Electronic Supplementary Information (ESI) for

Electrochemical Energy Storage in Mn_2O_3 Porous NanobarsDerived from Morphology-Conserved Transformation of Benzenetricarboxylate-bridged Metal-Organic Framework

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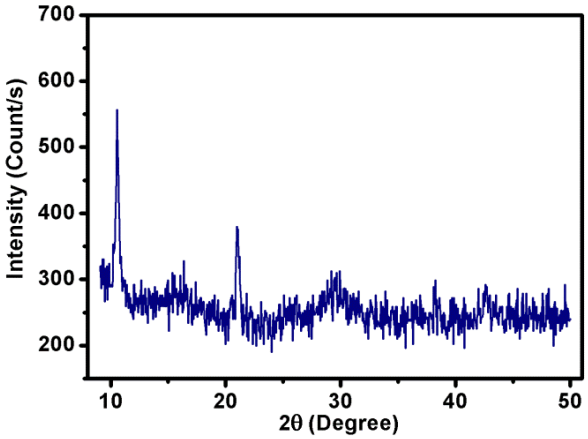

Fig. S1 X-ray diffractogram of the synthesized Mn-BTC MOF. The observed diffractogram matches well to that of Mn(1,3,5-benzenetricarboxylate)$_2$(H_2O)$_6$ MOF reported by Taylor et al.[S1] and Zheng et al.[S2] confirming formation of Mn-BTC MOF.

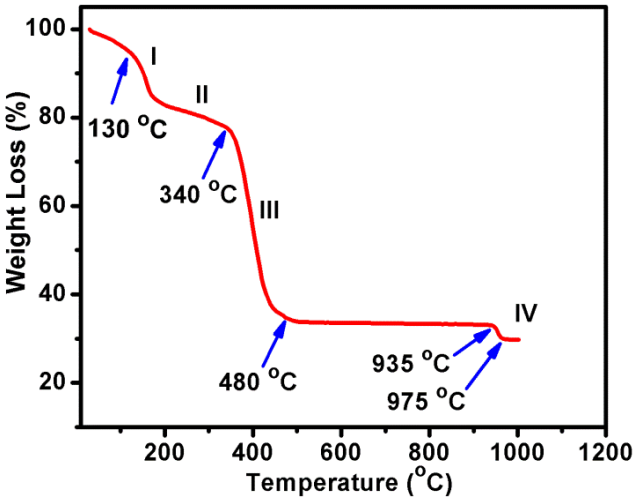

Fig. S2 TGA plot of Mn-BTC MOF performed at constant air (O_2) flow with a heating rate of 10^o C min^{-1}. Four stages of weight loss is observed in the TGA curve. Weight losses up to ~340^{o}C accounts for the loss of physically adsorbed and chemisorped water molecules. Breakdown of BTC ligands and conversion to Mn_2O_3 accounts for the sharp weight loss between 340 and 480oC. Further small weight loss between 935 and 975^{o}C can be attributed to the transformation from Mn_2O_3 to Mn_3O_4.[S3]

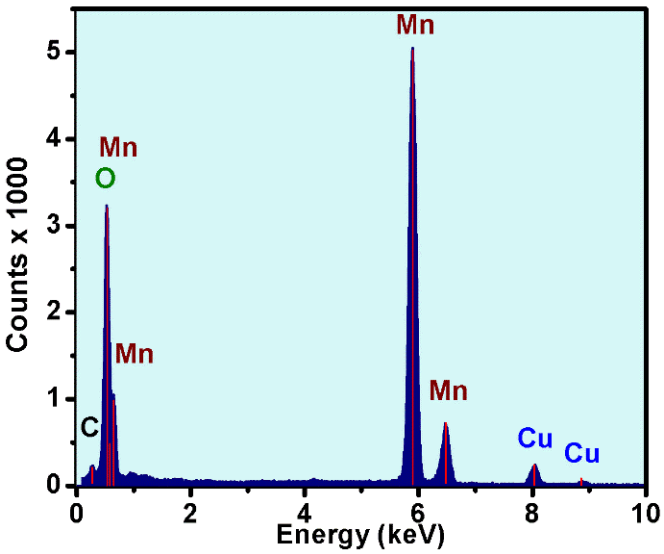

Fig. S3 Energy-dispersive X-ray spectroscopy (EDS) plot of Mn-BTC derived Mn_2O_3. Peaks for Cu and C appear from to the carbon coated TEM grid.

