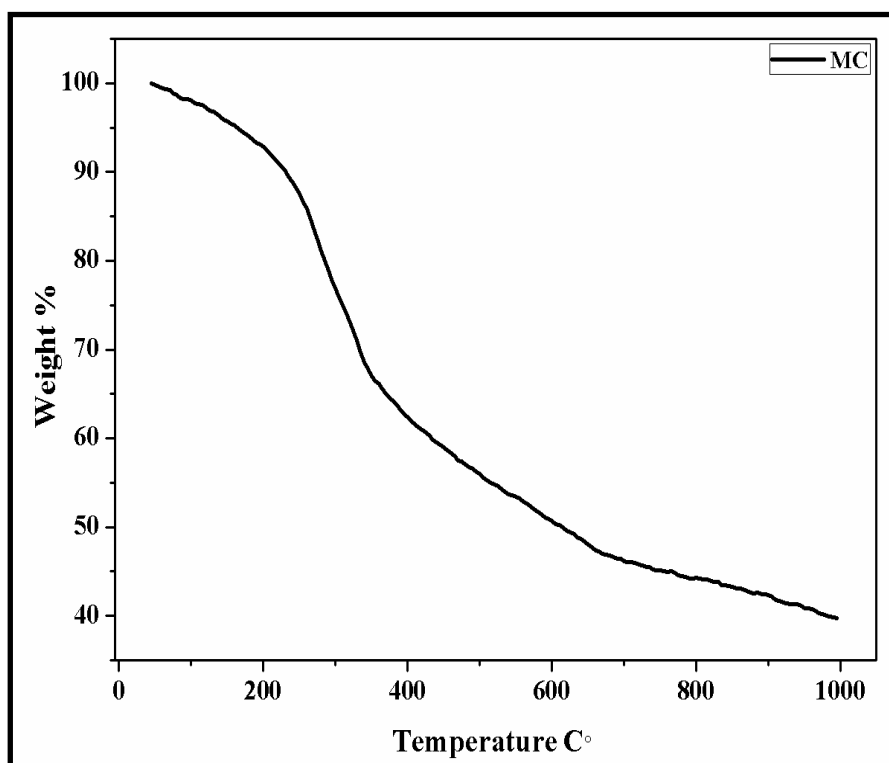


## 1-D/2-D Hybrid Nanostructured Manganese Cobaltite-Graphene nanocomposite for Electrochemical Energy Storage

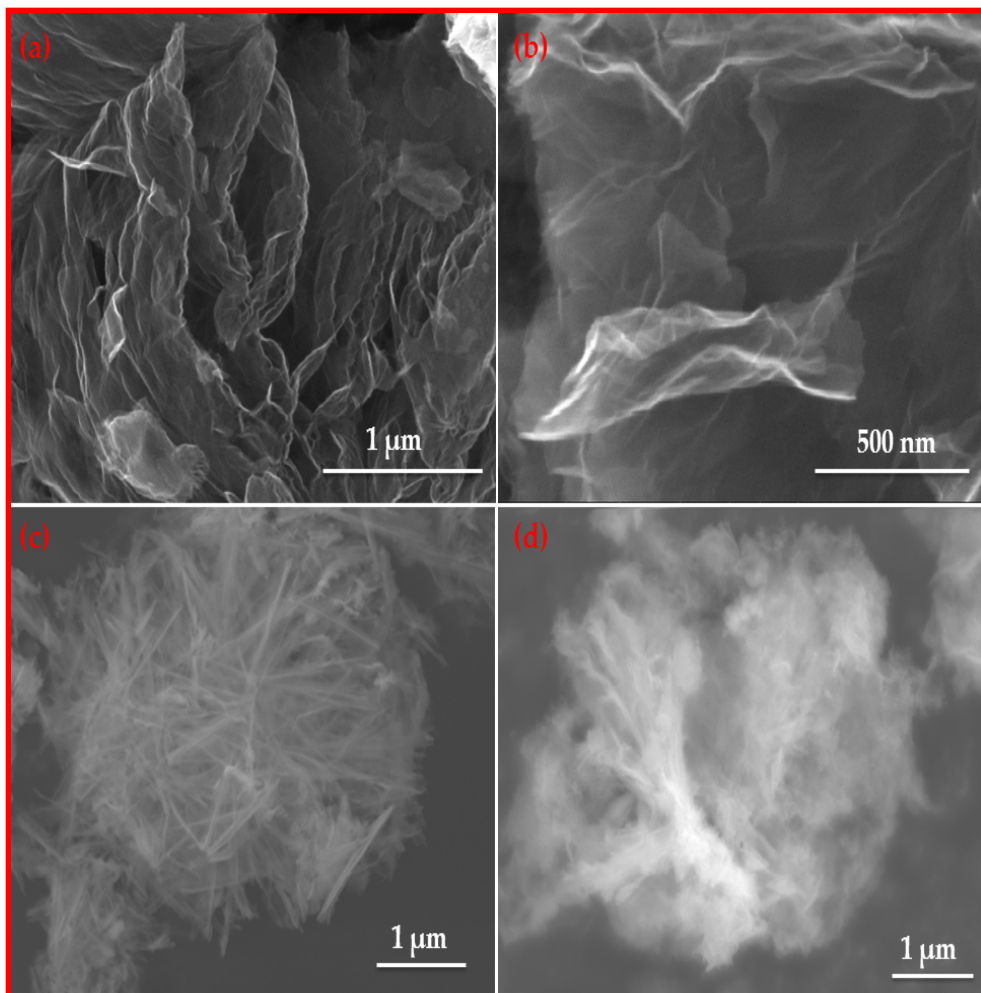
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**Figure S1** Thermogravimetric (TG) curve of as obtained product from the hydrothermal treatment



