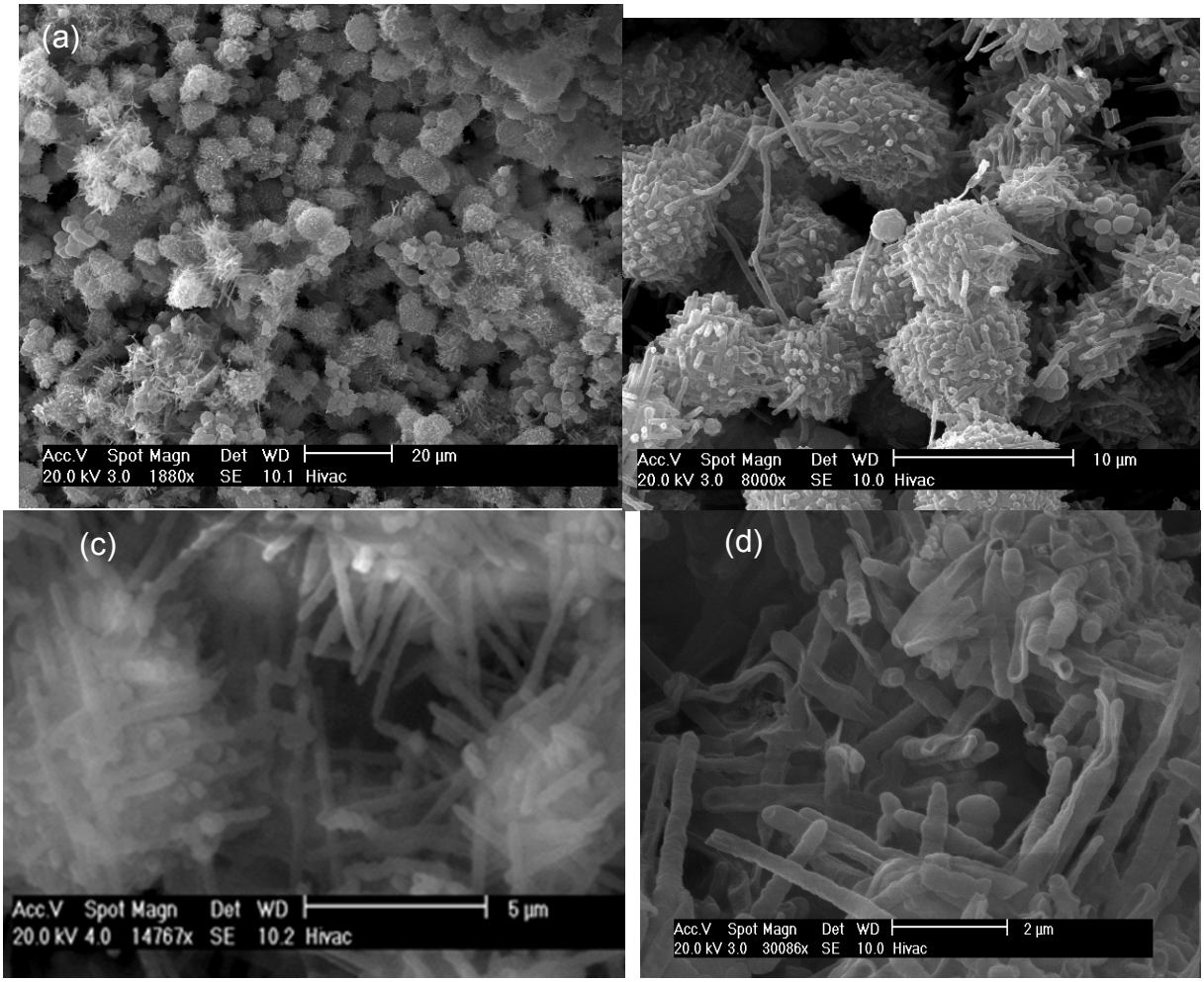

Figure S3. SEM images of washed CNTs.

