

Supporting information:

**Controllable synthesis of hydrangea-like Ni_xS_y hollow microflowers
all-solid-state asymmetric supercapacitor electrodes with enhanced
performance by synergistic effect of nickel multiphase**

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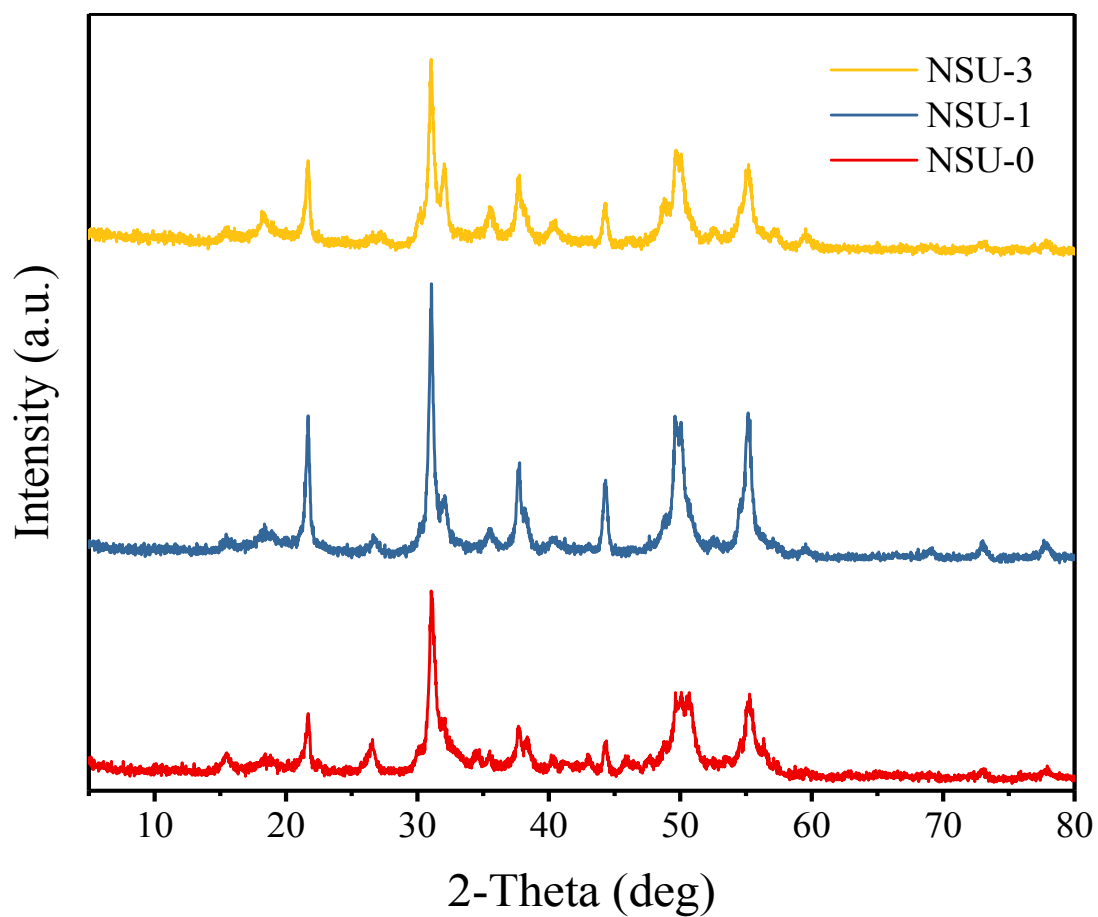


Figure S1. XRD patterns of NSU-0, NSU-1 and NSU-3.

Table S1. The amount of every phase of mixed phases.