**Figure S2** (a) and (b) shows the graphene sheets at low and high magnification prepared by same method without manganese cobaltite and (c) and (d) shows the as prepared MC and GMC before calcination.

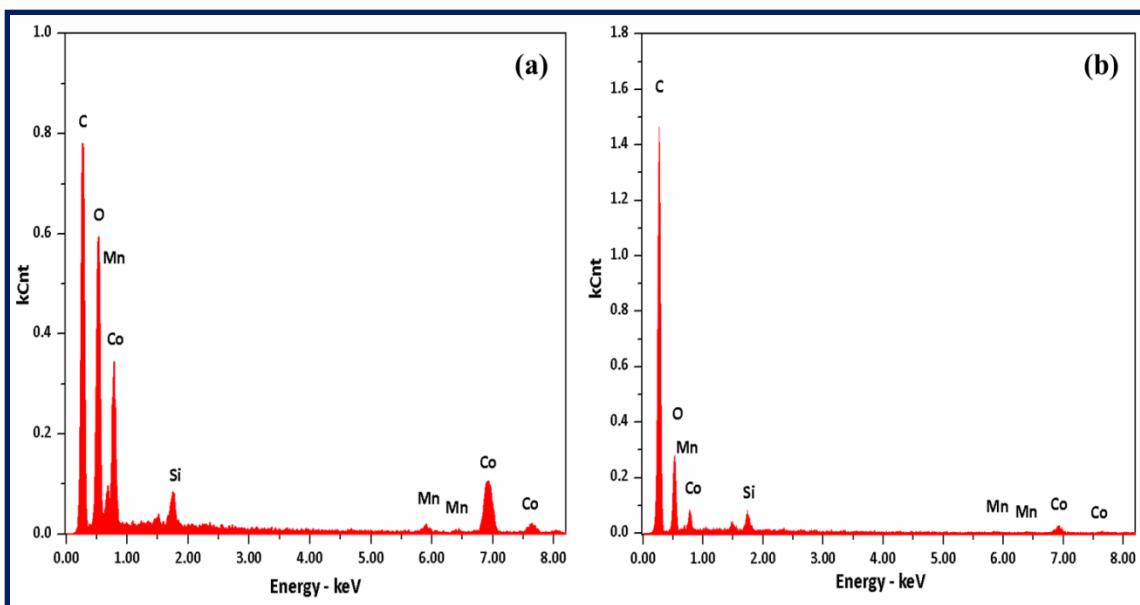


Figure S3 EDAX spectrum recorded for (a) MC and (b) GMC

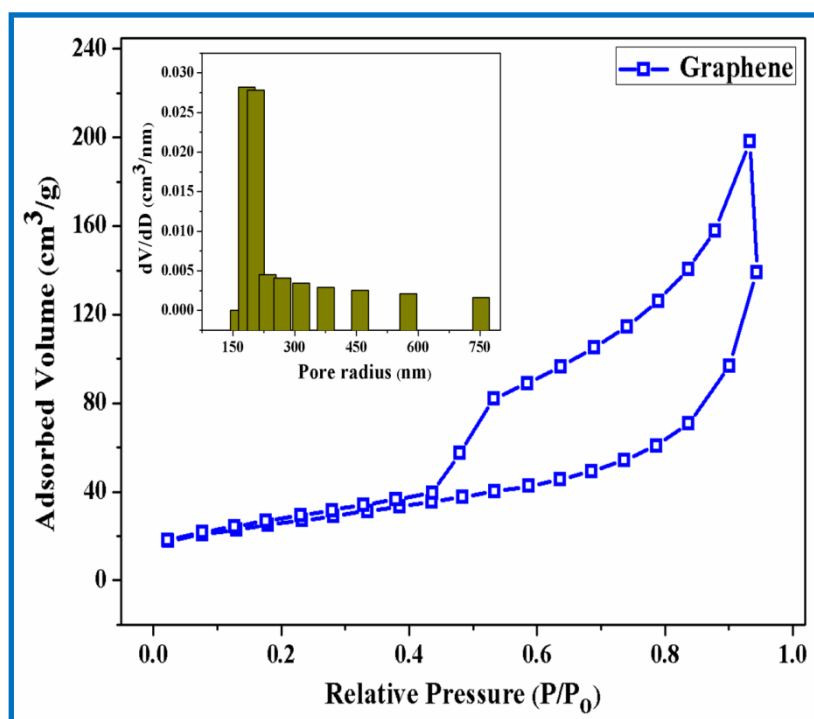
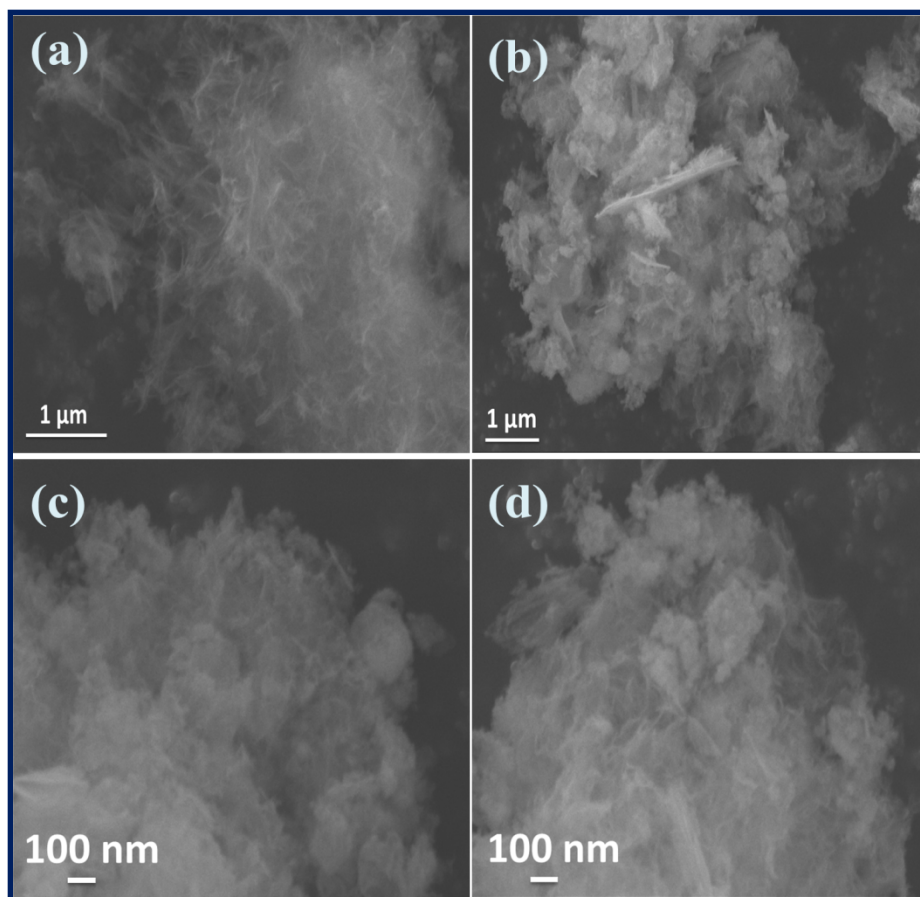