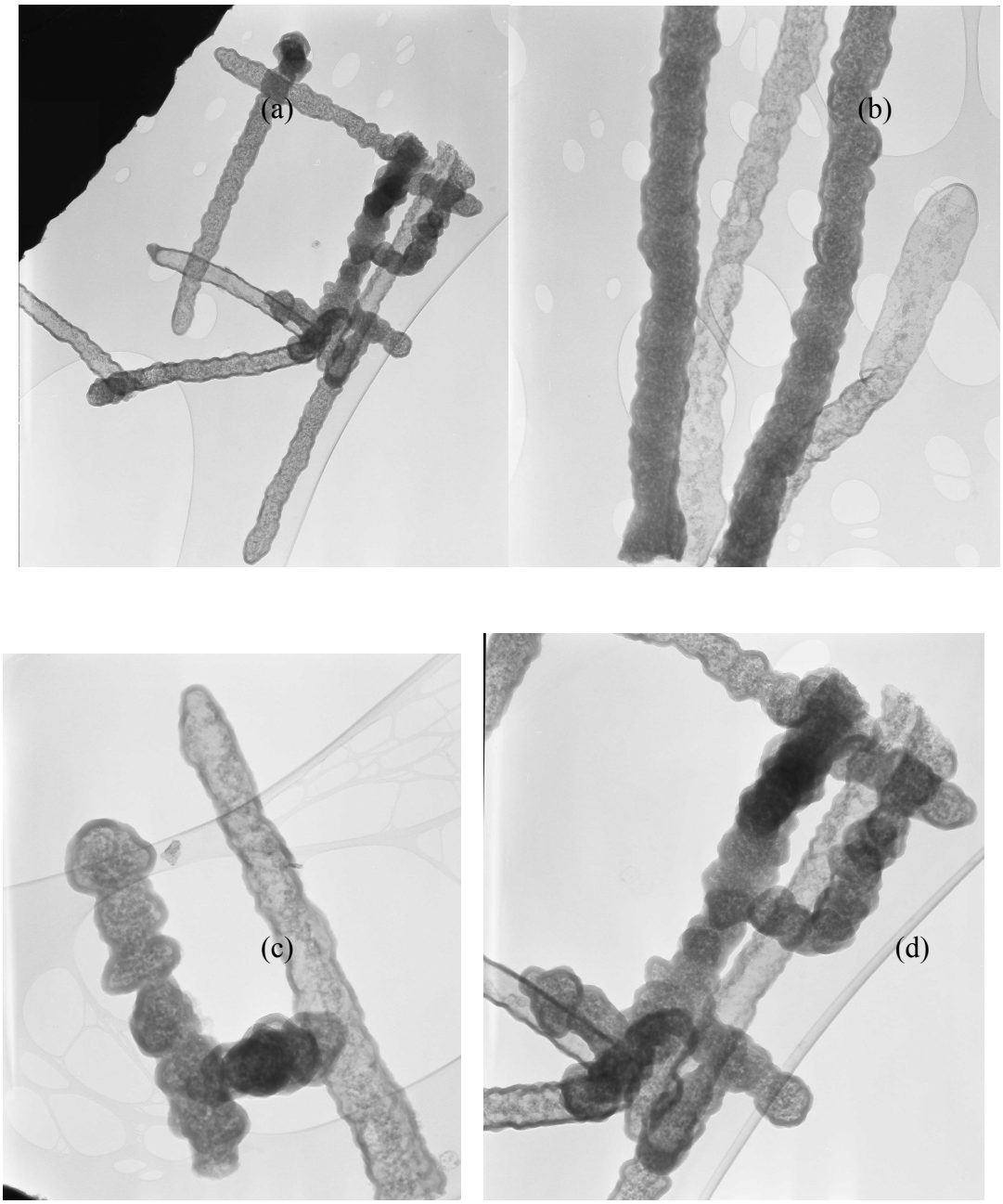

Figure S4. TEM images of washed CNTs. The scale bar is 500 nm in (a), and 200 nm in (b), (c) and (d).

