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Supporting Information

Enhanced capacitance of nitrogen-doped hierarchical porous carbide-derived carbon in matched ionic liquids

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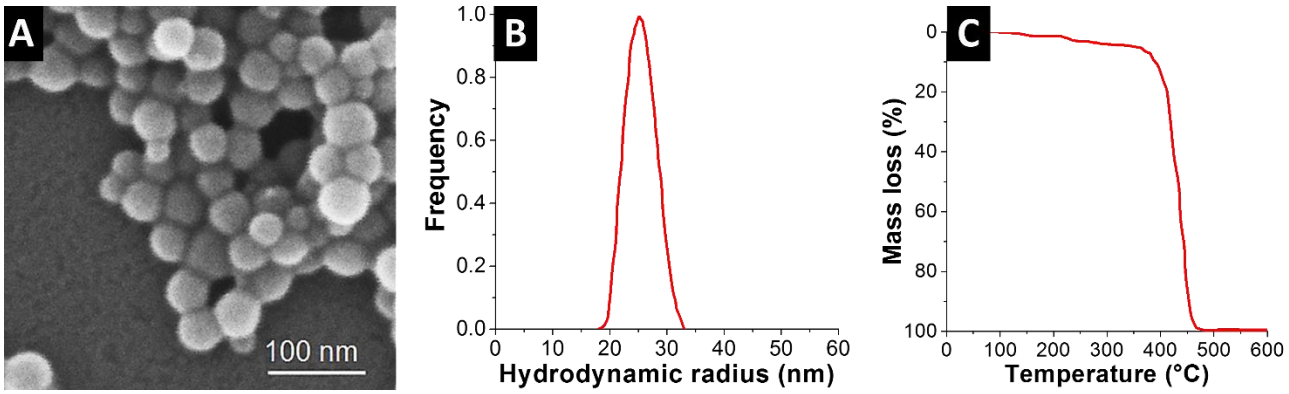

Figure S1. (A) Scanning electron micrograph of the polystyrene PS50. (B) Photon correlation spectrum of PS50 shows a narrow particle size distribution in the range of 19.7 nm and 31.3 nm with a peak at 24.8 nm. (C) Thermogravimetric analysis of PS50 shows a mayor mass loss between 400 and 470 °C (using a heating rate of 0.5 °C/min, nitrogen atmosphere).

