Supporting Information:

1. Electrochemical measurements employed in the present work.

➢ Measurements conducted in a three-electrode system using 6 mol L^{-1} KOH as electrolyte:

A mixture of 80 wt% the carbon sample (~ 4 mg), 15 wt% acetylene black and 5 wt% polytetrafluoroethylene (PTFE) binder was fabricated using ethanol as a solvent. Slurry of the above mixture was subsequently pressed onto nickel foam under a pressure of 20 MPa, serving as the current collector. The prepared electrode was placed in a vacuum drying oven at 120 ºC for 24 h. A three electrode experimental setup taking a 6 mol L^{-1} KOH aqueous solution as electrolyte was used in cyclic voltammetry and galvanostatic charge-discharge measurements on an electrochemical working station (CHI660D, ChenHua Instruments Co. Ltd., Shanghai). Here, the prepared electrode, platinum foil (6 cm^2) and saturated calomel electrode (SCE) were used as the working, counter and reference electrodes, respectively.

Specific capacitances derived from galvanostatic tests can be calculated from the equation:

$$C = \frac{I\Delta t}{m\Delta V}$$

where C (F g^{-1}) is the specific capacitance; I (A) is the discharge current; Δt (s) is the discharge time; ΔV (V) is the voltage window; and m (mg) is the mass of active materials loaded in working electrode.

Specific capacitances derived from cyclic voltammetry tests can be calculated from the equation:

$$C = \frac{1}{mv(V_b - V_a)} \int_{V_a}^{V_b} I\mathrm{d}V$$

where C (F g^{-1}) is the specific capacitance; m (mg) is the mass of active materials loaded in working electrode; v (V s^{-1}) is the scan rate; I (A) is the discharge current; V_b and V_a (V) are high and low voltage limit of the CV tests.

Specific energy density (E) and specific power density (P) derived from galvanostatic tests can be calculated from the equations:

$$E = \frac{1}{2} C \Delta V^2$$

$$P = \frac{E}{\Delta t}$$

where E (Wh kg^{-1}) is the average energy density; C (F g^{-1}) is the specific capacitance; ΔV (V) is the voltage window; P (W kg^{-1}) is the average power density and Δt (s) is the discharge time.

➢ Measurements conducted in a two-electrode system using [EMIm]BF_4/AN as electrolyte:

In a two-electrode cell, [EMIm]BF_4 and acetonitrile (AN) (weight ratio of 1:1) was adopted as electrolyte. A glassy paper separator was sandwiched between two electrodes, and each electrode contains a mixture of 80 wt% the carbon sample (~ 2 mg), 15 wt% acetylene black and 5 wt% polytetrafluoroethylene (PTFE) binder. Nickel foam serves as the current collector. The assembly of the test cell was done in a glove box filled with Ar.

Specific capacitances derived from galvanostatic tests can be calculated from the equation:

$$C = \frac{4I\Delta t}{m\Delta V}$$

where C (F g^{-1}) is the specific capacitance; I (A) is the discharge current; Δt (s) is the discharge time; ΔV (V) is the voltage window; and m (mg) is the total mass of two electrodes.

Specific capacitances derived from cyclic voltammetry tests can be calculated from the equation:

$$C = \frac{2}{mv(V_b - V_a)} \int_{V_a}^{V_b} IdV$$

where C (F g^{-1}) is the specific capacitance; m (mg) is the mass of active materials loaded in working electrode; v (V s^{-1}) is the scan rate; I (A) is the discharge current; V_b and V_a (V) are high and low voltage limit of the CV tests.

Specific energy density (E) and specific power density (P) derived from galvanostatic tests can be calculated from the equations:

$$E = \frac{1}{8} C \Delta V^2$$

$$P = \frac{E}{\Delta t}$$

where E (Wh kg^{-1}) is the average energy density; C (F g^{-1}) is the specific capacitance; ΔV (V) is the voltage window; P (W kg^{-1}) is the average power density and Δt (s) is the discharge time.

➢ **Measurements conducted in a two-electrode system using 6 mol L^{-1} KOH as electrolyte:**

In a two-electrode cell, 6 mol L^{-1} KOH aqueous solution was adopted as electrolyte. A glassy paper separator was sandwiched between two electrodes, and each electrode contains a mixture of 80 wt% the carbon sample (~ 2 mg), 15 wt% acetylene black and 5 wt% polytetrafluoroethylene (PTFE) binder. Nickel foam serves as the current collector. The assembly of the test cell was done in a glove box filled with Ar.