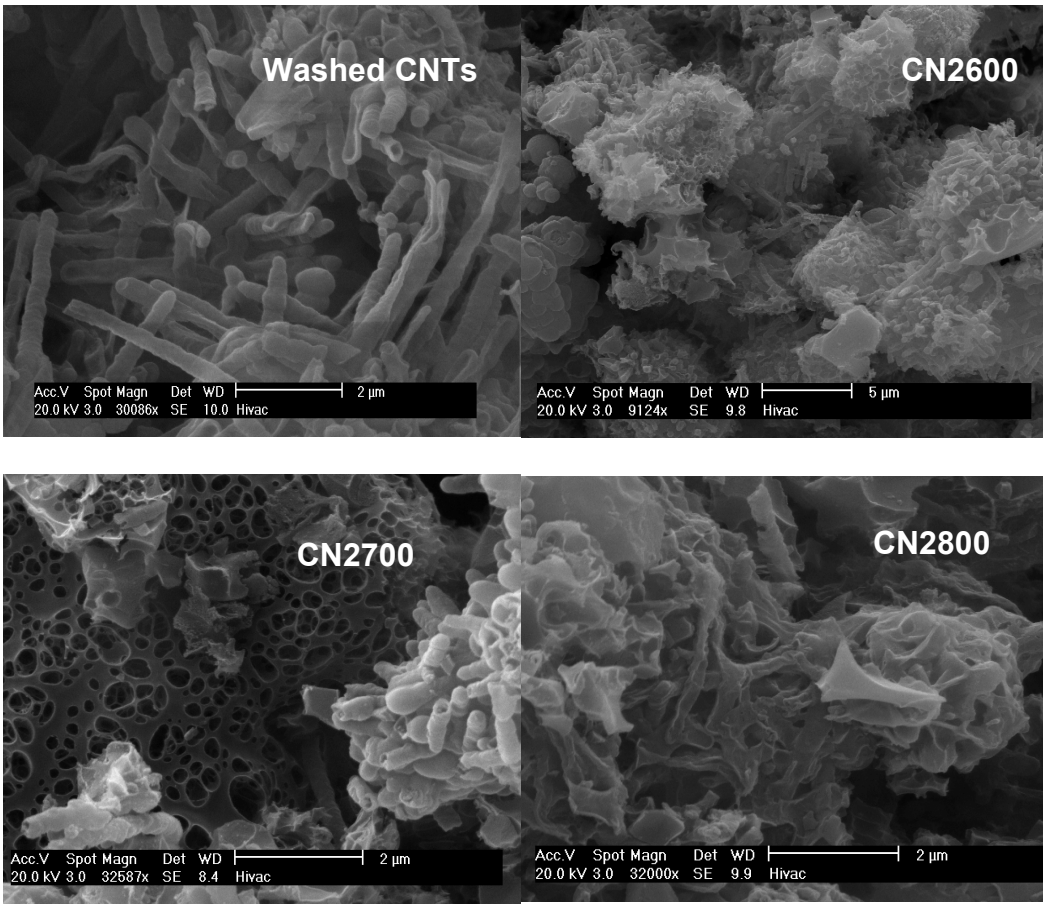

Figure S5. SEM images of acid-washed CNTs and activated carbons. CN2600, CN2700 and CN2800 are the carbons activated at a KOH/carbon ratio of 2 and at 600 °C, 700°C and 800 °C, respectively.

