Electronic Supplementary Information

Room-temperature synthesized porous $Cu(OH)_2/Cu_7S_4$ hybrid nanowires as high-performance electrode materials for asymmetric supercapacitor

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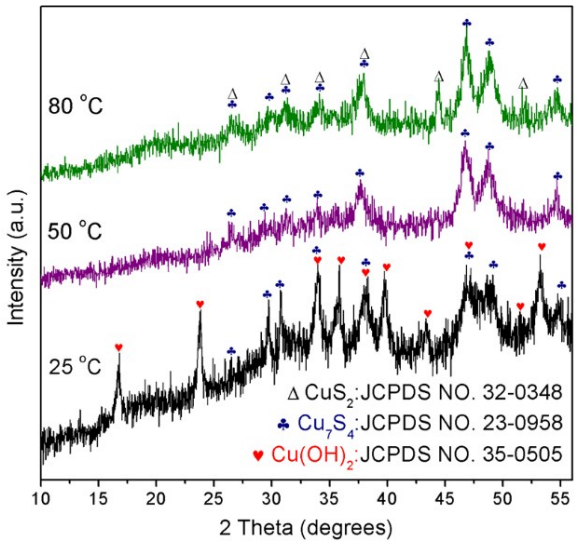


Fig. S1 XRD spectra of samples prepared at different reaction temperature.

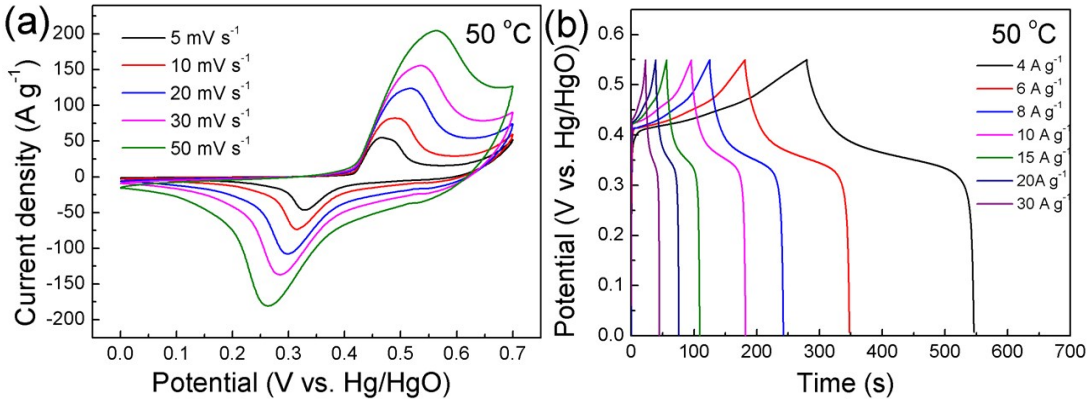


Fig. S2 The electrochemical performance of sample prepared at 50 °C. (a) CV curves measured at different scan rates and (b) GCD curves at different current densities.

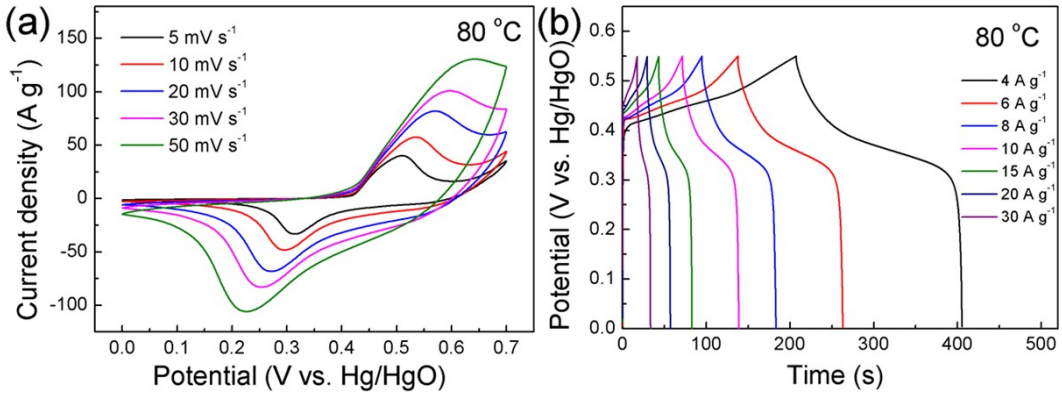


Fig. S3 The electrochemical performance of sample prepared at 80 °C. (a) CV curves measured at different scan rates and (b) GCD curves at different current densities.