Sample	Amount of urea, mmol	Percentage content of Ni_3S_2	Percentage content of NiS	Percentage content of Ni_3S_4
NSU-0	0	50.5%	15.8%	33.7%
NSU-1	1	65.0%	13.0%	22.0%
NSU-2	2	57.6%	20.2%	22.2%
NSU-3	3	62.0%	15.0%	23.0%

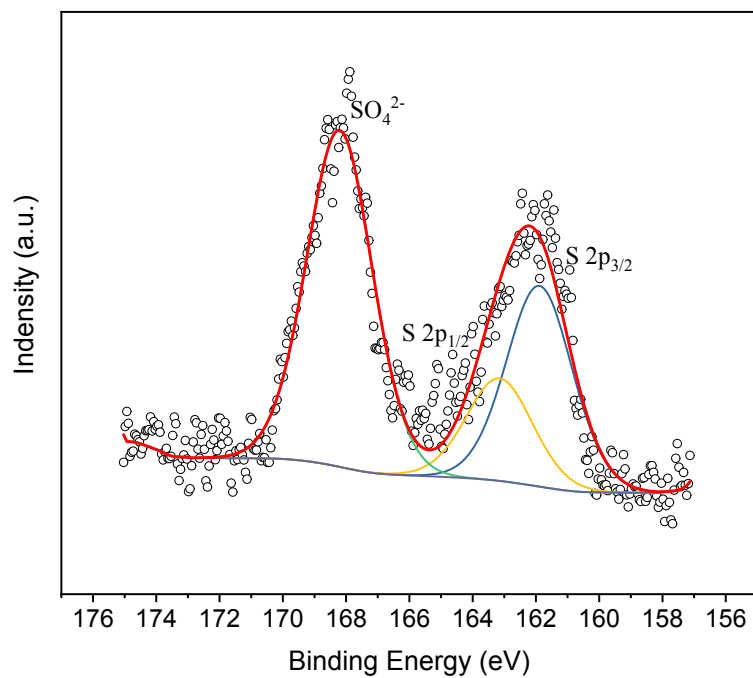


Figure S2. S 2p spectra of NSU-2.

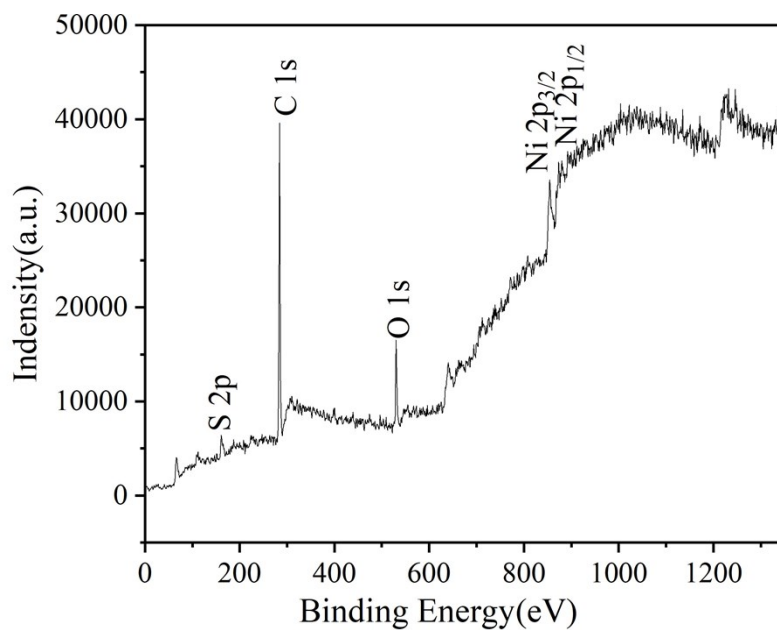


Figure S3. The full survey spectrum of NSU-2.

