Electronic Supplementary Material (ESI) for RSC Advances

Nitrogen-enriched multimodal porous carbons for supercapacitors, fabricated from inclusion complexes hosted by urea hydrates

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Supplementary information

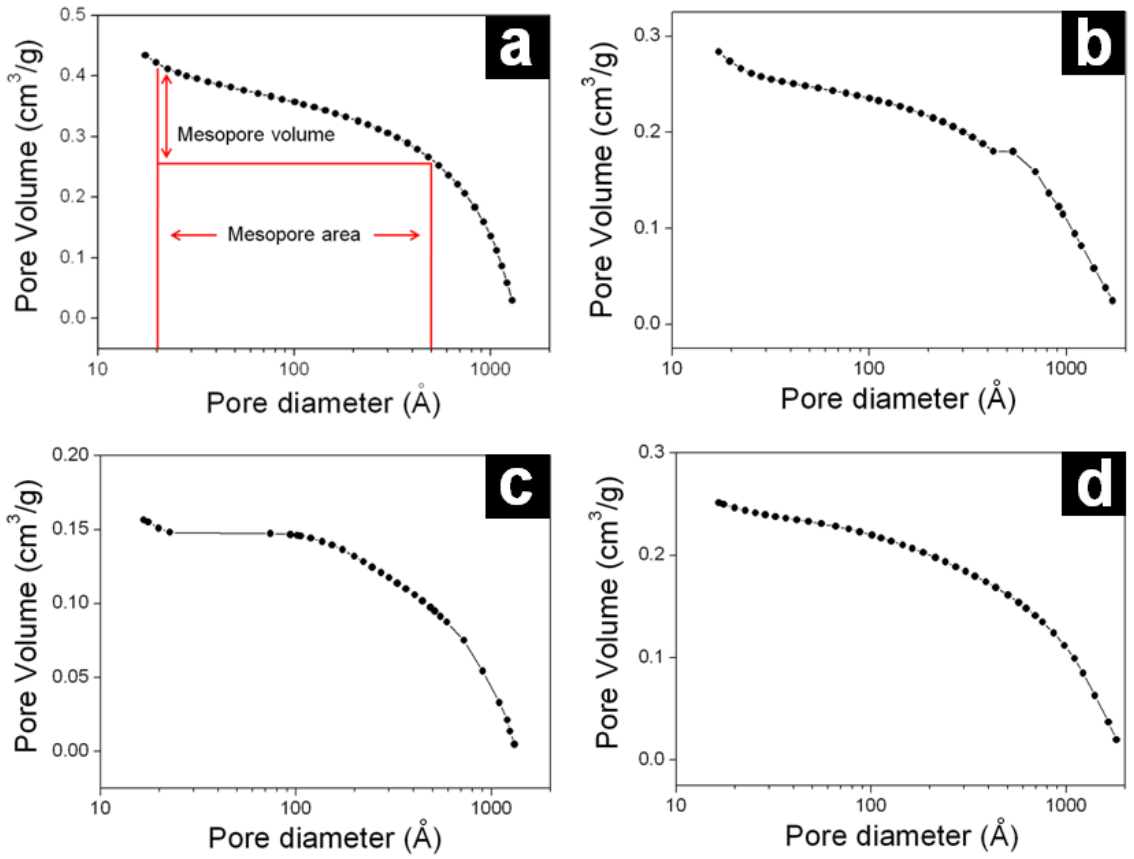

Fig. S1. BJH adsorption cumulative pore volumes of (a) NMPC-4 wt%, (b) NMPC-NaOH14 wt%, (c) NMPC-urea18 wt% and (d) NMPC-6 wt%.