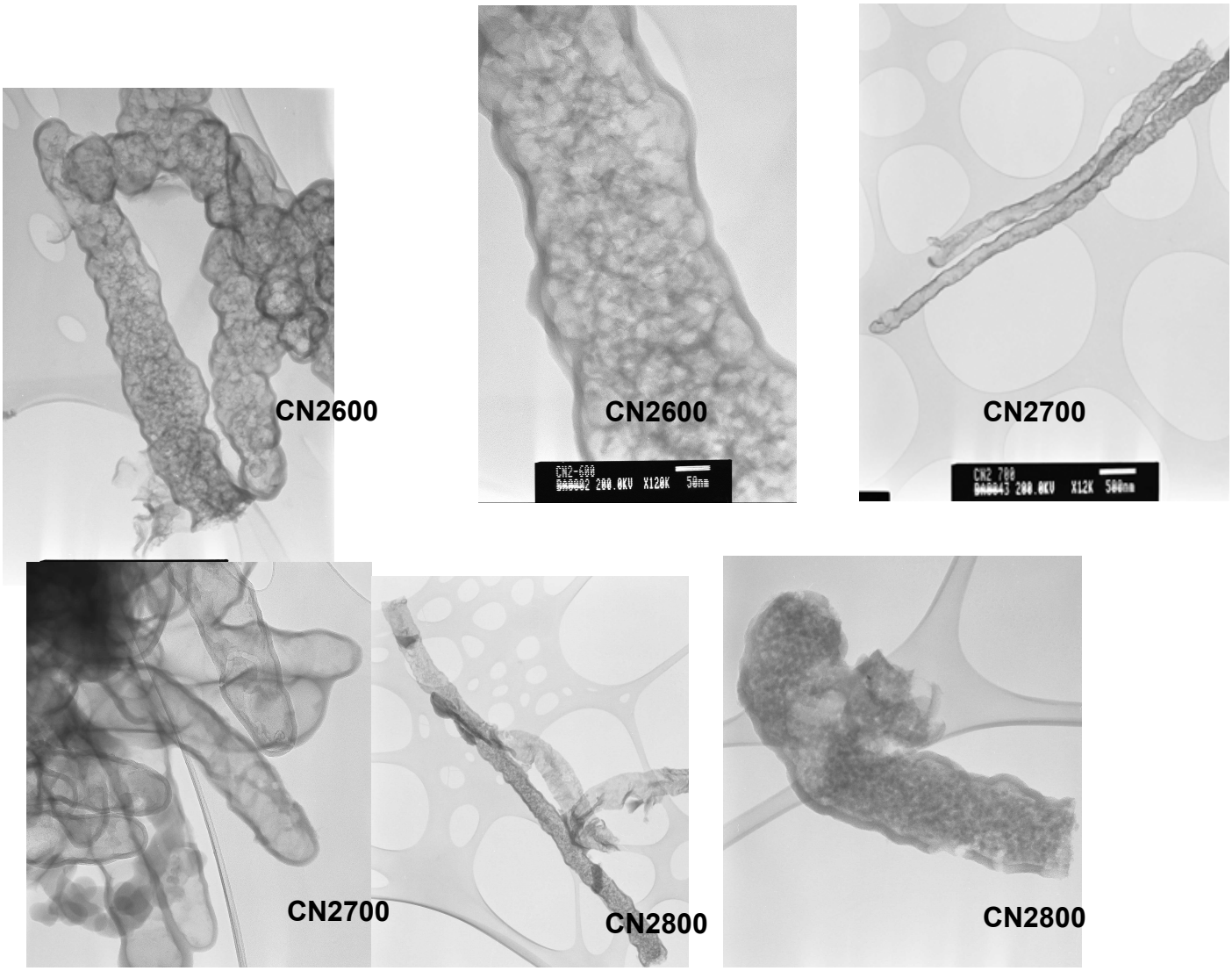

Figure S6. TEM images of activated samples prepared at KOH/carbon ratio of 2.