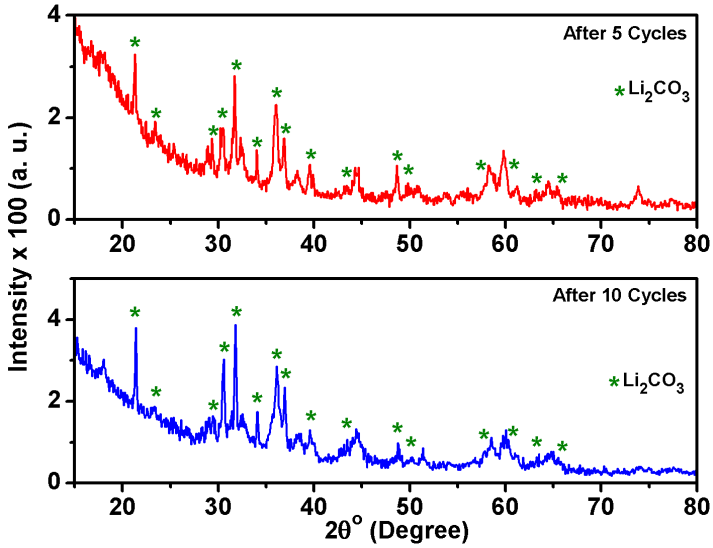

Fig.S4 PXRD patterns of Mn_2O_3 electrode after 5 and 10 cycles.

