

# Supplementary Materials

## Plasma-engineered N-CoO<sub>x</sub> nanowire array as bifunctional electrode for supercapacitor and electrocatalysis

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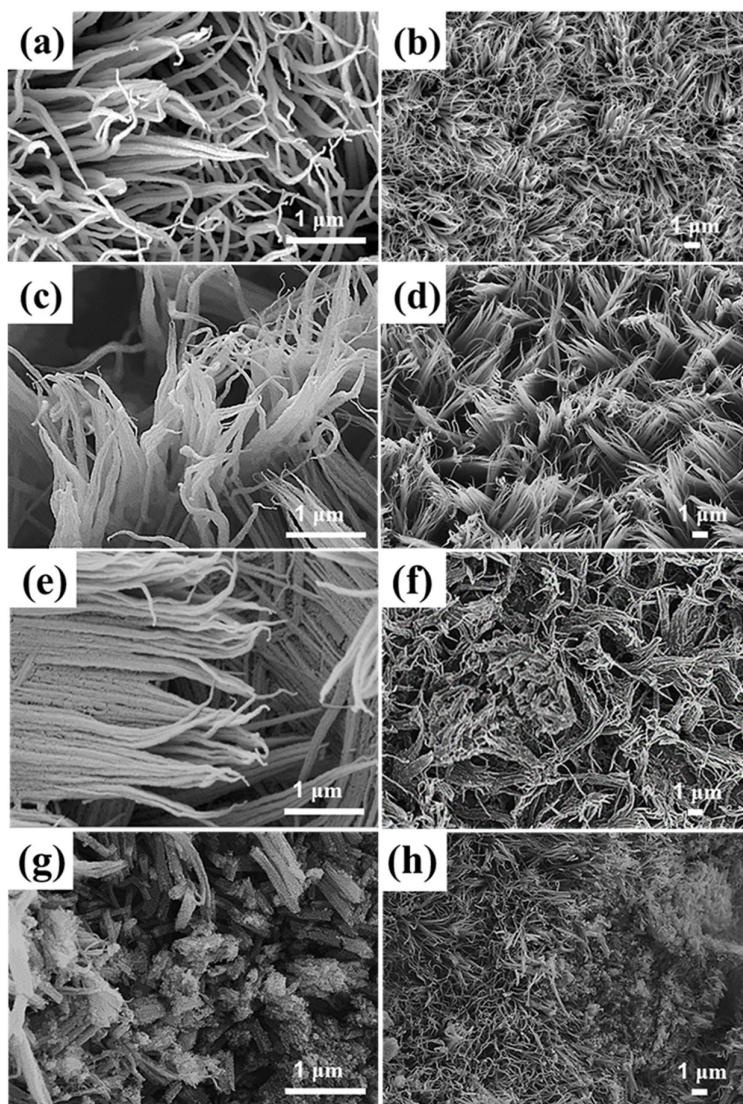


Figure S1. SEM images of N/Ar-t: (a,b) t = 2, (c,d) t = 4, (e,f) t = 8, (g,h) t = 10.

