

**Supporting Information**

**Controllable MnCo<sub>2</sub>S<sub>4</sub> Nanostructure for high performance hybrid  
supercapacitor**

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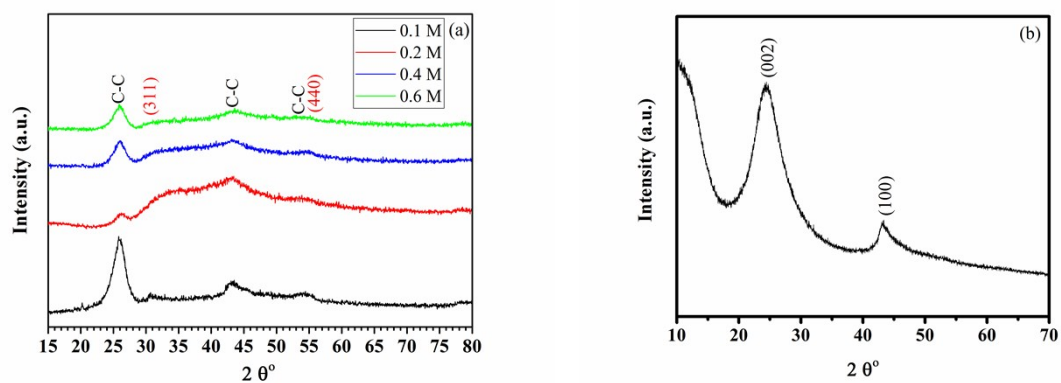


Figure S1: XRD of: (a) MnCo<sub>2</sub>S<sub>4</sub> /CC derived from different Sulphur concentrations, (b) PCP/rGO hydrogel.

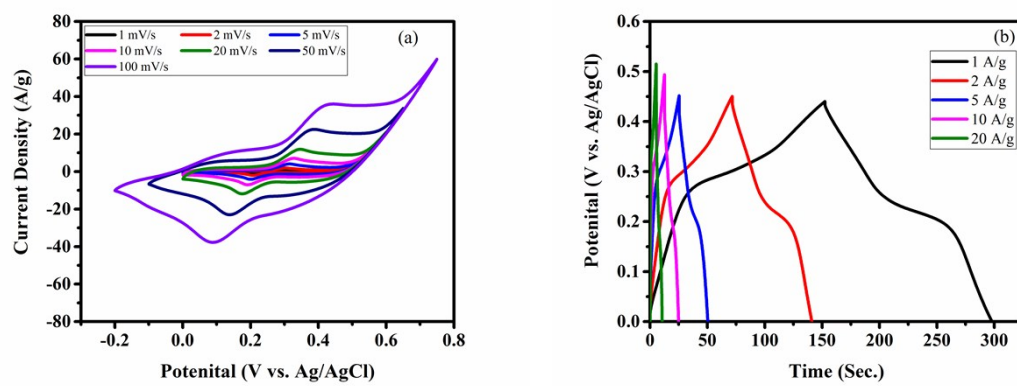


Figure S2: Electrochemical performance of MnCo<sub>2</sub>S<sub>4</sub>/CC derived from 0.1M Na<sub>2</sub>S.9H<sub>2</sub>O. (a) CV curves at different scanning rates. (b) Charge-discharge curves under different current densities.

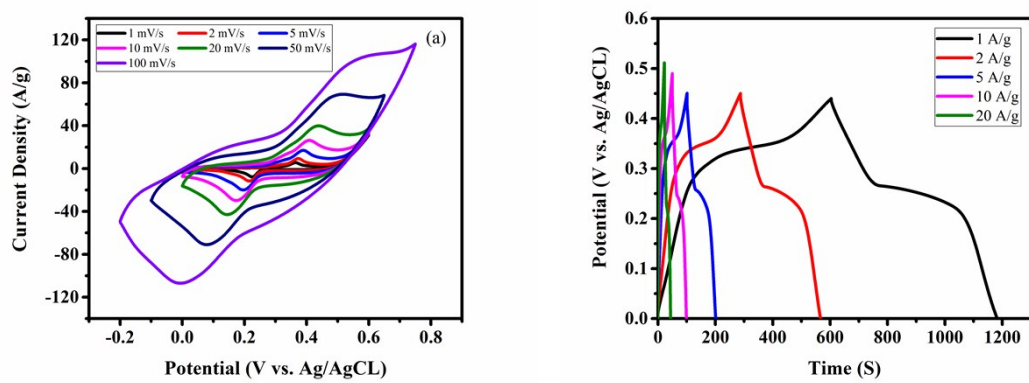


Figure S3: Electrochemical performance of MnCo<sub>2</sub>S<sub>4</sub>/CC derived from 0.4M Na<sub>2</sub>S·9H<sub>2</sub>O. (a) CV curves at different scanning rates. (b) Charge-discharge curves under different current densities.