➢ **Measurements conducted in a two-electrode system using [EMIm]BF_4 as electrolyte:**

In a two-electrode cell, [EMIm]BF_4 was adopted as electrolyte. A glassy paper separator was sandwiched between two electrodes, and each electrode contains a mixture of 80 wt% the carbon sample (~ 2 mg), 15 wt% acetylene black and 5 wt% polytetrafluoroethylene (PTFE) binder. Nickel foam serves as the current collector. The assembly of the test cell was done in a glove box filled with Ar.

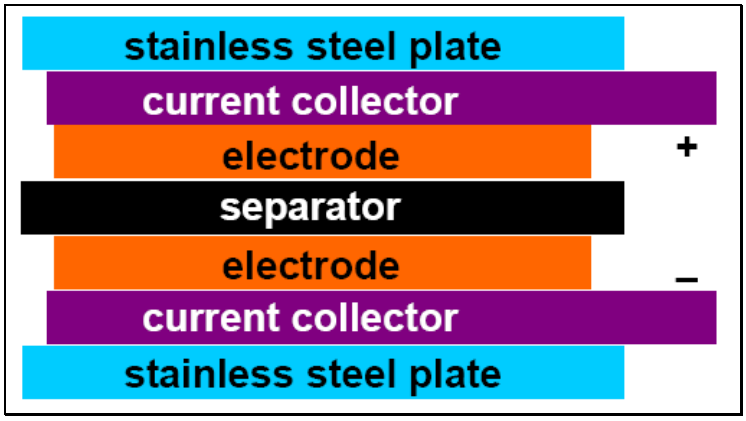
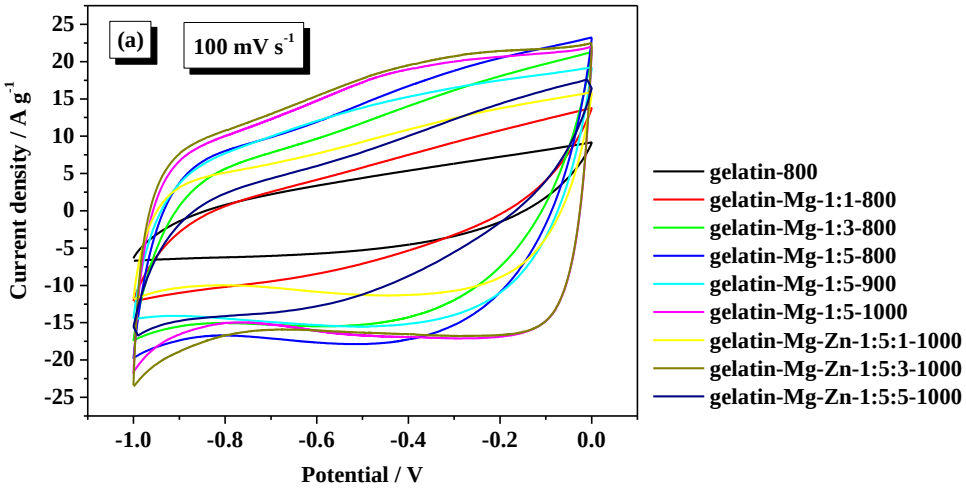
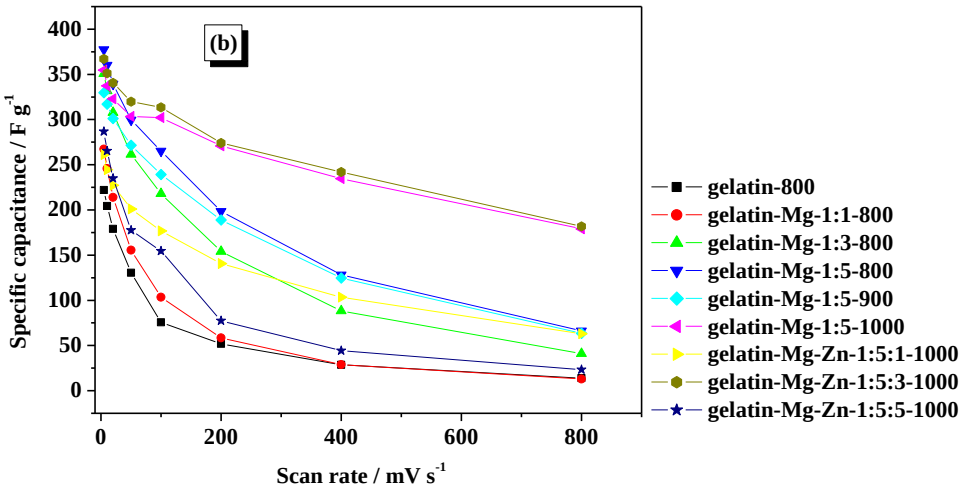