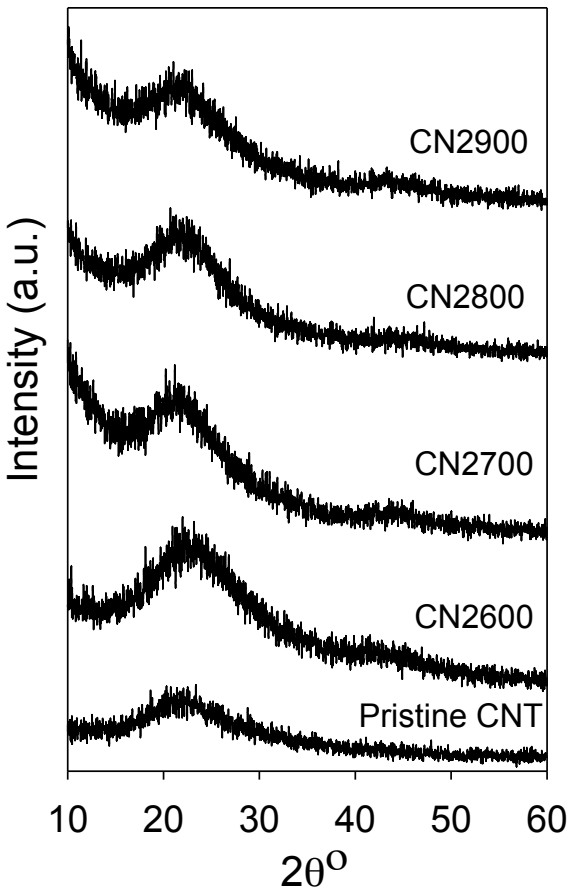

Figure S7. Powder XRD patterns of as-synthesised and activated CNT samples.