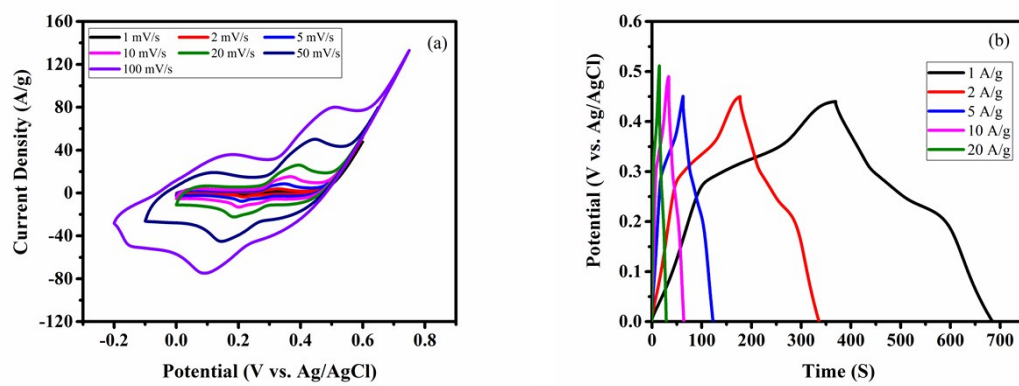


Figure S4: Electrochemical performance of MnCo<sub>2</sub>S<sub>4</sub>/CC derived from 0.6M Na<sub>2</sub>S.9H<sub>2</sub>O. (a) CV curves at different scanning rates. (b) Charge-discharge under different current densities.

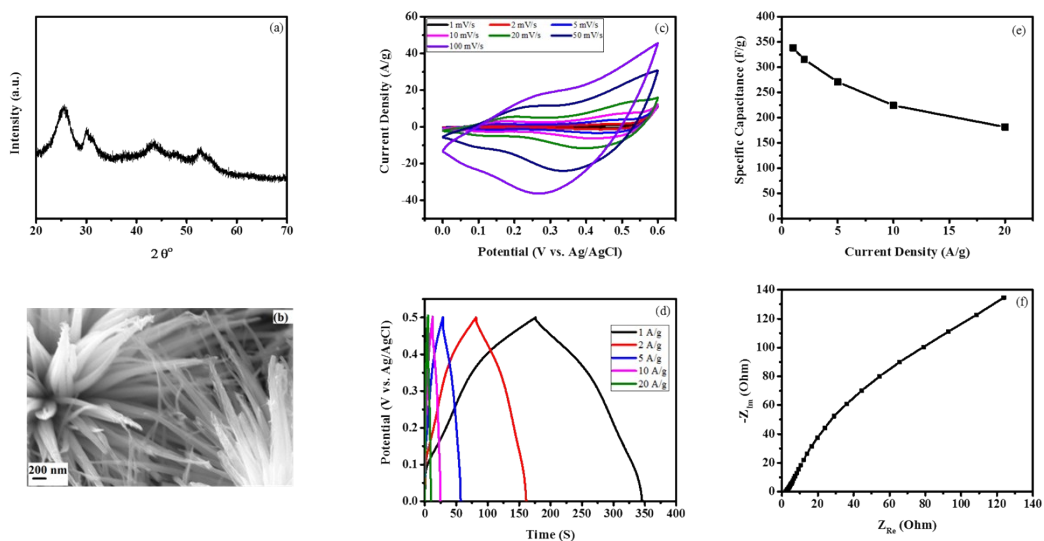


Figure S5: (a) XRD, (b) SEM Image, (c) CV curves at different scanning rates, (d) Charge–discharge under different current densities, (e) Specific capacitance as a function of current density and (f) Nyquist plots of CoS<sub>x</sub>/CC electrodes.