Fig. S1. Schematic illustration of a supercapacitor cell.





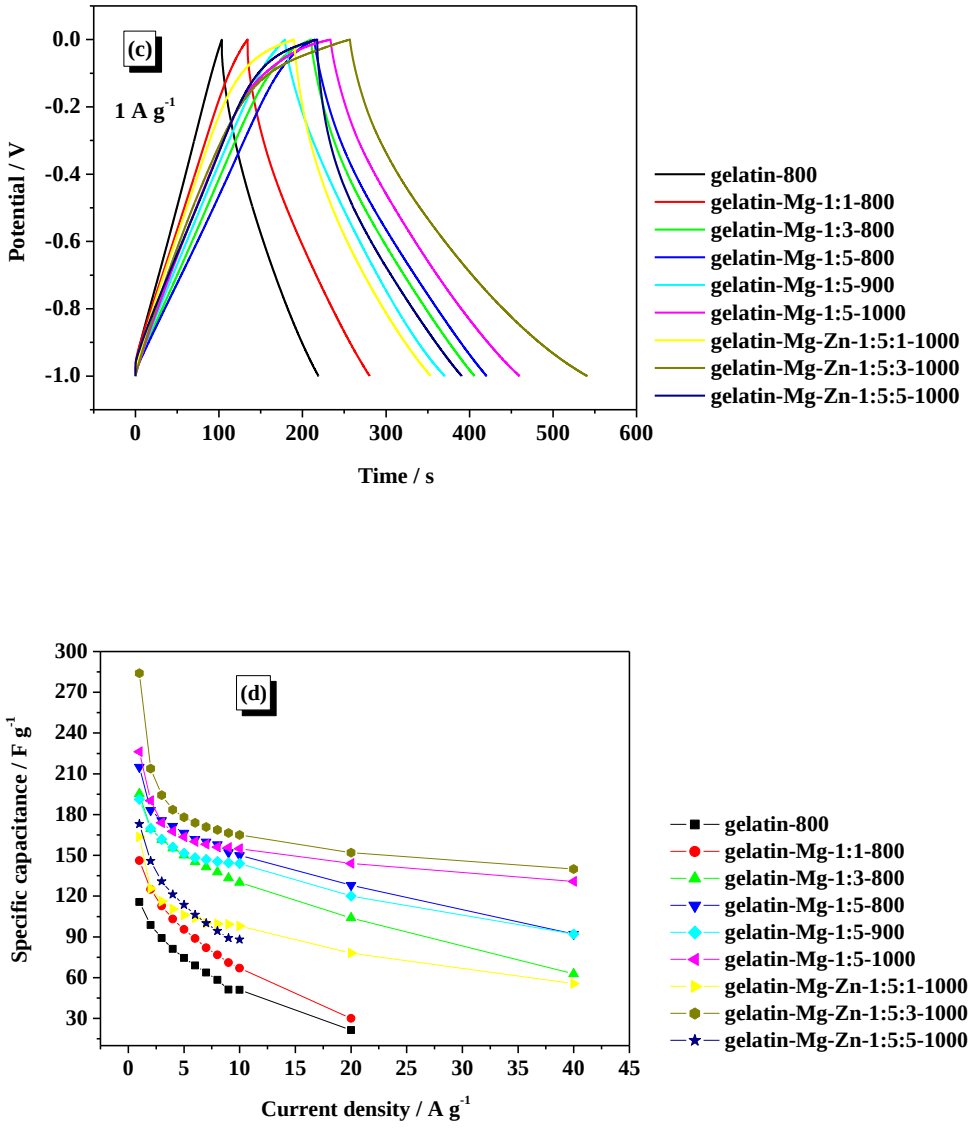


Fig. S2. (a) CV curves at various scan rates; (b) specific capacitances calculated from CV curves; (c) galvanostatic charge-discharge curves at various current densities; (d) specific capacitances calculated from galvanostatic charge-discharge curves. *Note that the results shown in Fig. S1 were measured in a three-electrode system using 6 mol L^{-1} KOH as electrolyte.*