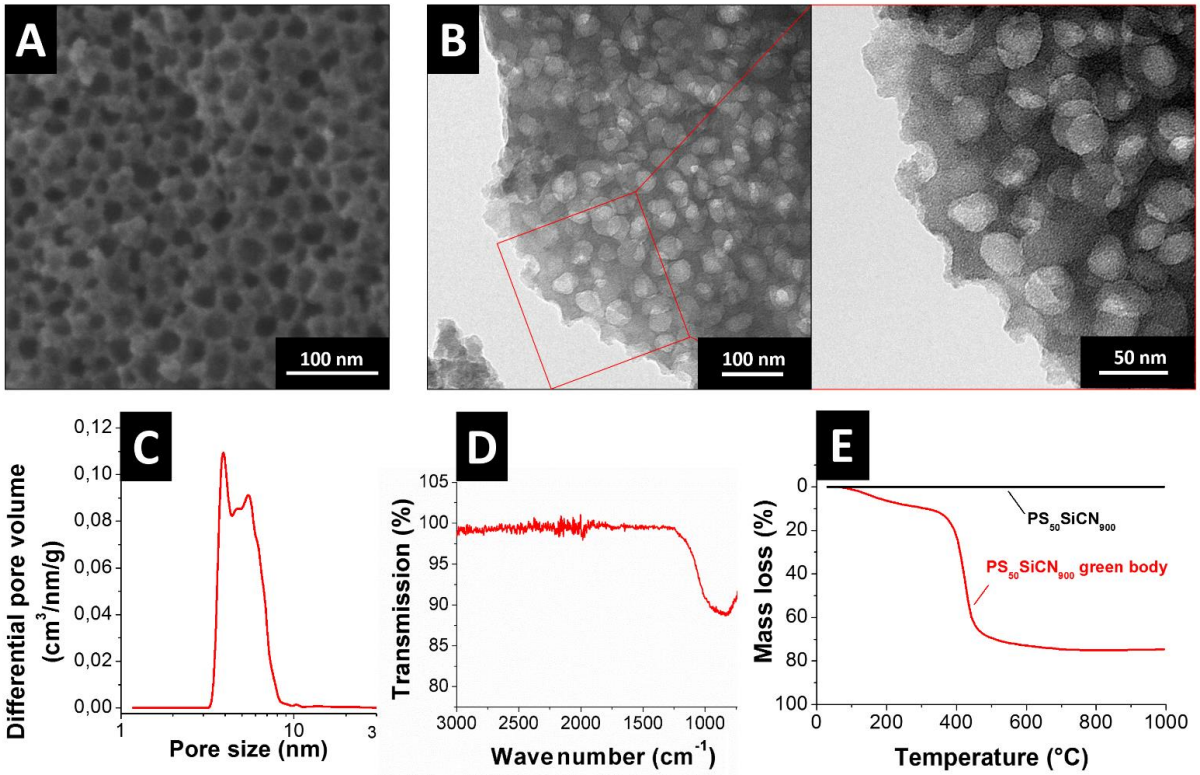

Figure S2. (A) SEM image and (B) TEM image of $PS_{50}SiCN_{900}$ verify the pore structure. (C) Pore size distribution of $PS_{50}SiCN_{900}$, measured by nitrogen gas sorption at -196 °C, shows presence of mesopores and a BET surface area of 130 m^2/g. (D) FT-IR measurement of $PS_{50}SiCN_{900}$ exhibits the characteristic broad SiCN peak between 1250 cm^{-1} and 750 cm^{-1}. (E) TGA measurements of the $PS_{50}SiCN_{900}$ green body and the $PS_{50}SiCN_{900}$ material.

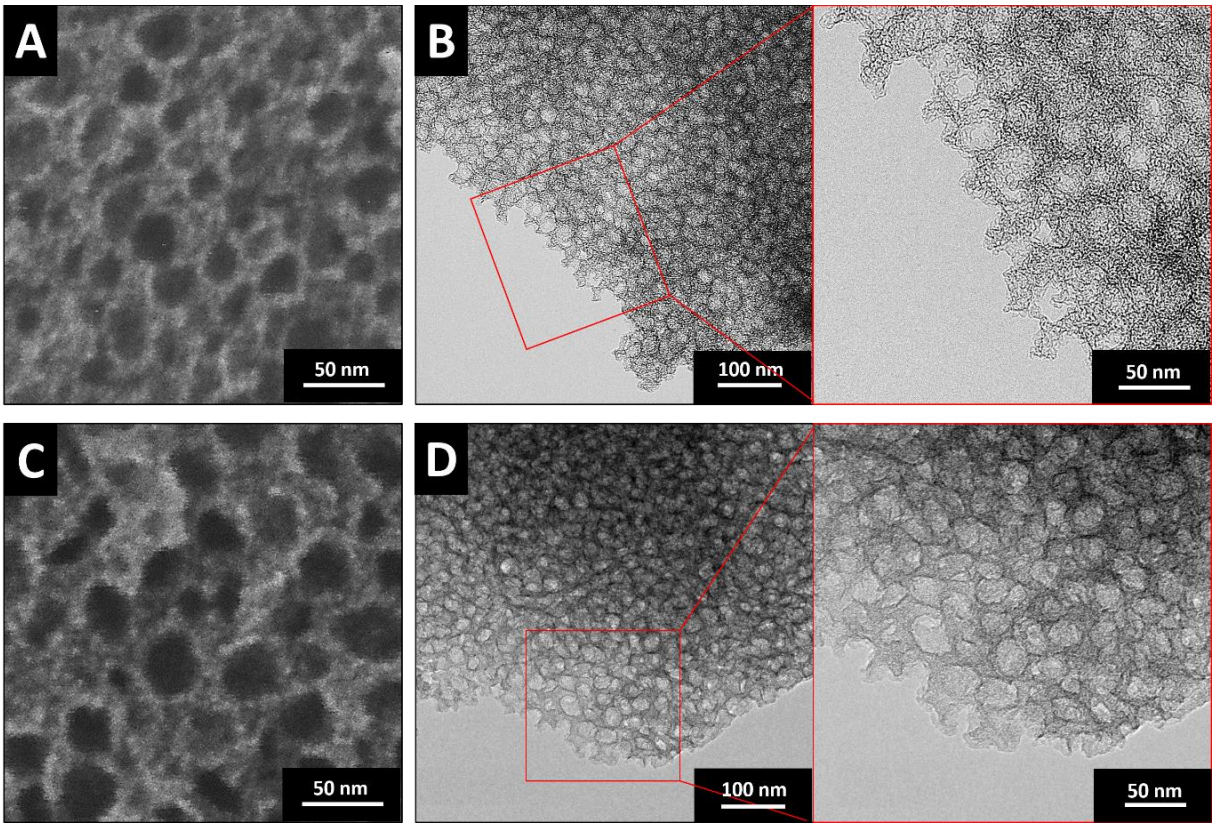

Figure S3. (A) SEM image and (B) TEM image of $PS_{50}SiCN_{900}Cl_2$-800°C. (C) SEM image and (D) TEM image of $PS_{50}SiCN_{900}Cl_2$-1000°C. Both materials show the honeycombed pore structure of the ceramic template.