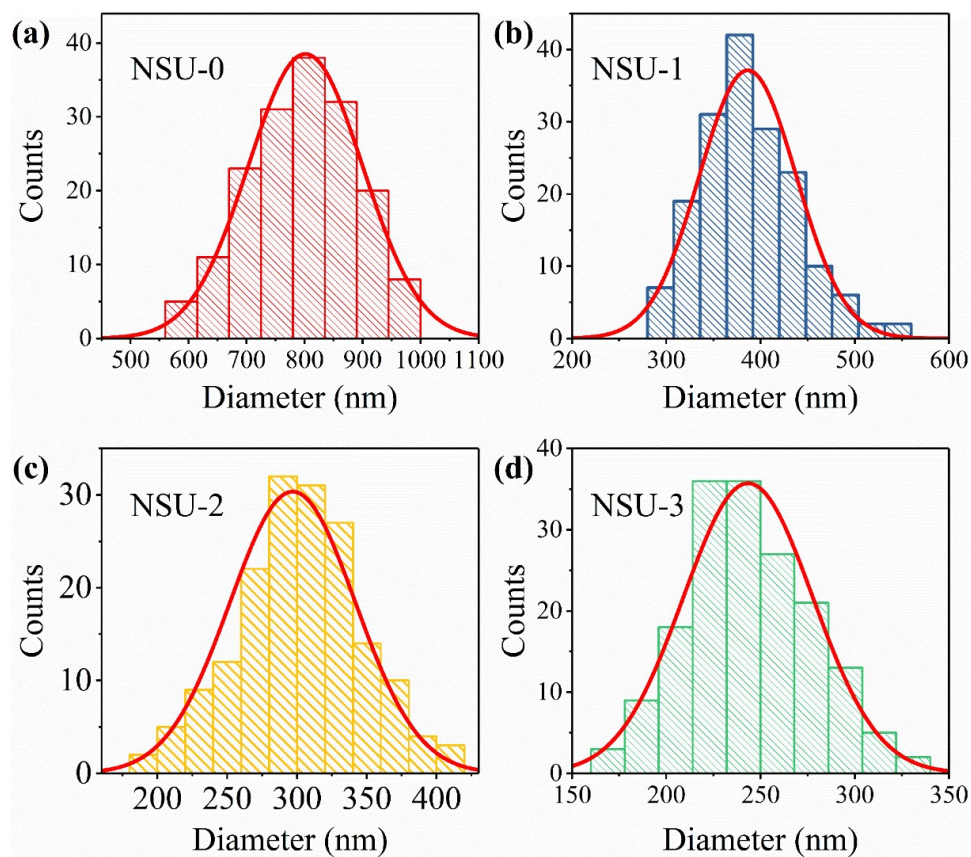


Figure S4. Diameter distribution histogram of NSU-0(a), NSU-1(b), NSU-2(c) and NSU-3(d).

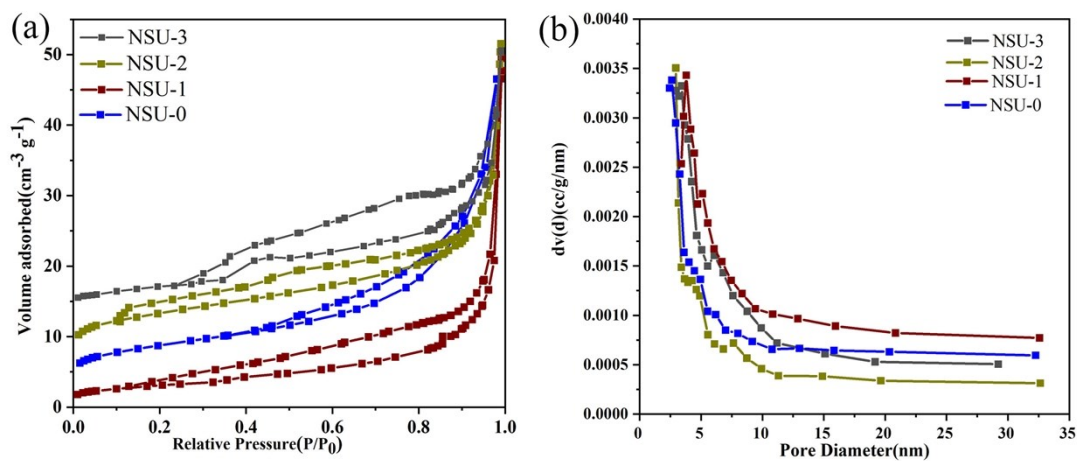


Figure S5. (a) N_2 adsorption/desorption isotherms of NSUs samples; (b) pore size distributions of NSUs samples.

