

Supporting Information for

Conductive Electrodes of Metallic-organic Compound CH₃CuS Nanowires for All-solid-state Flexible Supercapacitor

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1. Mass percent by element.

Energy dispersive spectroscopy (EDS) confirms the percentage composition of each element in CH_3CuS nanowires.

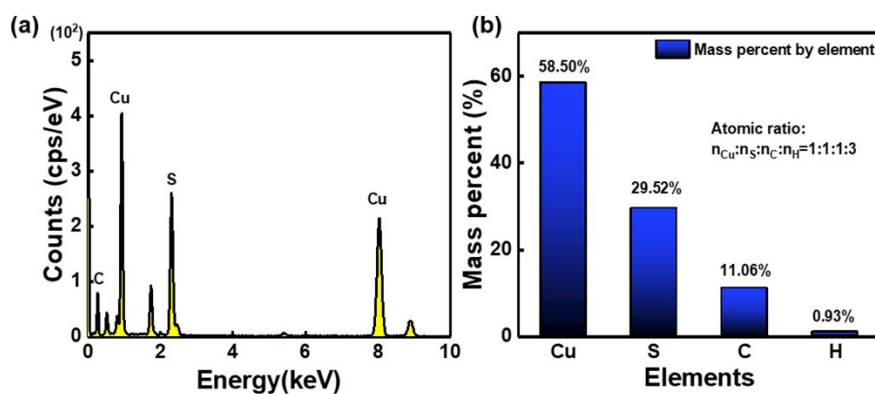


Figure S1 (a) Energy-dispersive X-ray spectroscopy and (b) Histogram of elements mass percent in CH_3CuS nanowires.

2. Comparison of the integrated areas of CV curves.

The integral areas of CV curves reflect the capacitance of the supercapacitors (Fig. S2), which is dependent on the areal mass loading of the electrode. The calculated integral areas under different mass loadings in the inset reach the maximum with a mass loading of 20 mg/cm².

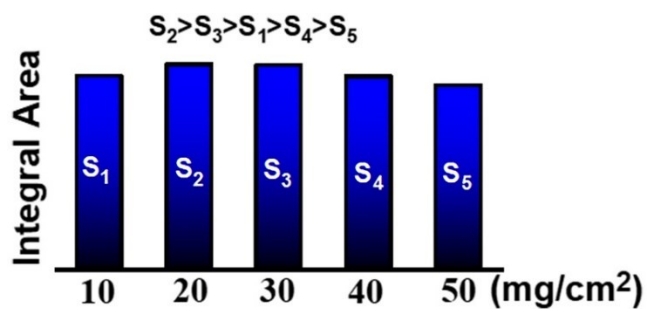


Figure S2 The integral areas of CV curves under different mass loadings.

3. SEM image of CH₃CuS nanowires after CD cycle.

The CH₃CuS nanowires can maintain their original morphology after CD cycle, illustrating the stable physical structure and chemical performance.

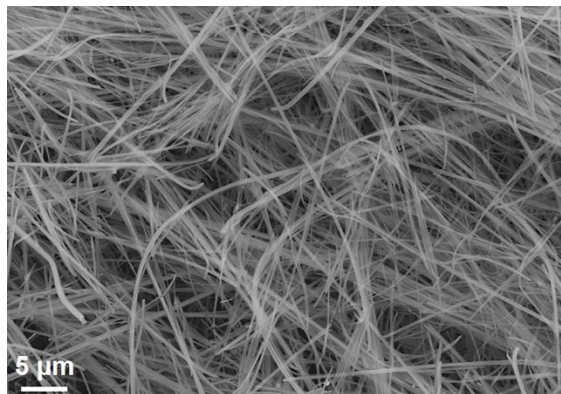


Figure S3 SEM image of CH₃CuS nanowires after 10,000 cycles.

4. Distribution of nanopore diameter.

The surface area of CH_3CuS nanowires was calculated to be $83.6 \text{ m}^2/\text{g}$ using the Brunauer-Emmett-Teller (BET) model, and the measured nanopore diameter from Barrett-Joyner-Halenda (BJH) pore size distribution plot was mainly distributed around 10 nm. The existence of these nanopores provides a multi-level space for the charge storage and benefits to the capacitance improvement directly.

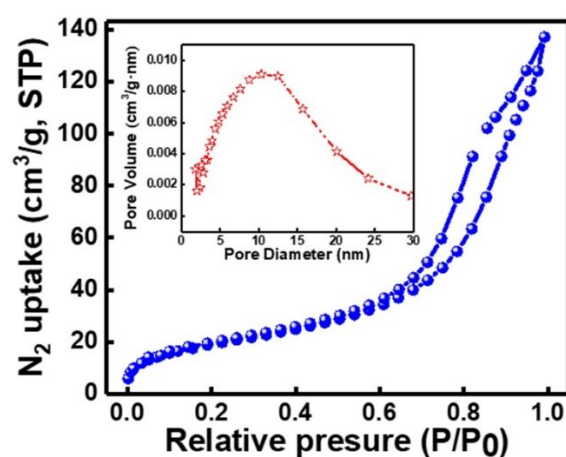


Figure S4 The isotherm curves of nitrogen adsorption and desorption. Inset is the corresponding pore size distribution of CH_3CuS nanowires.

5. Electrochemical impedance spectroscopy.

The EIS of the supercapacitor device from 100 kHz to 0.01 Hz. The Nyquist plot displays that the fabricated supercapacitor device has a charge transport resistance of around 350 Ω .

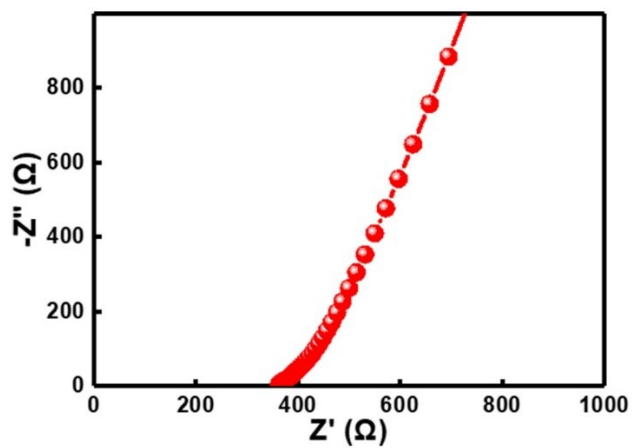


Figure S5 Electrochemical impedance spectroscopy (EIS) of fabricated supercapacitor device at room temperature.