Supplementary Information

Investigation of energy storage performance in organic molecule-stabilized nickel ferrocyanide nanoparticles for supercapacitor application

To determine the electrochemical parameters of the three and two electrode systems, the following equations are used:

The specific capacitance (S_P) of the working electrode was calculated using equations (1) derived from the GCD test, respectively.

$$S_C(F/g) = I \times \Delta t/\Delta V \times m \ldots \quad (1)$$

where, m is the mass of the electroactive material; I, Δt and ΔV denotes current, discharge time and potential window, respectively.

The mass ratio of anode and cathode material was calculated using the following equation (2).

$$\frac{m_-}{m_+} = \frac{S_{P+} \times \Delta V_+}{S_{P-} \times \Delta V_-} \ldots \quad (2)$$

where, m_+, S_{P+}, ΔV_+ and m_-, S_{P-}, ΔV_- are the masses (g), capacitance (F/g) and the voltage windows (V), of cathode and anode electrodes, respectively. The specific energy (S_E) and specific power (S_P) were calculated using the following equations (3 and 4).

$$S_E(Wh.kg^{-1}) = \frac{I\int V(t)dt}{m \times 3.6} \ldots \quad (3)$$

$$S_P(W.kg^{-1}) = (S_E/\Delta t) \times 3600 \ldots \quad (4)$$

where, I, $\int V(t)dt$, m and Δt represents the applied current, area under discharge curve, mass of active material (g) and discharge time, respectively.

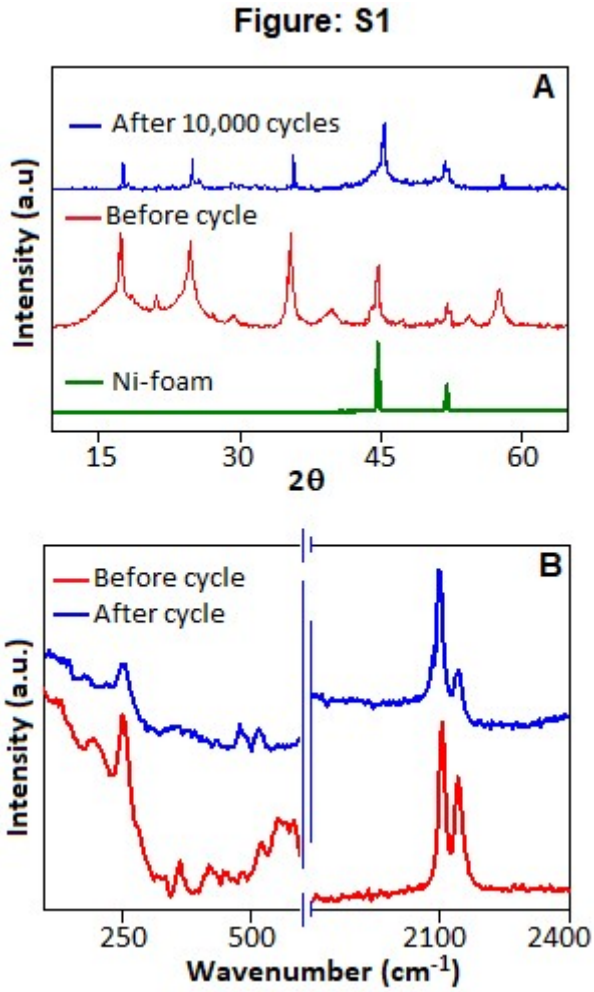

Figure S1: XRD (A) and Raman spectra (B) of the active electrode material (NFC) for before and after 10,000 GCD cycles.

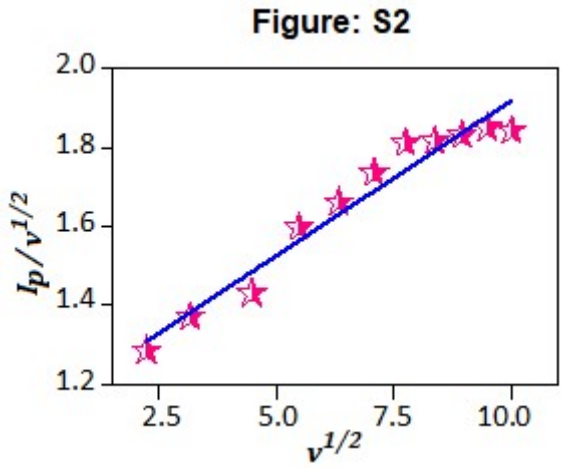

Figure S2: Plot of $I_p/v^{1/2}$ as a function of $v^{1/2}$.