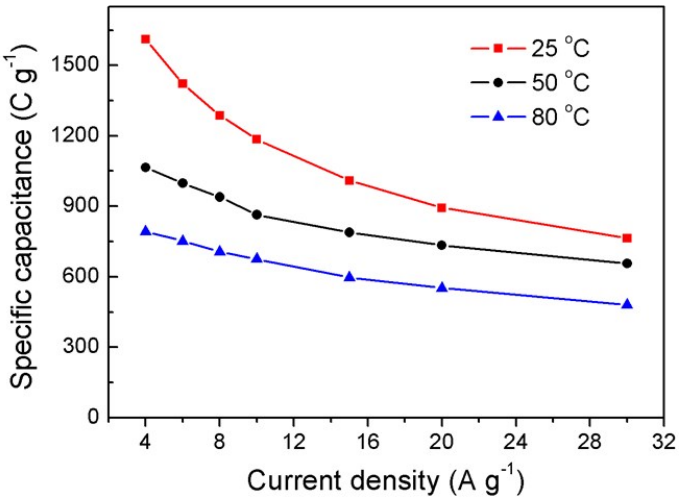


Fig. S4 The Specific capacity values of samples prepared at different reaction temperature.

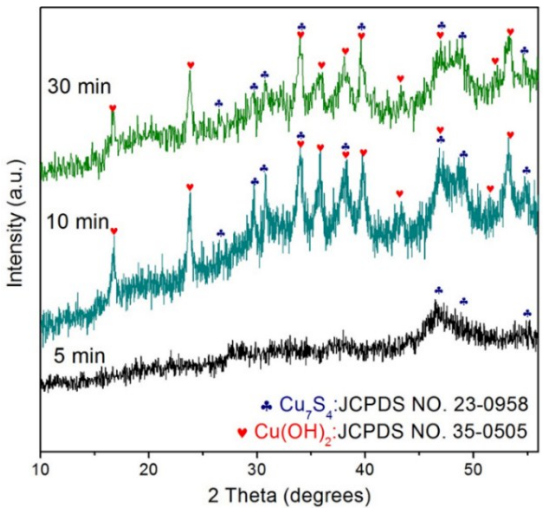
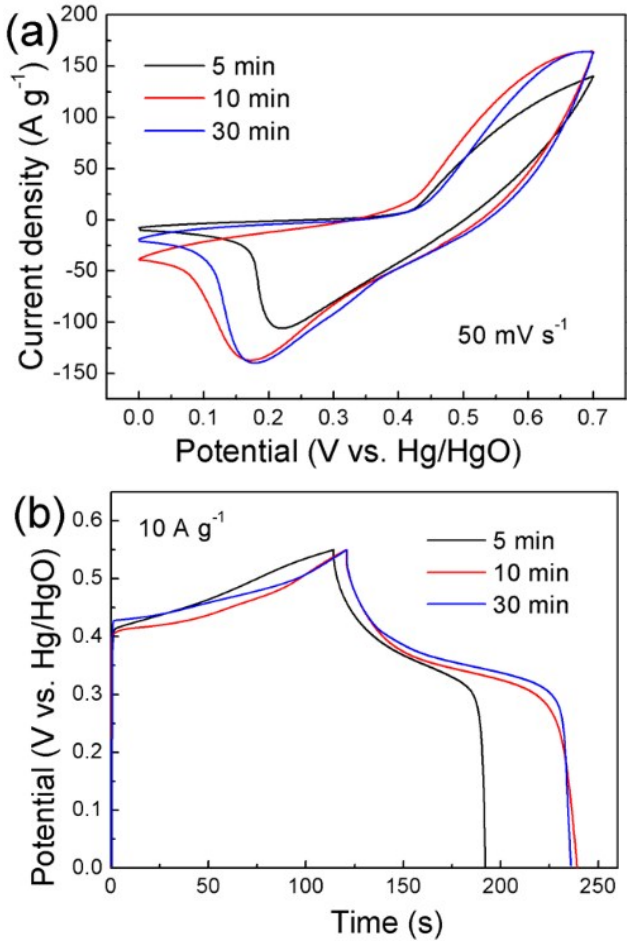


Fig. S5 XRD spectra of samples prepared in different reaction times.