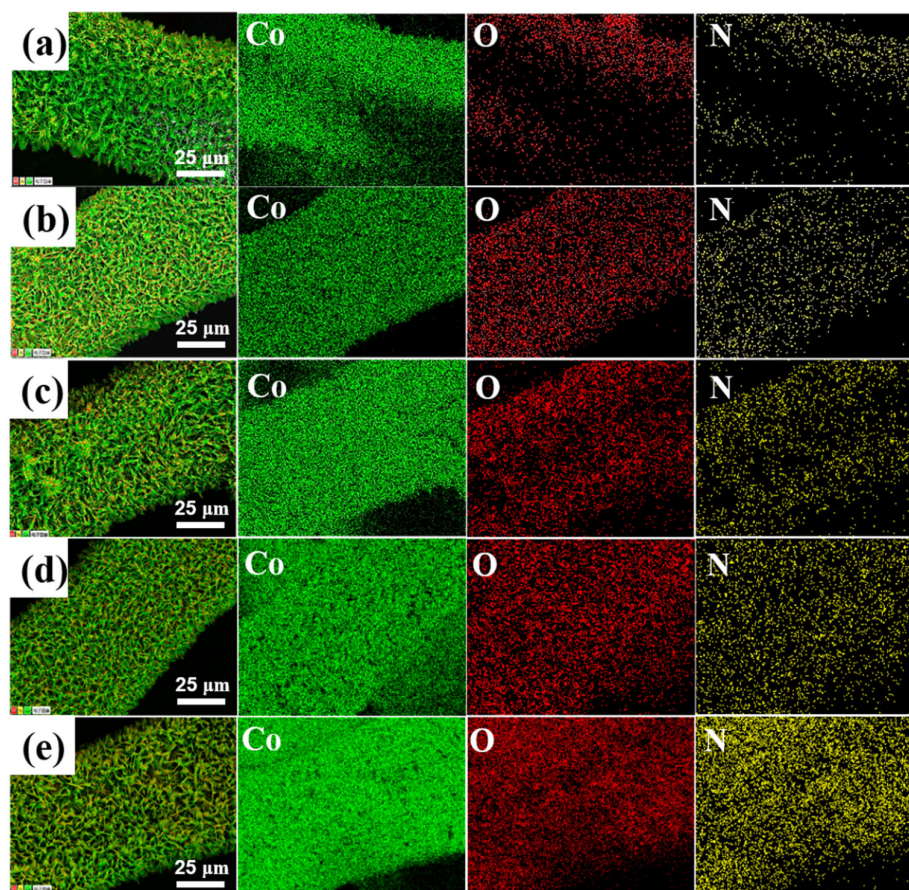


Figure S2. EDS mapping of N/Ar-t: (a)  $t = 2$ , (b)  $t = 4$ , (c)  $t = 6$ , (d)  $t = 8$ , (e)  $t = 10$ .

Table S1. Element concentration in N/Ar-t ( $t = 2, 4, 6, 8, 10$  min)

Sample	Co (wt%)	Co (at%)	O (wt%)	O (at%)	N (wt%)	N (at%)
N/Ar-2	99.4	97.7	0.6	0.3	0	0
N/Ar-4	98	92.9	1.7	6.0	0.3	1.1
N/Ar-6	98.5	94.8	1.1	3.9	0.3	1.3
N/Ar-8	98.8	95.1	0.9	3.2	0.4	1.7
N/Ar-10	97.8	92.4	1.6	5.6	0.5	2

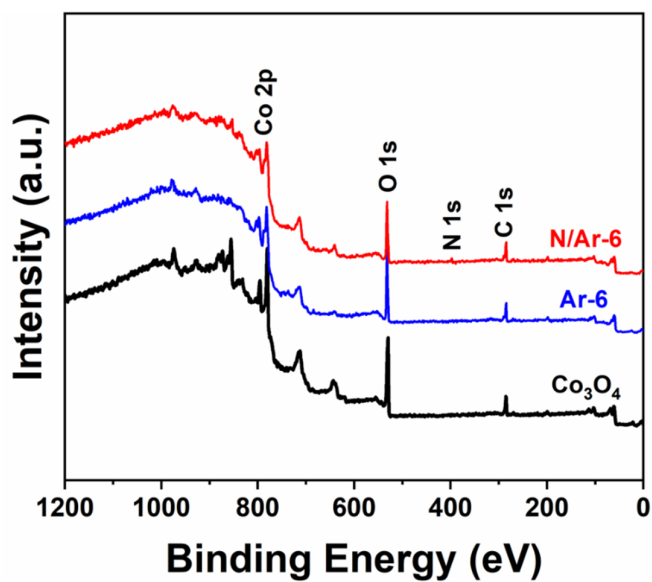


Figure S3. XPS survey spectra of  $\text{Co}_3\text{O}_4$ , Ar-6 and N/Ar-6.

