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 potential 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:

$$C = \frac{1}{mv(V_\mathrm{b} - V_\mathrm{a})}\int_{V_\mathrm{a}}^{V_\mathrm{b}} I\mathrm{d}V$$

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 potential 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 potential 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:

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

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 potential window; and m (mg) is the total mass of two electrodes.

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

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

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 potential 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 potential window; P (W kg^{-1}) is the average power density and Δt (s) is the discharge time.

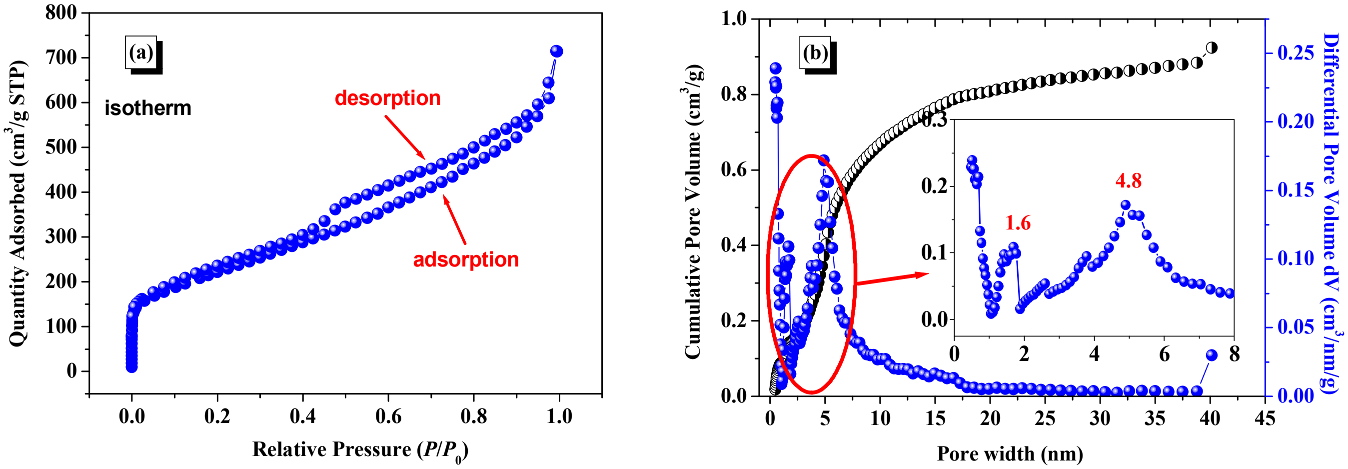
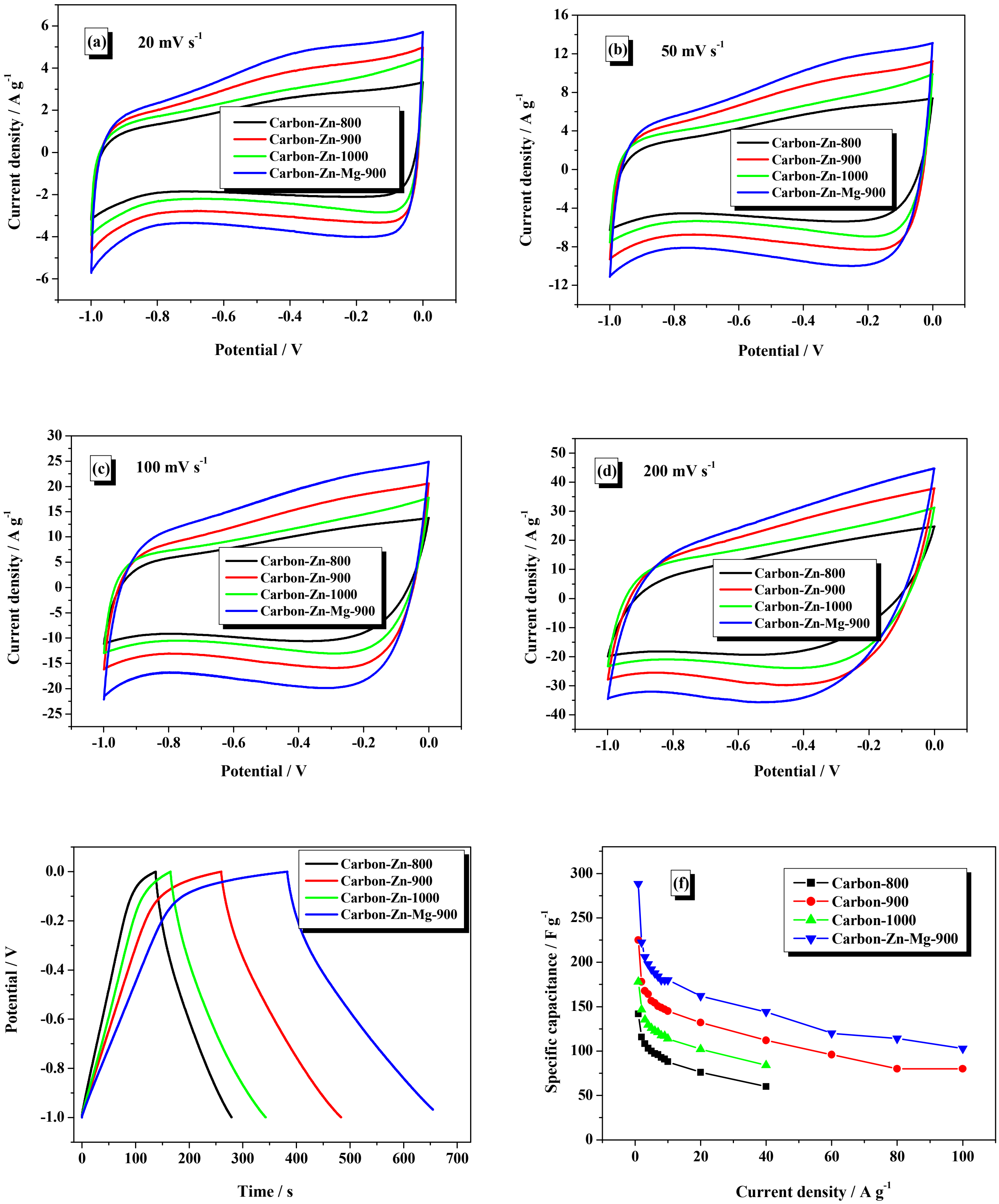


