SUPPLEMENTARY INFORMATION

MOF-Derived Micro Structural Interconnected Network Porous Mn_2O_3/C as the Negative Electrode Material for Asymmetric Supercapacitor Device

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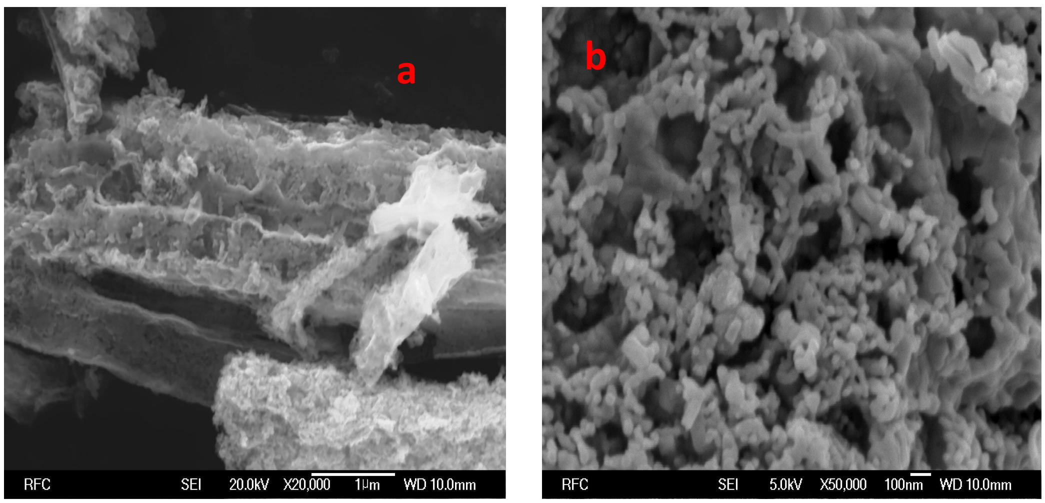

Figure S1: FESEM images of Mn_2O_3/C samples calcined at 500˚C with the heating rate of 5˚C

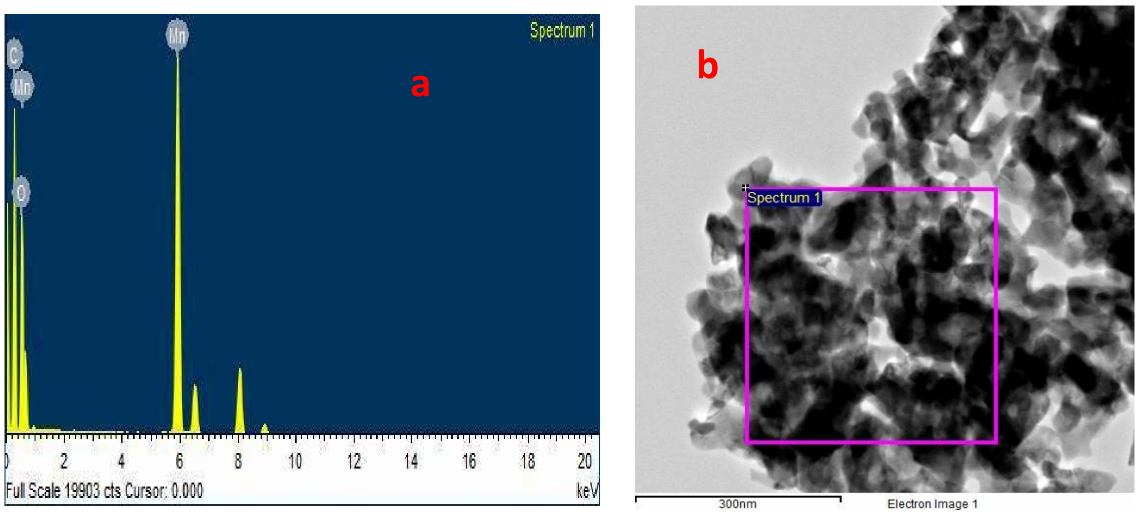

Figure S2: XDAX pattern of Mn_2O_3/C samples

Asymmetric supercapacitor device Fabrication:

A coin cell was fabricated using activated carbon as the positive electrode (3.936 mg) and Mn_2O_3/C as the negative electrode (1 mg). Total mass of the electrode material is 4. 936 mg. Whatman filter paper was used as the separator, which had been presoaked in a 1 M Na_2SO_4 electrolyte for 24 h prior to device fabrication.