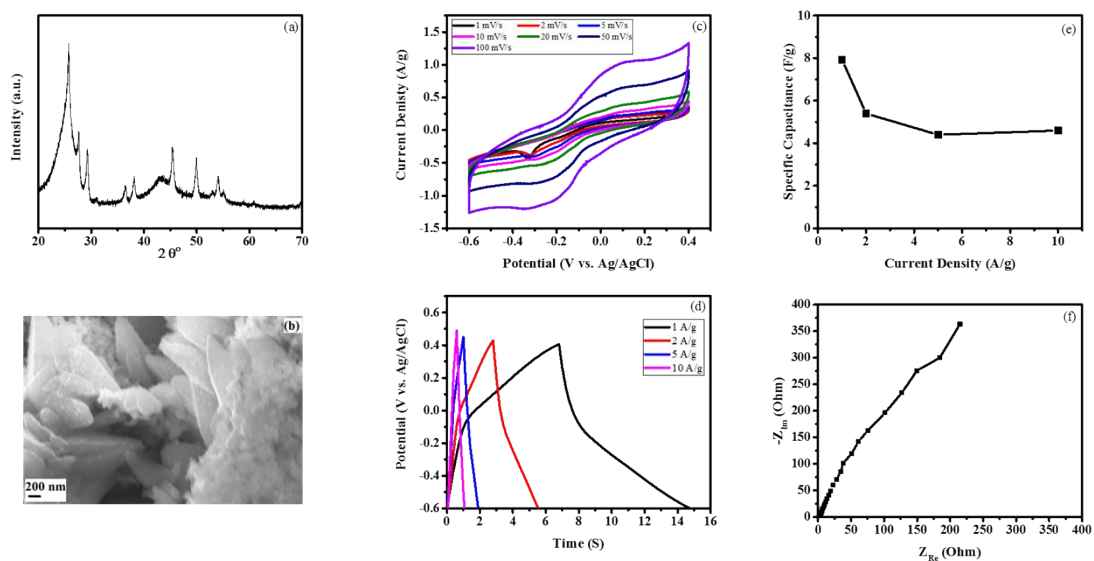


Figure S6: (a) XRD, (b) SEM Image, (c) CV curves at different scanning rates, (d) Charge–discharge under different current densities, (e) Specific capacitance as a function of current density and (f) Nyquist plots of MnS<sub>x</sub>/CC electrodes.

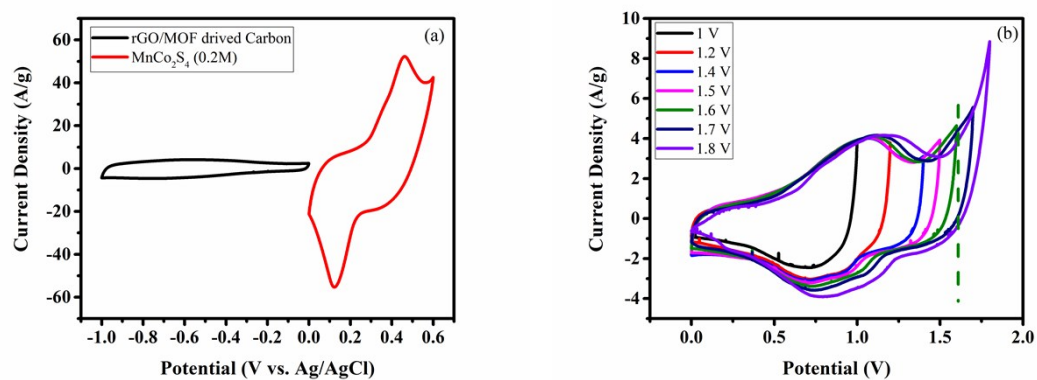


Figure S7. (a) Cyclic voltammetry profiles of MnCo<sub>2</sub>S<sub>4</sub>/CC as the positive electrode and PCP/rGO as the negative electrode at the same scan rate of 20 mV/s. (b) CV curves of MnCo<sub>2</sub>S<sub>4</sub>/CC//PCP/rGO supercapacitor full cell collected in different cell voltages at the scan rate of 20 mV/s in 2M KOH electrolyte.