Fig. S1. Carbon-Zn-900 sample: (a) N_2 adsorption-desorption isotherm; (b) Cumulative pore volume and pore size distribution curves (calculated by using a slit/cylindrical NLDFT model).


(a)
20 mV s-1
Carbon-Zn-800
Carbon-Zn-900
Carbon-Zn-1000
Carbon-Zn-Mg-900
Current density / A g-1
Potential / V
(b)
50 mV s-1
Carbon-Zn-800
Carbon-Zn-900
Carbon-Zn-1000
Carbon-Zn-Mg-900
Current density / A g-1
Potential / V
(c)
100 mV s-1
Carbon-Zn-800
Carbon-Zn-900
Carbon-Zn-1000
Carbon-Zn-Mg-900
Current density / A g-1
Potential / V
(d)
200 mV s-1
Carbon-Zn-800
Carbon-Zn-900
Carbon-Zn-1000
Carbon-Zn-Mg-900
Current density / A g-1
Potential / V
Carbon-Zn-800
Carbon-Zn-900
Carbon-Zn-1000
Carbon-Zn-Mg-900
Potential / V
Time / s
(f)
Carbon-800
Carbon-900
Carbon-1000
Carbon-Zn-Mg-900
Specific capacitance / F g-1
Current density / A g-1