Mass balancing for Device fabrication:

The electrode mass ratio should be optimized prior to asymmetric device fabrication

$$\frac{m_+}{m_-} = \frac{C_- \, X \, V_-}{C_+ \, X \, V_+}$$

where m_+ is mass of the positive electrode (activated carbon) (g), m_- is the mass of the negative electrode (g), C_- is the specific capacity of the negative electrode (C g^{-1}), V_- is the potential range of the negative electrode (V), C_+ is the specific capacity of the positive electrode (C g^{-1}), and V_+

is the potential range of the positive electrode (V). The optimal mass ratio is ~0.18 is the positive to negative electrodes.

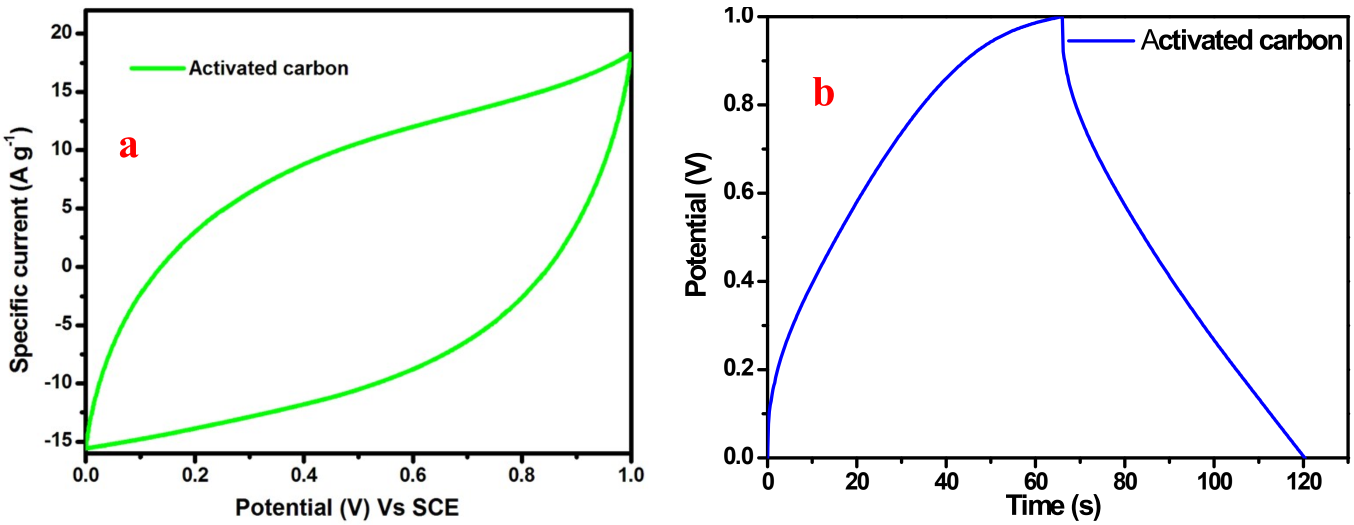

Figure S3: (a) CV curve of activated carbon at 25 mVs^{-1} and (b) Charge discharge curve of activated carbon electrode at 2 A g^{-1} in aqueous electrolyte

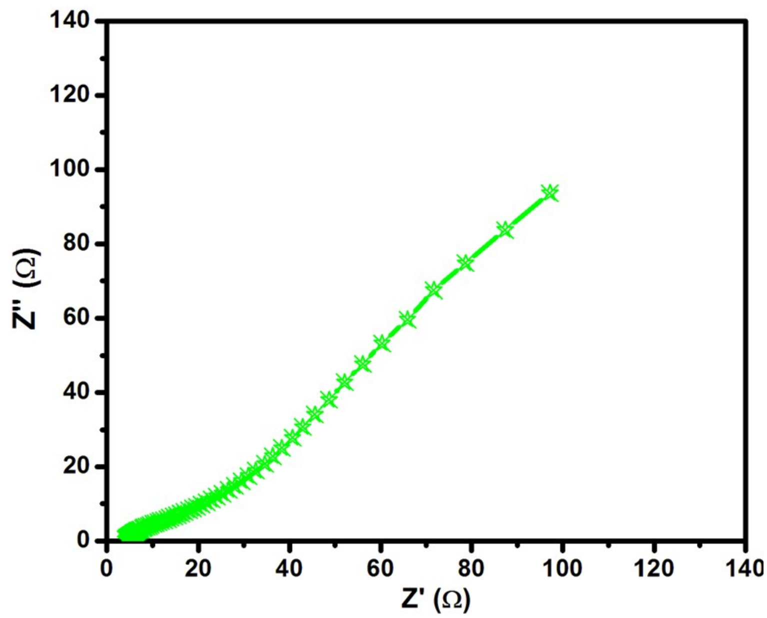

Figure S4: Nyqusit plot for asymmetric supercapacitor device after cycling