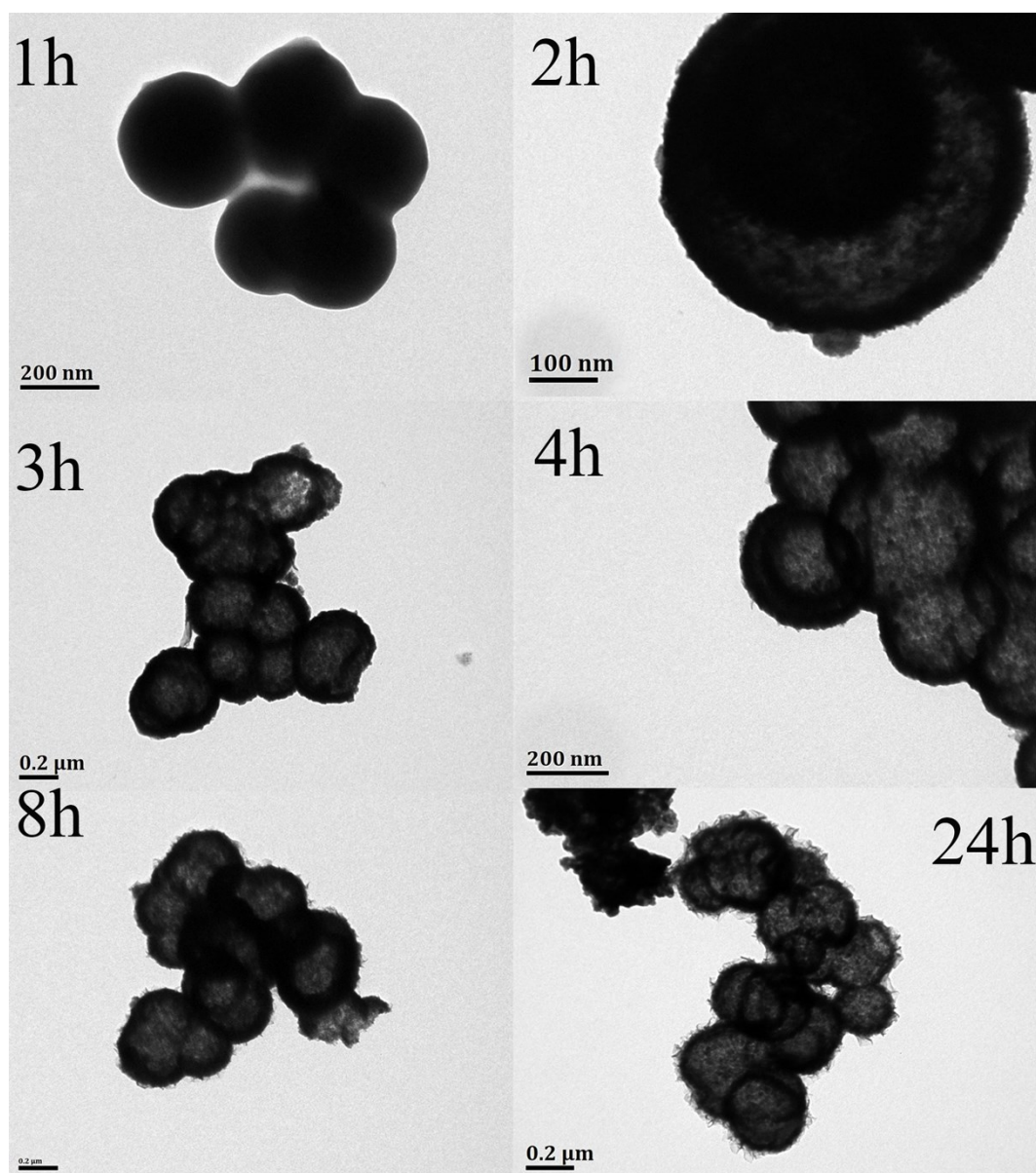


Figure S6. TEM images of NSUs after 1, 2, 3, 4, 8 and 24h, respectively.