Figure S4  $N_2$  adsorption/desorption isotherm recorded for graphene sheets and inset shows the pore size distribution

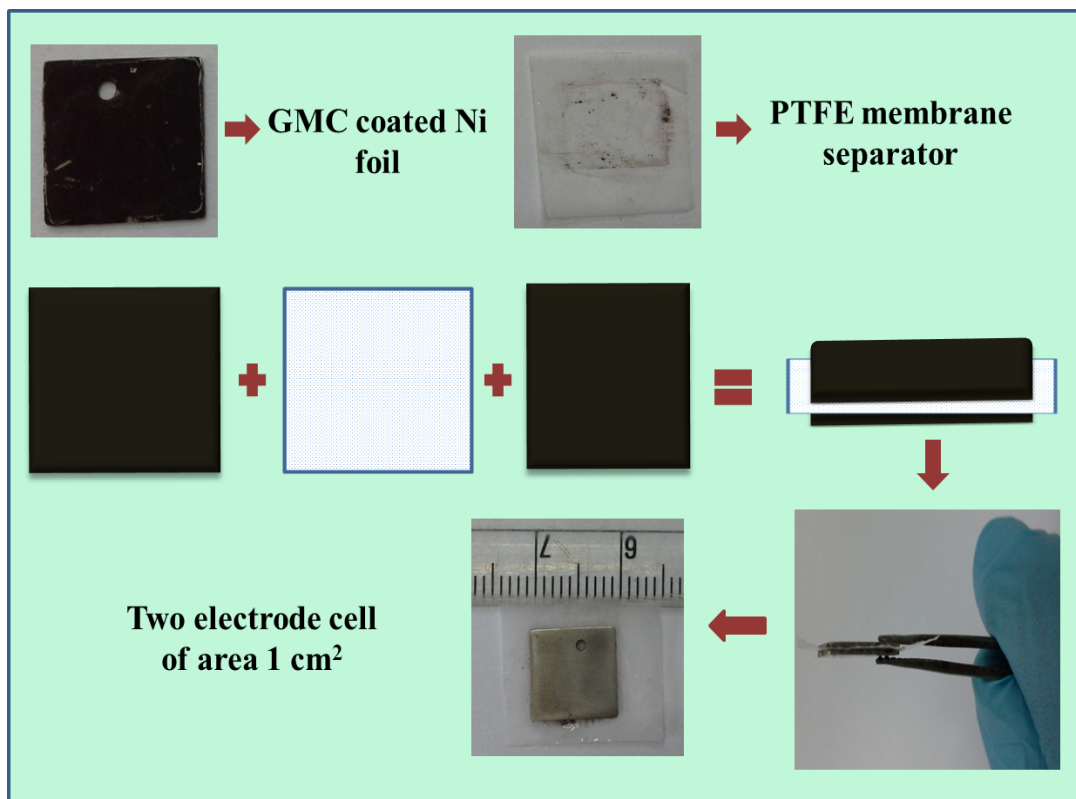


**Figure S5** SEM images of electrode material (a) MC and (b-d) GMC after 2000 continuous charging and discharging

*Fabrication of Symmetrical Capacitor*

For the fabrication of symmetrical capacitor, GMC electrode material, activated carbon and polyvinylidene fluoride (PVDF) binder were mixed together in the ratio of 85:5:10 (wt. %). A slurry of the mixture was made using N-Methyl-2-Pyrrolidone (NMP), which was coated onto a nickel foil current collector of (1 x 1 cm) 0.25 mm thickness (produced by Alfa Aesar) and dried for 4 h at 80 °C to remove the solvent. Two identical electrodes were prepared with mass loading of 0.5 mg each. PTFE membrane of pore size 0.4 μm was used as the separator. Prior to fabrication membrane was soaked into 3 M KOH electrolyte solution for impregnation. Later, membrane was sandwiched between the electrodes. Cell was held together by insulated clips and

electrical contacts were drawn from the cell. Schematic illustration of symmetrical capacitor fabrication is provided in figure S6.



**Figure S6** Schematic illustration of GMC based symmetrical capacitor fabrication.