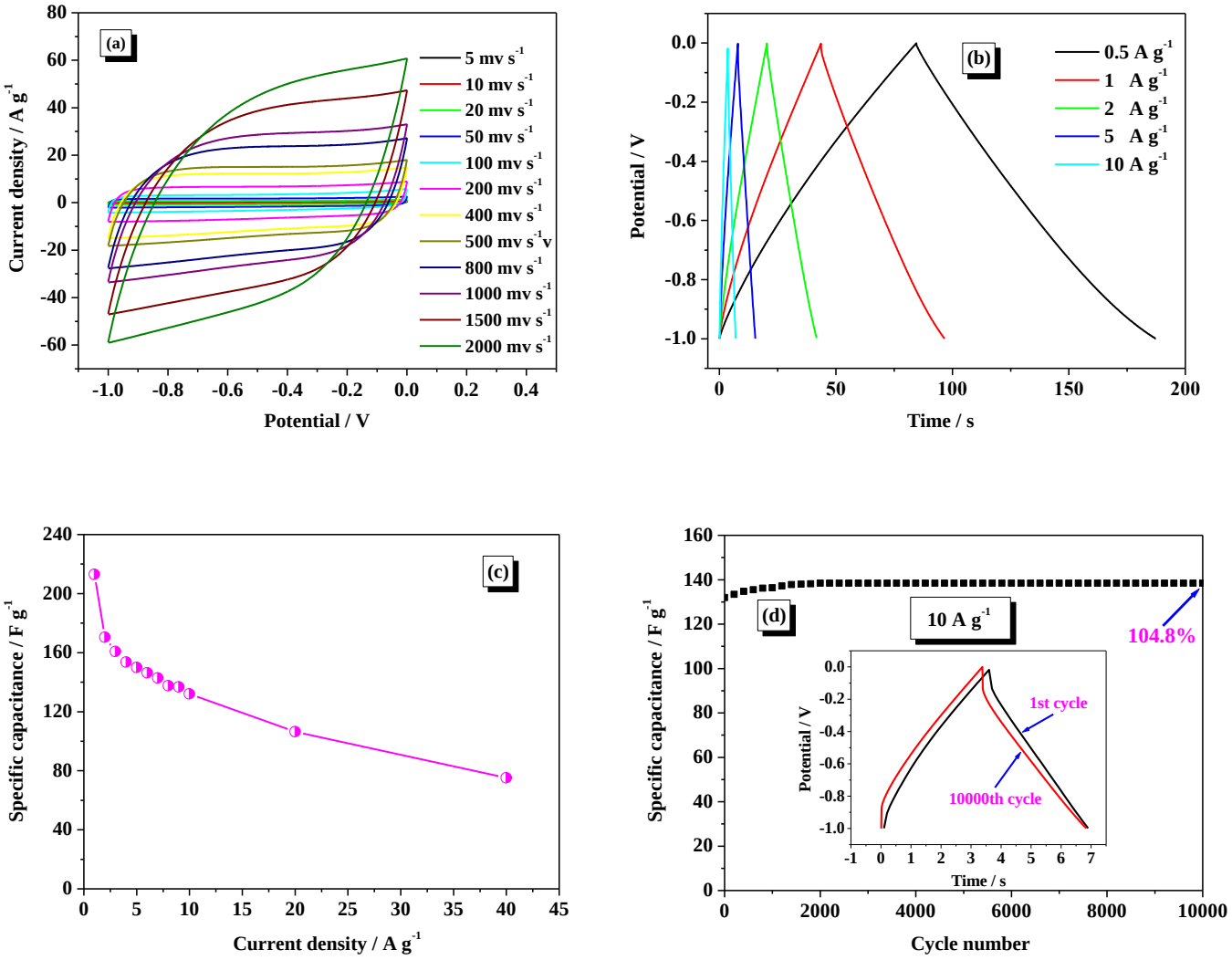


Fig. S3. Gelatin-Mg-Zn-1:5:3 sample measured in a two-electrode system using 6 mol L^{-1} KOH as electrolyte: (a) CV curves at various scan rates; (b) galvanostatic charge-discharge curves at various current densities; (d) specific capacitances calculated from galvanostatic charge-discharge curves; (d) cycling durability measured at 10 A g^{-1} as well as the 1st and 10000th galvanostatic charge-discharge curves (the inset).