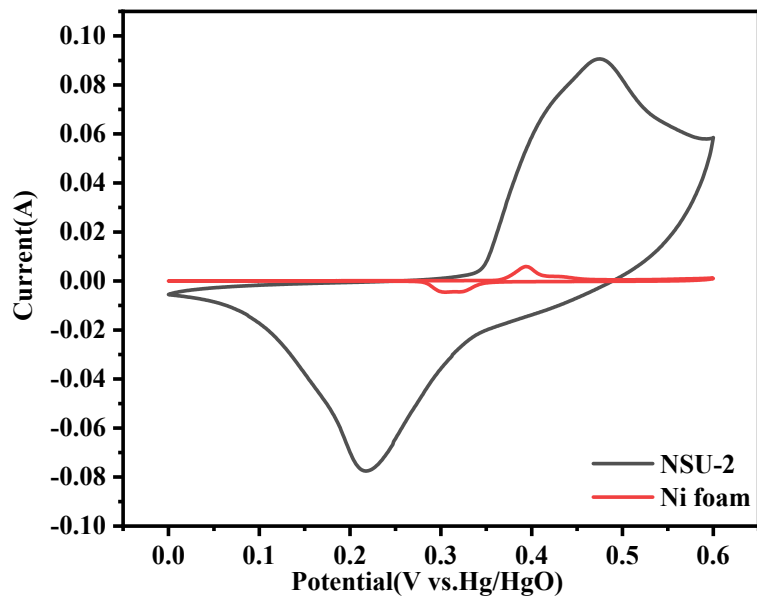


Figure S7. CV curve of nickel foam and NSU-2 at $10 \text{ mV}\cdot\text{s}^{-1}$.

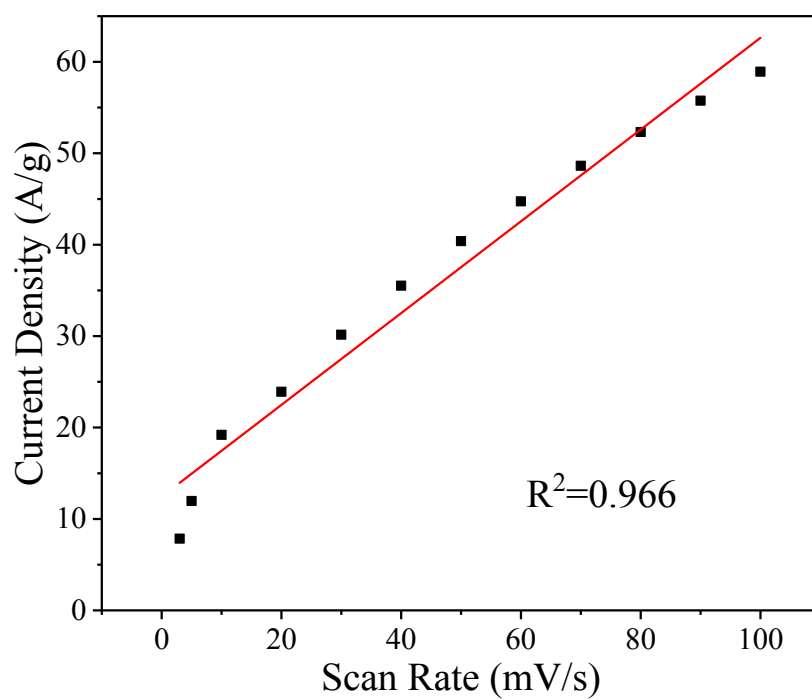


Figure S8. The i_p vs. V plots of NSU-2 electrode.