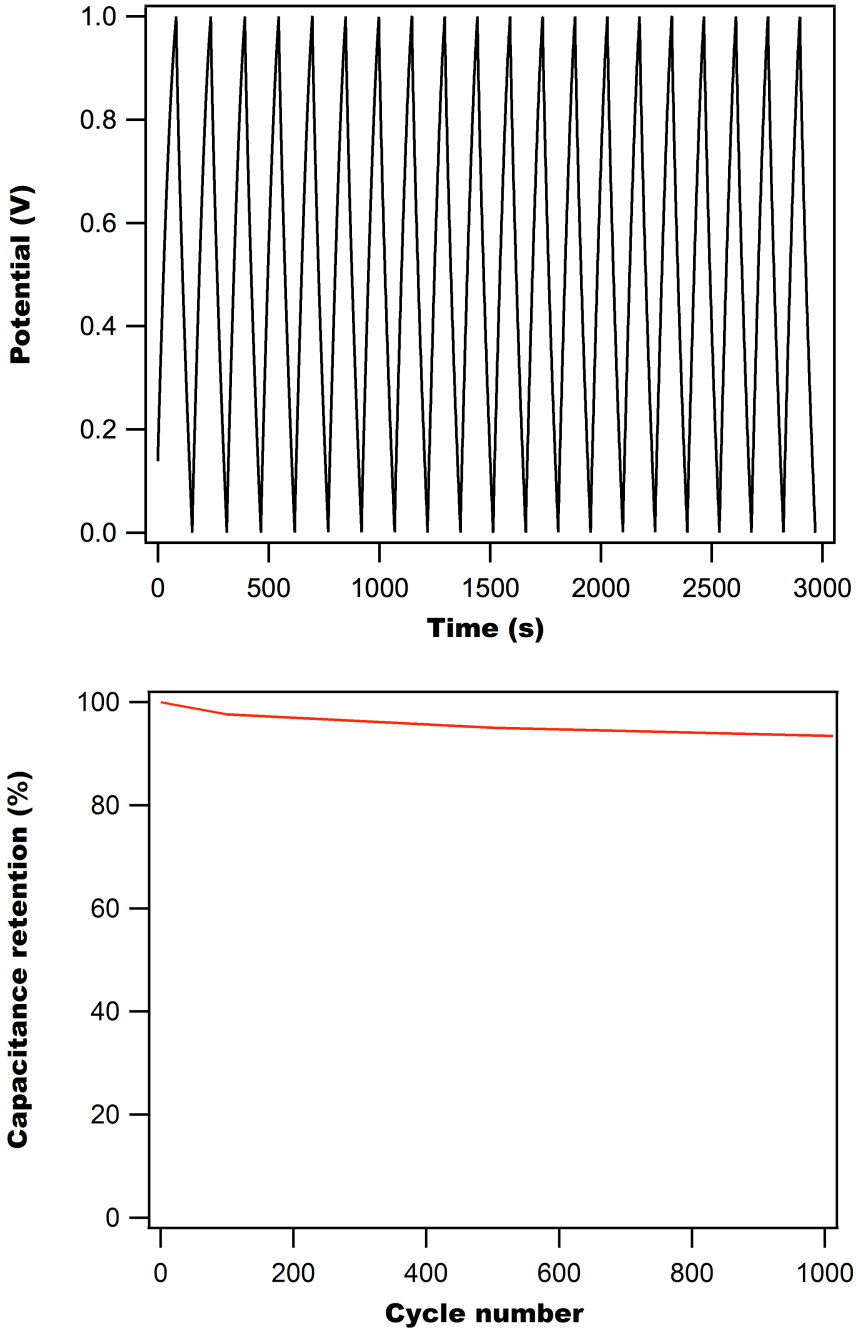

Figure S8. (A) Charge/discharge curves recorded using a symmetrical cell containing the CN2900 sample and H_2SO_4 as electrolyte at current density of 1 A g^{-1}. (B) Percent capacitance versus cycle number for 1000 charge/discharge cycles.

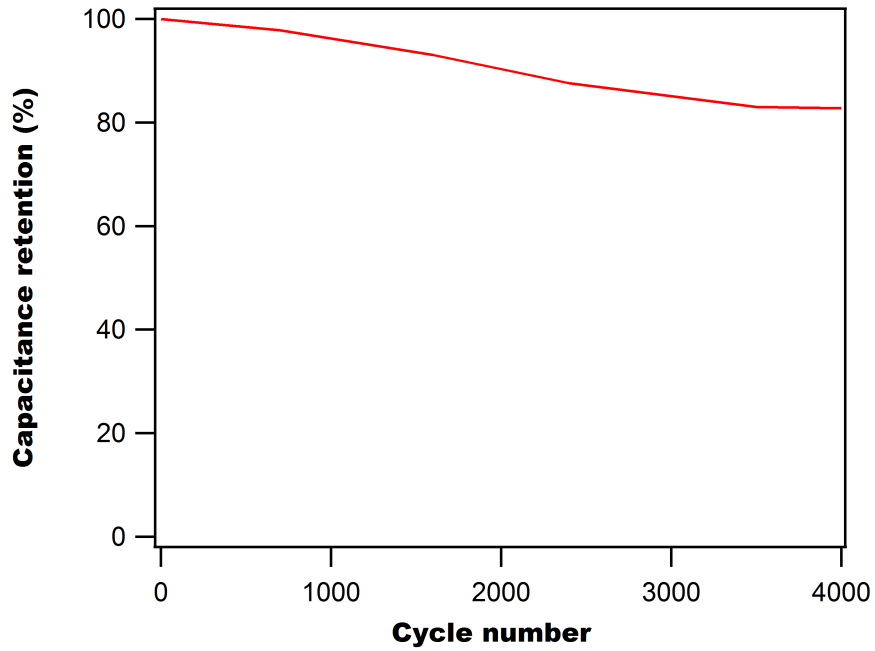

Figure S9. *Percent capacitance versus cycle number over 4000 charge/discharge cycles of the cell containing H_2SO_4 and CN2900 electrodes (charging to 1 V).*