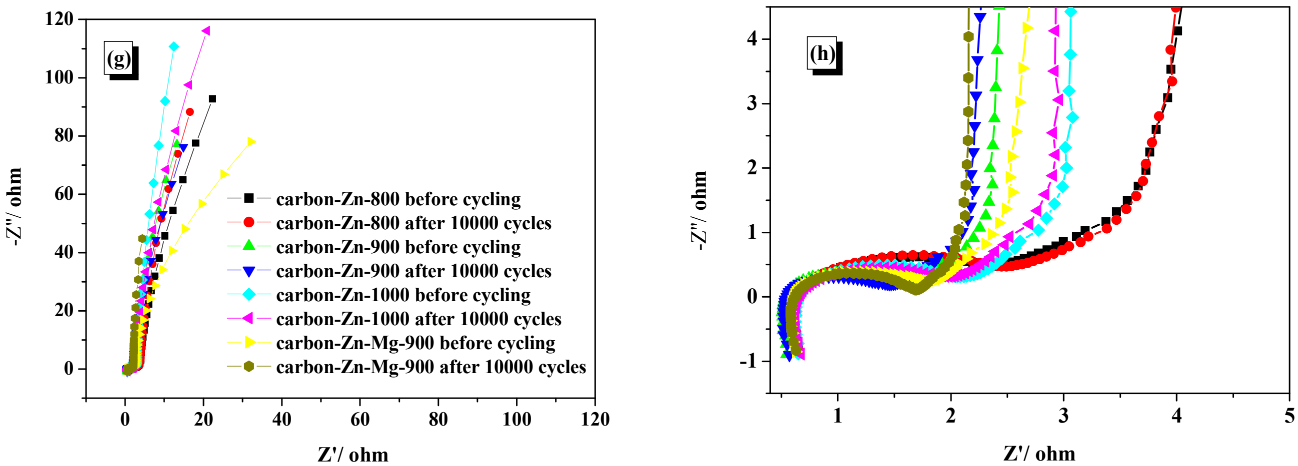


Fig. S2. The **carbon-Zn-800/900/1000**, **carbon-Zn-Mg-900** samples measured in a three-electrode system using 6 mol L^{-1} KOH as electrolyte: CV curves at various scan rates: (a) 20 mV s^{-1}; (b) 50 mV s^{-1}; (c) 100 mV s^{-1}; (d) 200 mV s^{-1}; (e) galvanostatic charge-discharge curves at various current densities as well as the calculated specific capacitances (f); (g) Nyquist plots before/after 10000 cycles, as well as the magnified Nyquist plots (h).

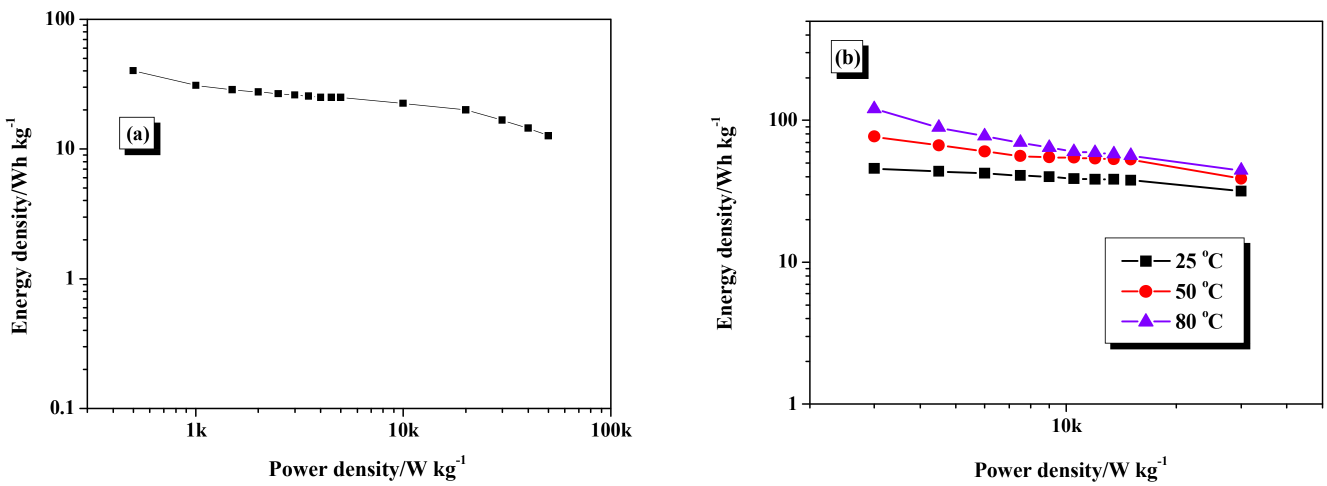


Fig. S3. Ragone plots of the**carbon-Zn-Mg-900** sample showing energy density *vs*. power density measured (a) in a three-electrode system using 6 mol L^{-1} KOH as electrolyte and (b) in a two-electrode system using [EMIm]BF_4/AN as electrolyte at the operation temperatures of 25/50/80 °C.