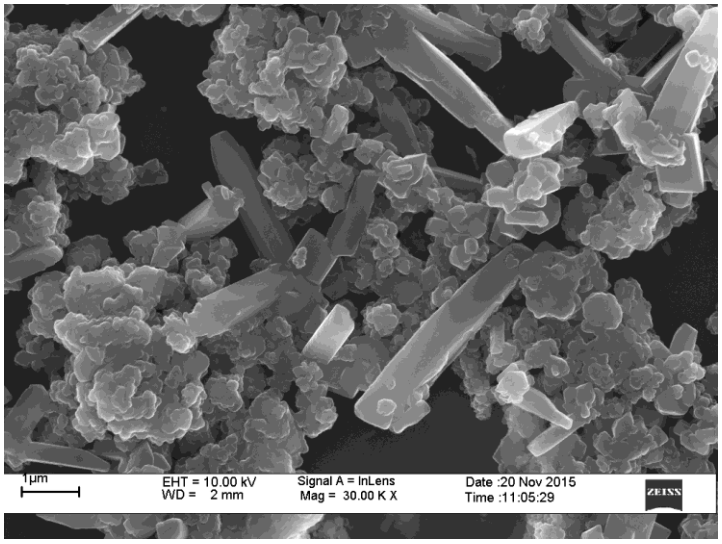

Fig.S5 FESEM micrograph of Mn_2O_3 electrode after 10 cycles

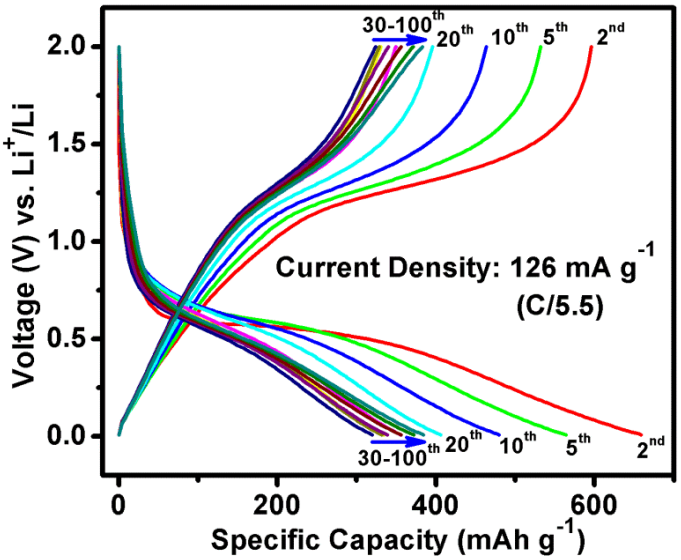

Fig. S6 Galvanostatic discharge-charge profiles of Mn_2O_3 at C/5.5 at different cycling intervals between 2^{nd} and 100^{th} cycle. The capacity decreases for ~40 cycles and then increases again.

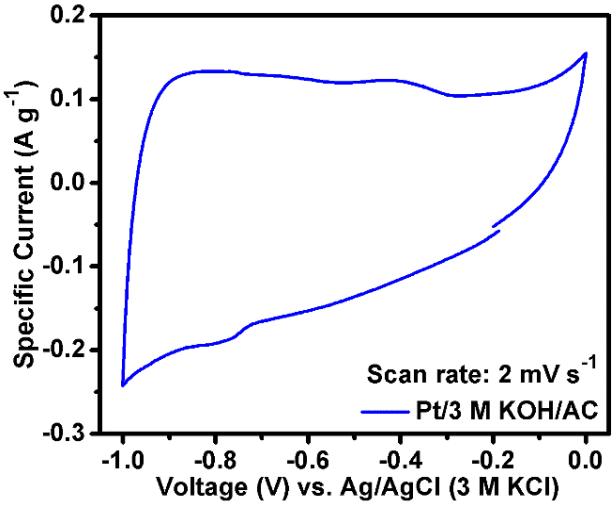

Fig. S7 Cyclic voltammogram of Pt//AC asymmetric supercapacitor cell at a scan rate of 2 mV s^{-1}

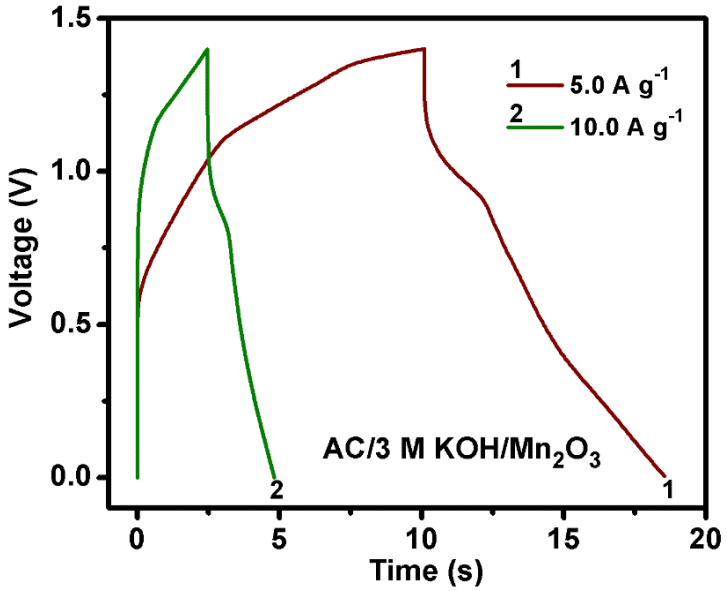

Fig. S8 Galvanostatic charge-discharge profiles of AC//Mn_2O_3 asymmetric supercapacitor cell at current densities of 5.0 and 10.0 A g^{-1}

References

S1 K. M. L. Taylor, W. J. Rieter and W. Lin, *J. Am. Chem. Soc.*, 2008, **130**, 14358-14359.

S2 F. Zheng, G. Xia, Y. Yang and Q. Chen, *Nanoscale*, 2015, **7**, 9637-9645.

S3 H.-W. Shim, A.-H. Lim, K.-M. Min and D.-W. Kim, *CrystEngComm*, 2011, 13, 6747-6752.