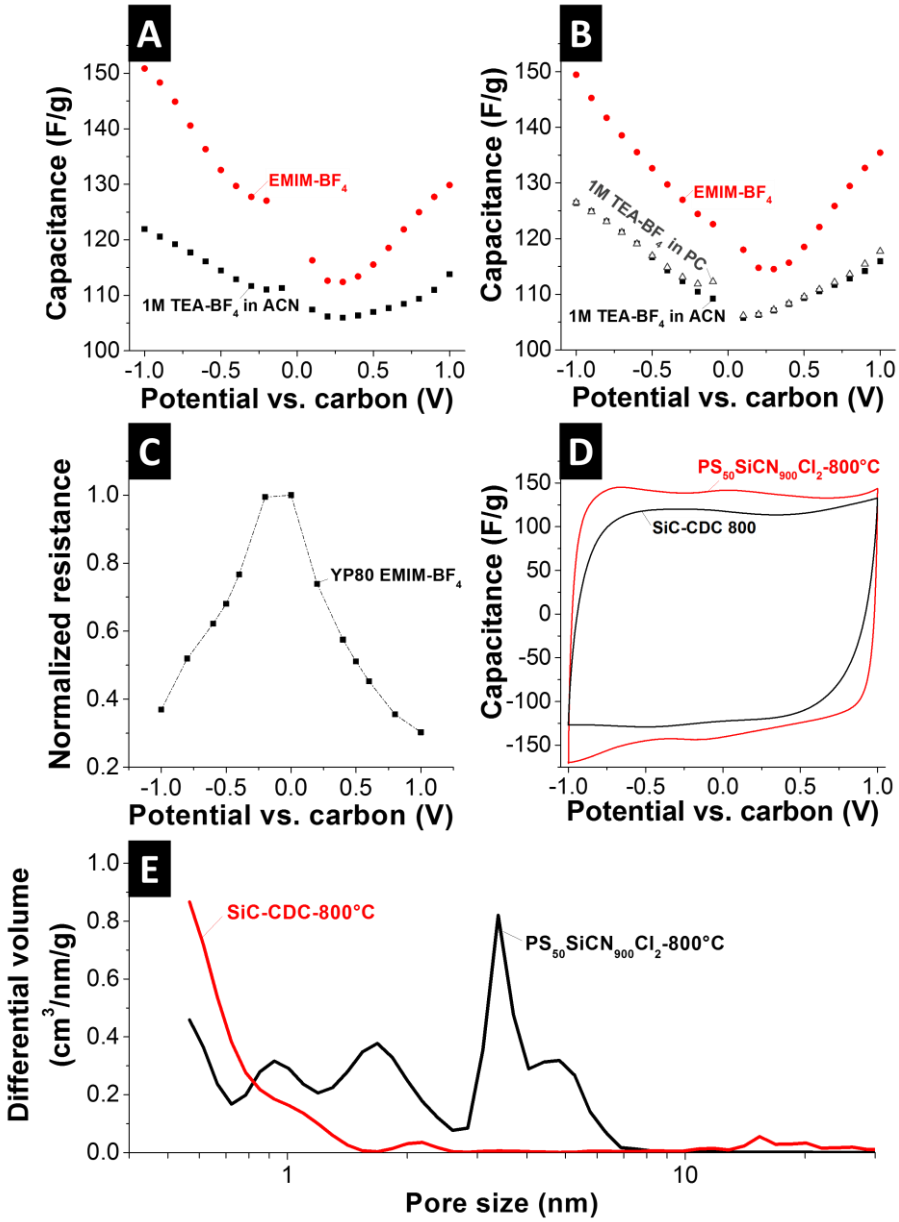

Figure S4. Comparison of the specific capacitance determined by GCPL for (A) $PS_{50}SiCN_{900}Cl_2$-800°C and (B) $PS_{50}SiCN_{900}Cl_2$-1000. (C) In situ resistivity measurement of YP 80F with EMIM-BF_4 as electrolyte. (D) Cyclic voltammograms of SiC-CDC 800 and $PS_{50}SiCN_{900}Cl_2$-800°C in EMIM-BF_4 as electrolyte, scan rate: 10 mV/s. (E) Calculated pore size distribution of SiC-CDC 800°C and $PS_{50}SiCN_{900}Cl_2$-800°C.

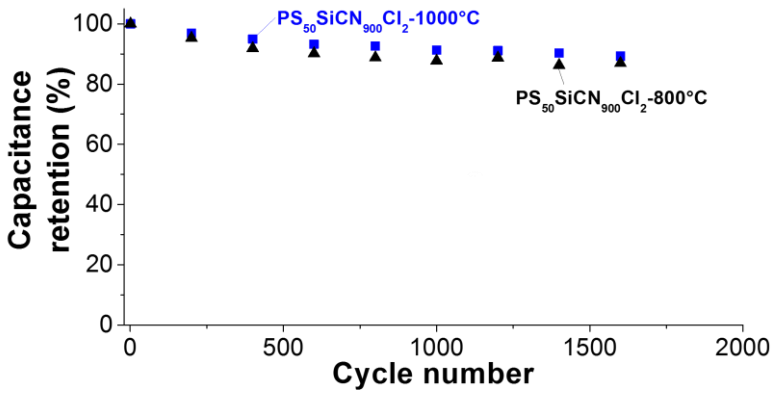

Figure S5. Cycling stability of $PS_{50}SiCN_{900}Cl_2$-800°C and $PS_{50}SiCN_{900}Cl_2$-1000°C in EMIM-BF_4 as electrolyte at 1 A/g.