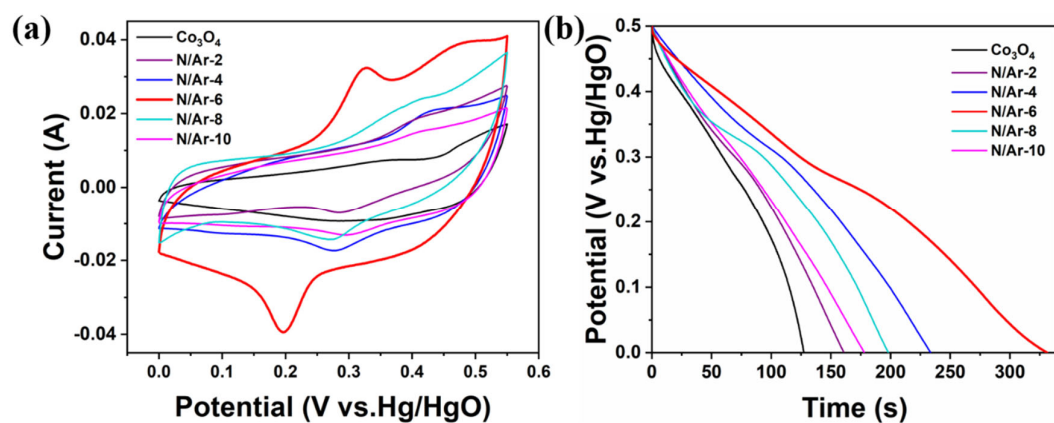


Figure S4. (a) CV and (b) GCD curves of pristine  $\text{Co}_3\text{O}_4$  and N/Ar- $t$  ( $t = 2, 4, 6, 8, 10$  min).

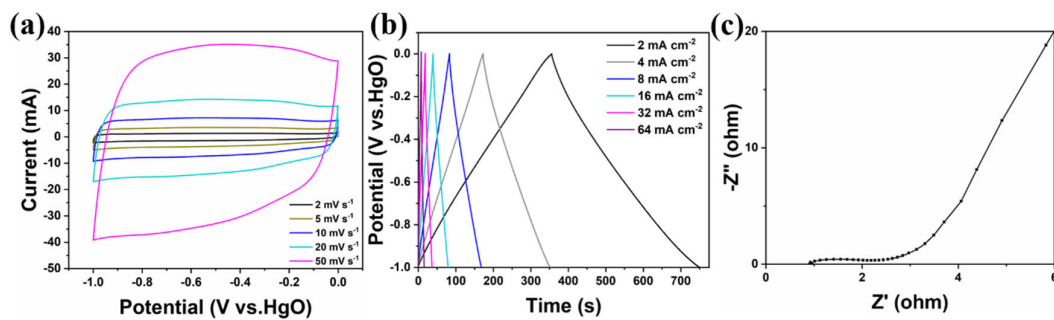


Figure S5. (a) CV, (b) GCD and (c) Nyquist curves of AC-40 half cell.



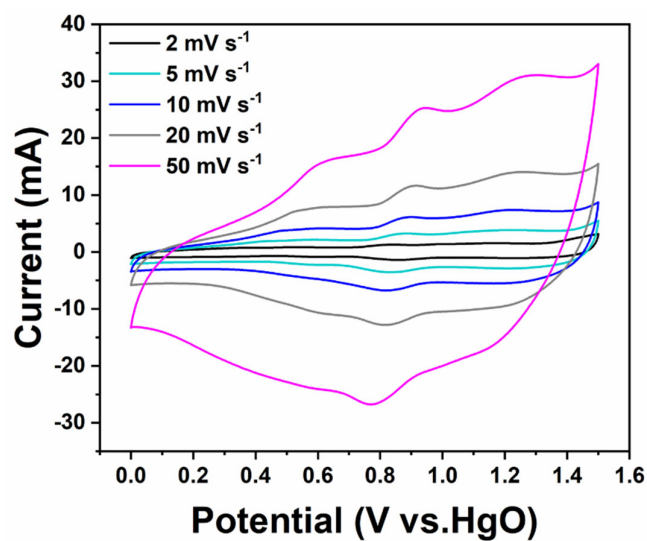


Figure S6. CV curves of N/Ar-6//AC-40 asymmetric device.

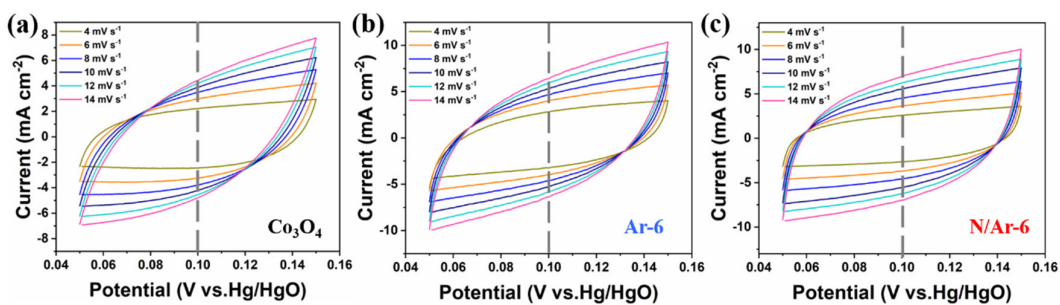


Figure S7. CV curves of  $\text{Co}_3\text{O}_4$ , Ar-6 and N/Ar-6 for EASA measurement.