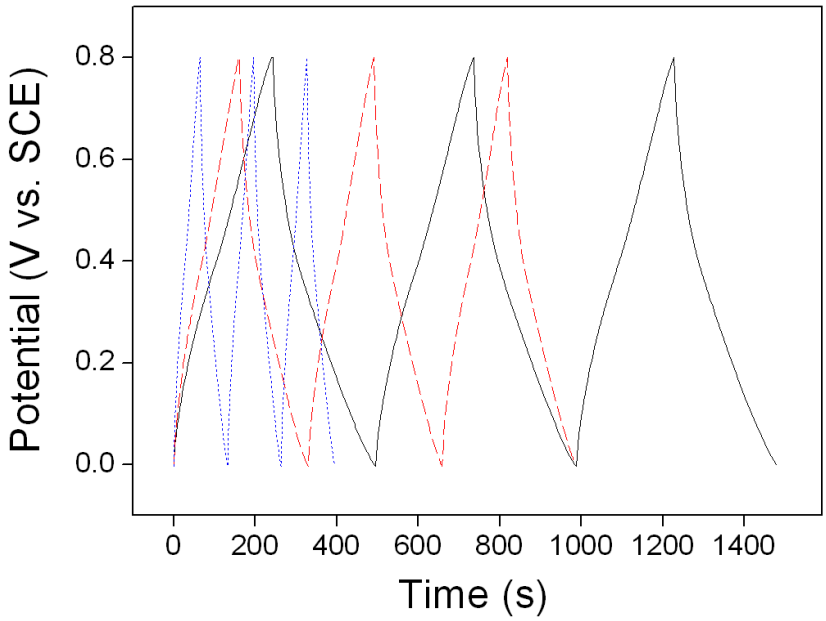

Fig. S2. Galvanostatic charge/discharge curves of NMPC-6 wt% in the potential window of 0 to 0.8 V at current densities of 0.1 (solid line), 1.1 (dash line) and 2.7 (dot line) A/g.

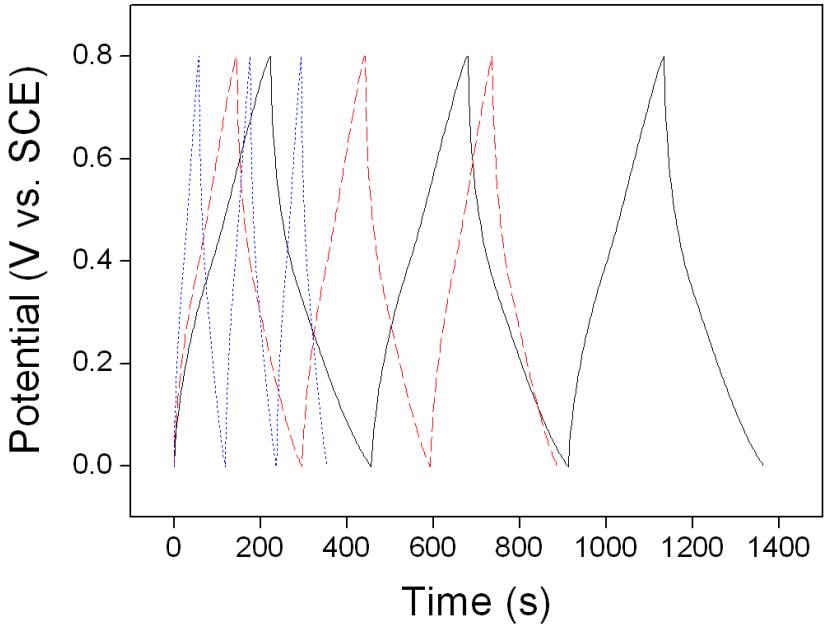

Fig. S3. Galvanostatic charge/discharge curves of NMPC-6 wt% TT in the potential window of 0 to 0.8 V at current densities of 0.1 (solid line), 1.1 (dash line) and 2.7 (dot line) A/g.