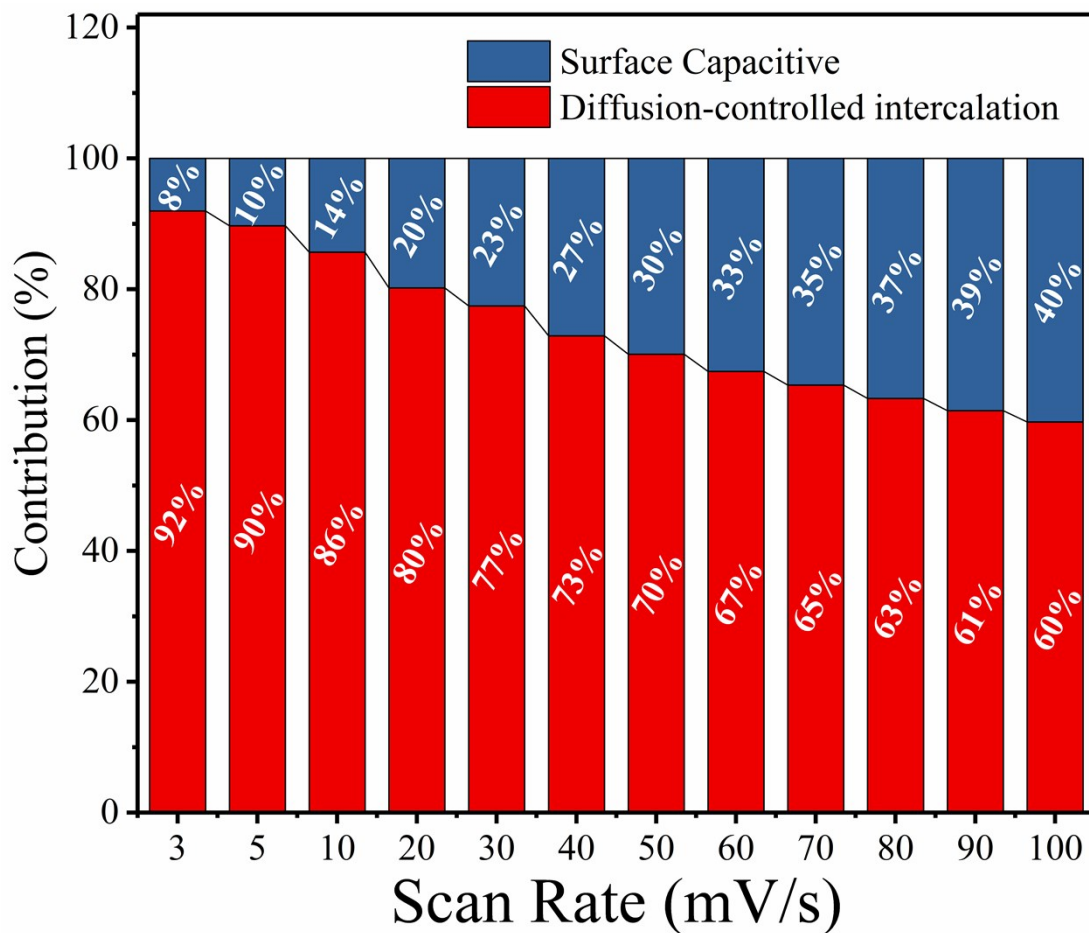


Figure S9. Surface capacitive effects and the diffusion-controlled intercalation process contribution of NSU-2 electrode at various scan rates.