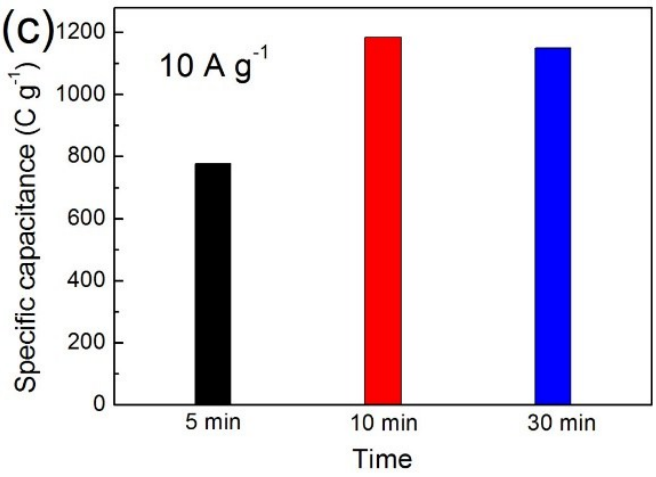


Fig. S6 (a) CV curves measured at 50 mV s^{-1}, (b) GCD curves and (c) specific capacity at 10 A g^{-1} of samples prepared in different reaction times.

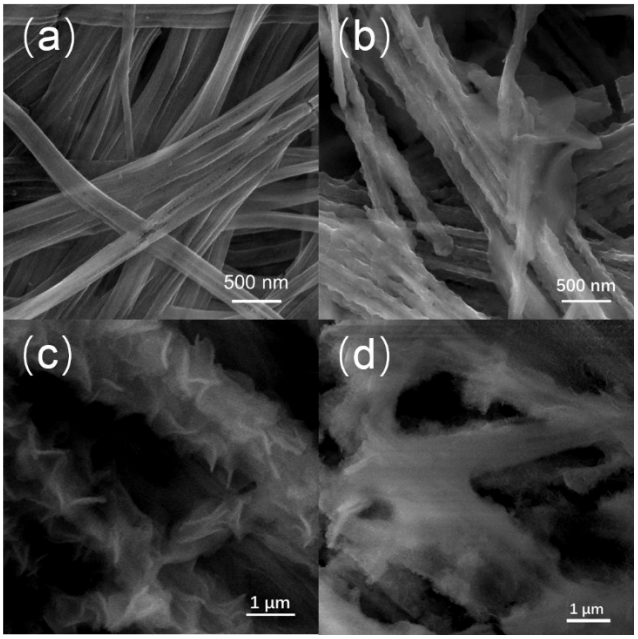


Fig. S7 the SEM images of (a) $Cu(OH)_2/Cu_7S_4$ and after (b) 2500 cycles, (c)5000 cycles, (d) 80000 cycles

Table S1. Summary of composition and specific capacity of samples prepared in different experimental conditions.

Experimental conditions	Composition	Specific Capacity
10 min, 25 °C	$Cu(OH)_2/Cu_7S_4$	1185.0 C g^{-1} at 10 A g^{-1}
10 min, 50 °C	Cu_7S_4	864.0 C g^{-1} at 10 A g^{-1}
10 min, 80 °C	CuS_2/Cu_7S_4	675.0 C g^{-1} at 10 A g^{-1}
5 min, 25 °C	Cu_7S_4	778.0 C g^{-1} at 10 A g^{-1}
30 min, 25 °C	$Cu(OH)_2/Cu_7S_4$	1176.0 C g^{-1} at 10 A g^{-1}

Table S2. Comparisons of specific capacity, pore volume and specific surface area of the $Cu(OH)_2/Cu_7S_4$ nanowire with other copper-based materials

Materials	Specific capacitance	Specific surface area (m^2 g^{-1})	Pore volume (cm^3 g^{-1})	Ref.
Multi-structural CuS@ppy composite	427 F g^{-1} at 1 A g^{-1}	6.19	0.070	1
Mesoporous $Cu(OH)_2$ nanorods	1.747 F cm^{-2} at 2 mA cm^{-2}	97.34	0.1445	2
3D graphene@CuS	249 F g^{-1} at 4 A g^{-1}	26.37	0.128	3
CuS-OEs/rGO	203 C g^{-1} at 0.5 A g^{-1}	60.41	0.266	4
CuS hollow microflowers	536.7 F g^{-1} at 8 A g^{-1}	65.99	0.215	5
Cu_7S_4 NWs	400 F g^{-1}10 mV s^{-1}	34.23	-	6
3D $Cu(OH)_2$	1332 F g^{-1} at 2 A g^{-1}	68.5	-	7
CuS nano-hollow spheres	948 F g^{-1} at 1 A g^{-1}	97	-	8
nanoporous CuS nanospheres	814 F g^{-1} at 1 A g^{-1}	65	-	9
$Cu(OH)_2$ nanoporous nanorods	2609 F g^{-1} at 5 mV s^{-1},	94.7	-	10
rGO-wrapped CuS hollow spheres	2317.8 F g^{-1} at 1 A g^{-1}	132.4	-	11
$Cu(OH)_2/Cu_7S_4$ porous nanowires	1610.8 C g^{-1} at 4 A g^{-1} (2980.8 F g^{-1})	102.8	0.2879	This work

Reference

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