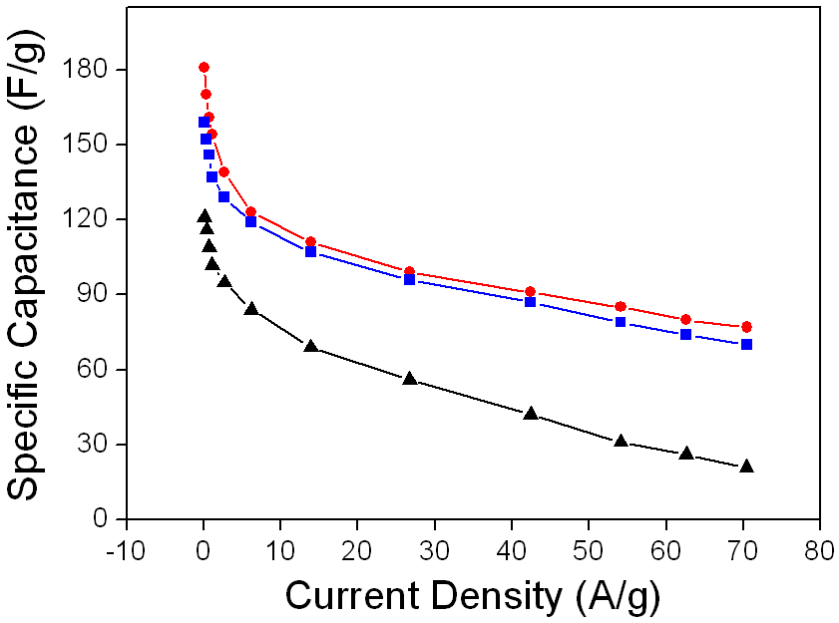

Fig. S4. Specific capacitances of NMPC-6 wt% (red circles), NMPC-6 wt% TT (blue squares) and Ketjen Black (black triangles) at various current densities, measured in 1 M H_2SO_4 aqueous electrolyte.

When the current density was increased from 0.1 to 70 A/g, the specific capacitance of NMPC-6 wt% decreased from 181 to 77 F/g. When the current density was increased from 1 to 25 A/g, the capacitance retentions of NMPC-6 wt%, NMPC-6 wt% TT and Ketjen Black were 64, 70 and 54%, respectively, and as the current density was further increased to 50 A/g, the capacitance retentions were 55, 58 and 26%, respectively. The rate capabilities of the NMPCs were better than that of Ketjen Black, due to the interconnected and opened meso/macroporous structure of the NMPCs.

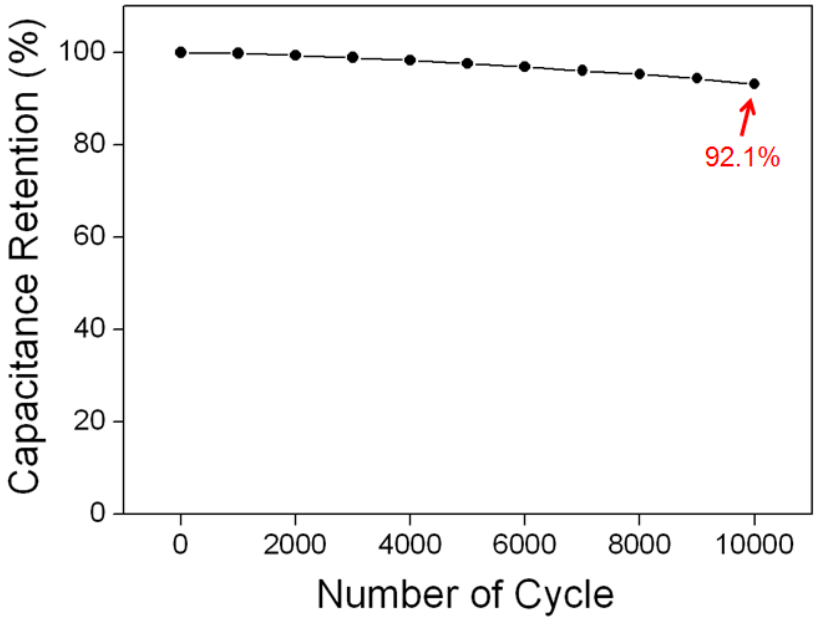

Fig. S5. Variation of the specific capacitance of NMPC-6 wt% as a function of the cycle number measured from galvanostatic charge/discharge measurement at a current density of 5 A/g in a 1 M H_2SO_4 aqueous solution.