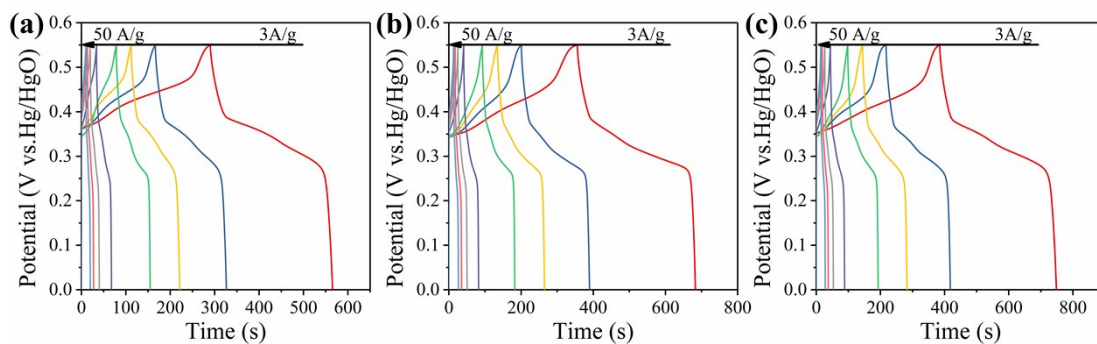


Figure S10. GCD curves of the NHU-0 (a), NHU-1 (b) and NHU-3 (c) at different current density.

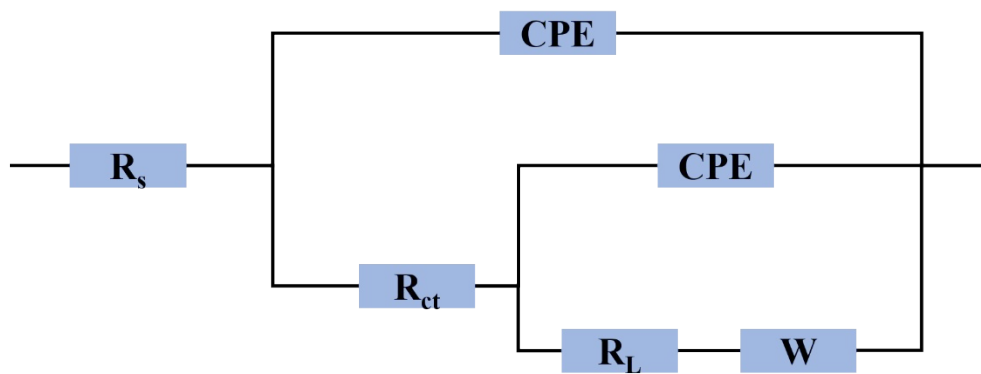


Figure S11. Corresponding equivalent circuit in EIS.