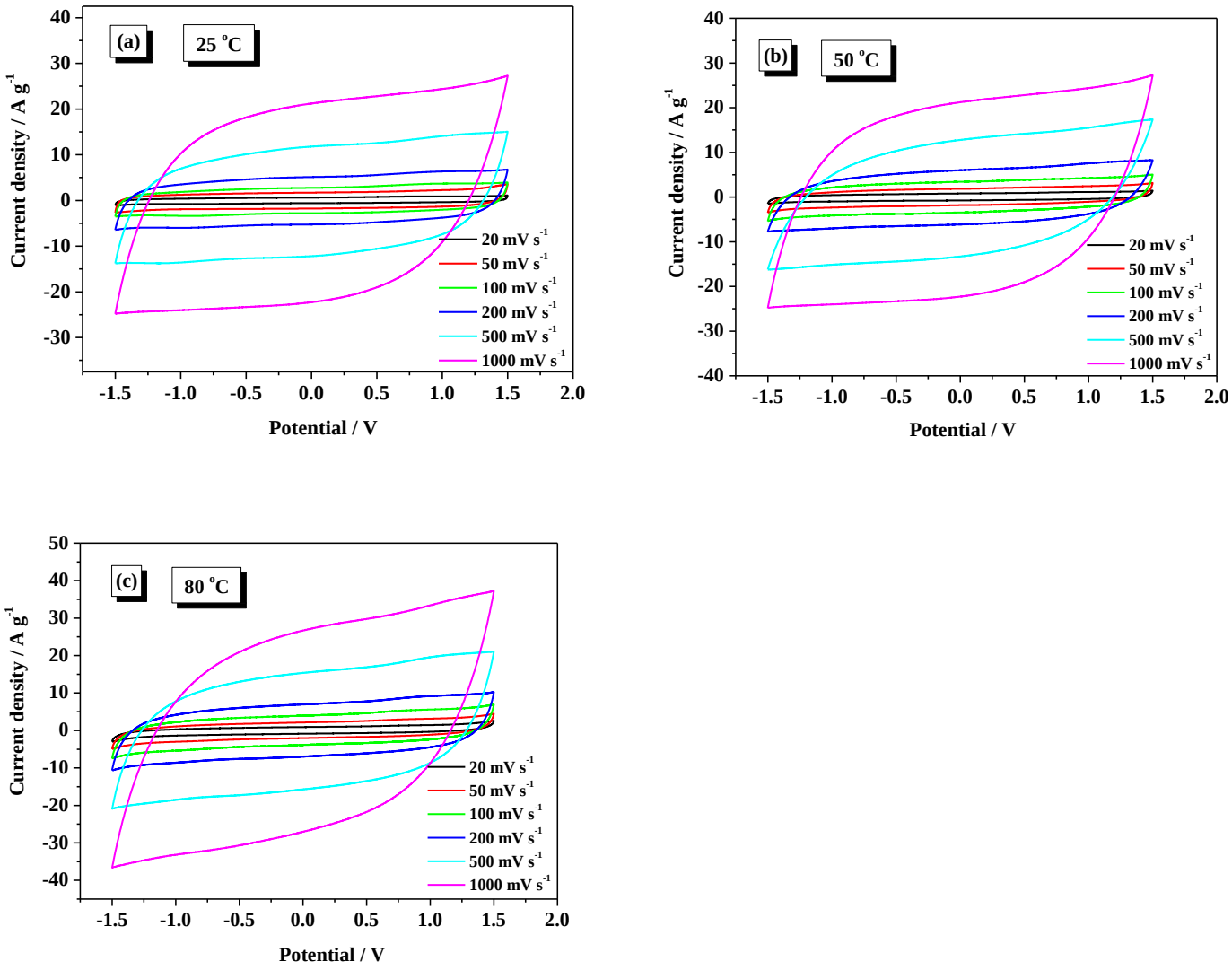


Fig. S4. CV curves of **Gelatin-Mg-Zn-1:5:3** sample measured in a two-electrode system using [EMIm]BF_4/AN as electrolyte.