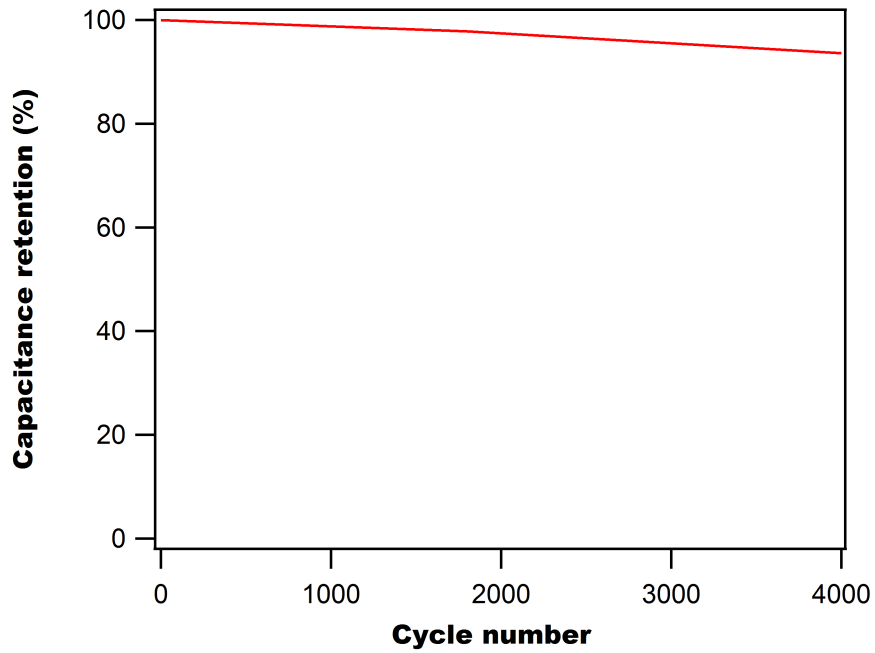

Figure S10. *Percent capacitance versus cycle number over 4000 charge/discharge cycles of the cell containing [EMIM][BF_4] and CN2900 electrodes (charging to 2 V).*

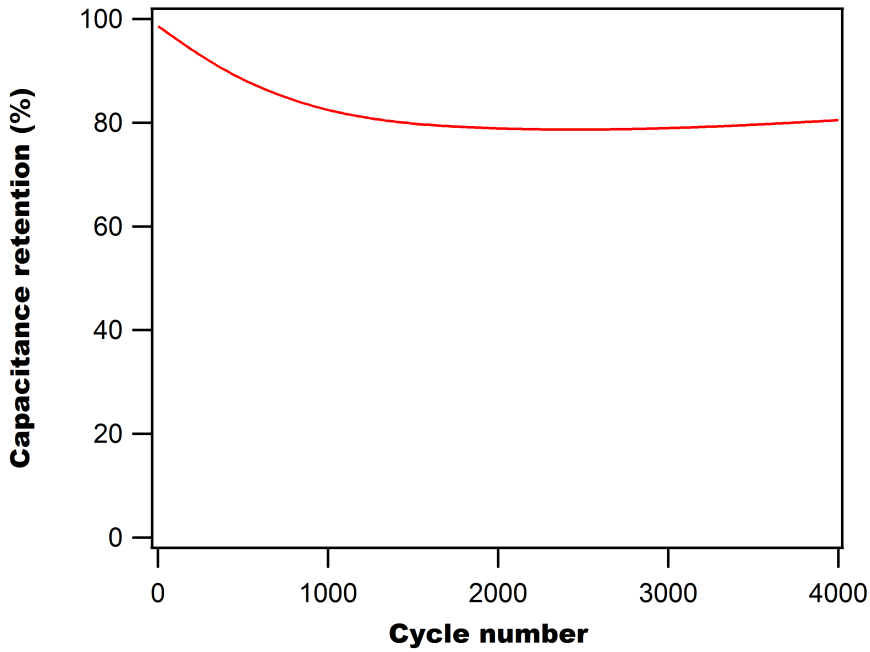

Figure S11. *Percent capacitance versus cycle number over 4000 charge/discharge cycles of the cell containing [EMIM][BF_4] and CN2900 electrodes (charging to 3 V).*