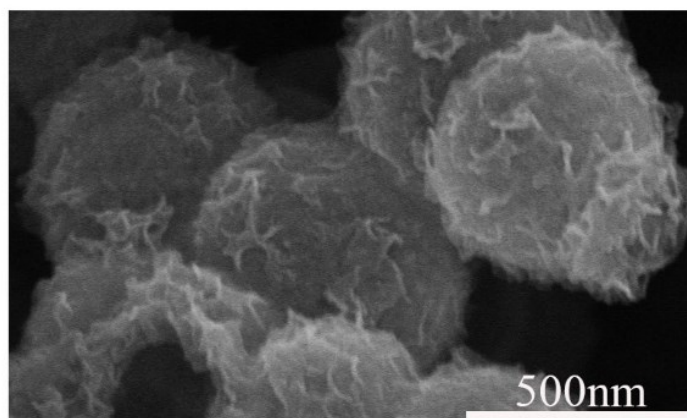


Figure S12. SEM of NSU-2 after 6000 cycles long-term stability test

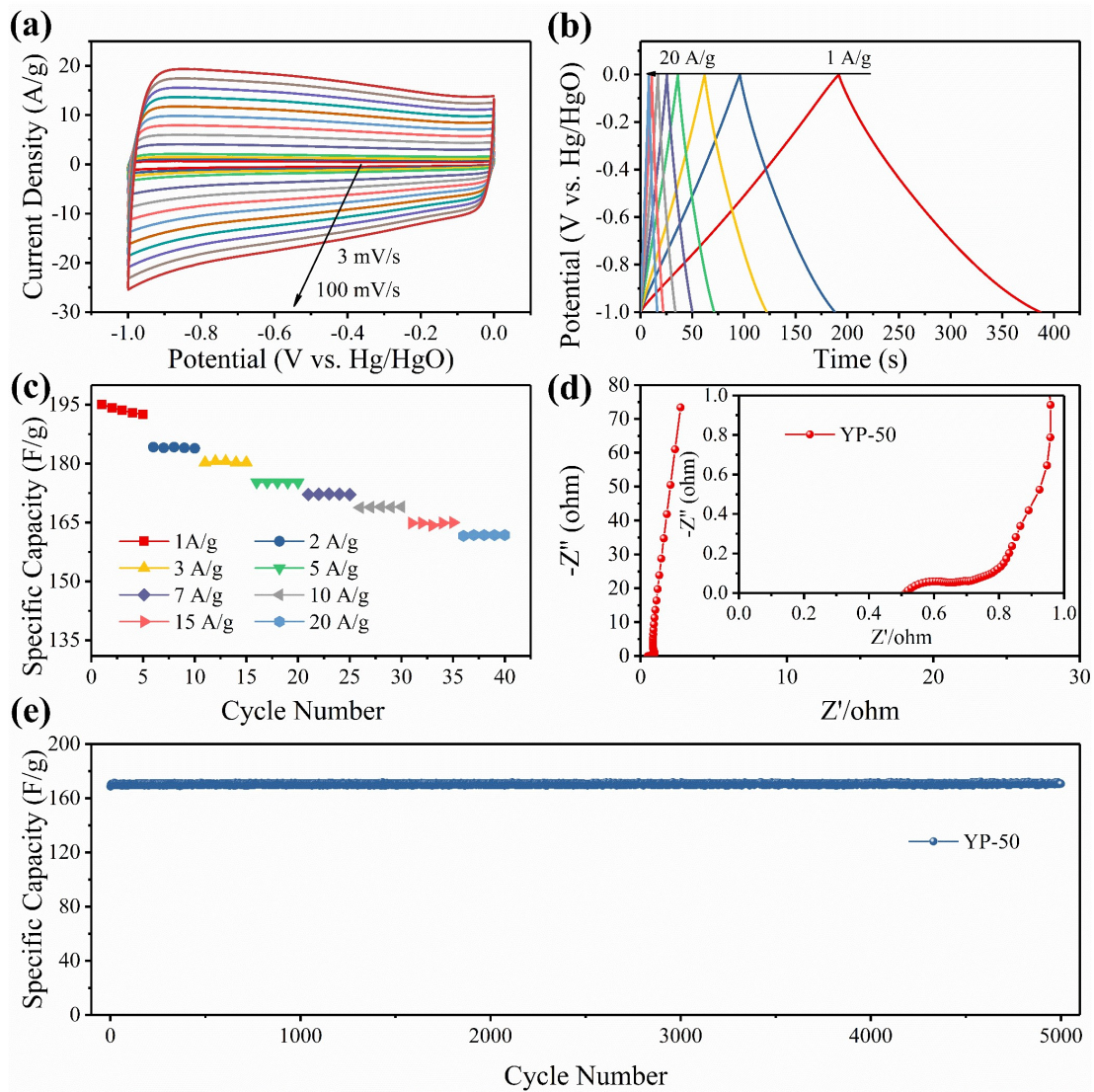


Figure S13. (a) CV curves of YP-50 at different scan rate, (b) GCD curves of YP-50 at different current density from 1 to 20 $\text{A}\cdot\text{g}^{-1}$, (c) the corresponding specific capacitance of the YP-50 electrode (d) Nyquist plot of and the YP-50 electrode (e) cycle stability of the YP-50 electrode at 10 $\text{A}\cdot\text{g}^{-1}$ current density.