

Supporting Information

Nickel doped Co₃O₄ spinel nanospheres embedded with nitrogen-doped carbon composites derived from bimetallic NiCo metal-organic framework as high-performance asymmetric supercapacitor

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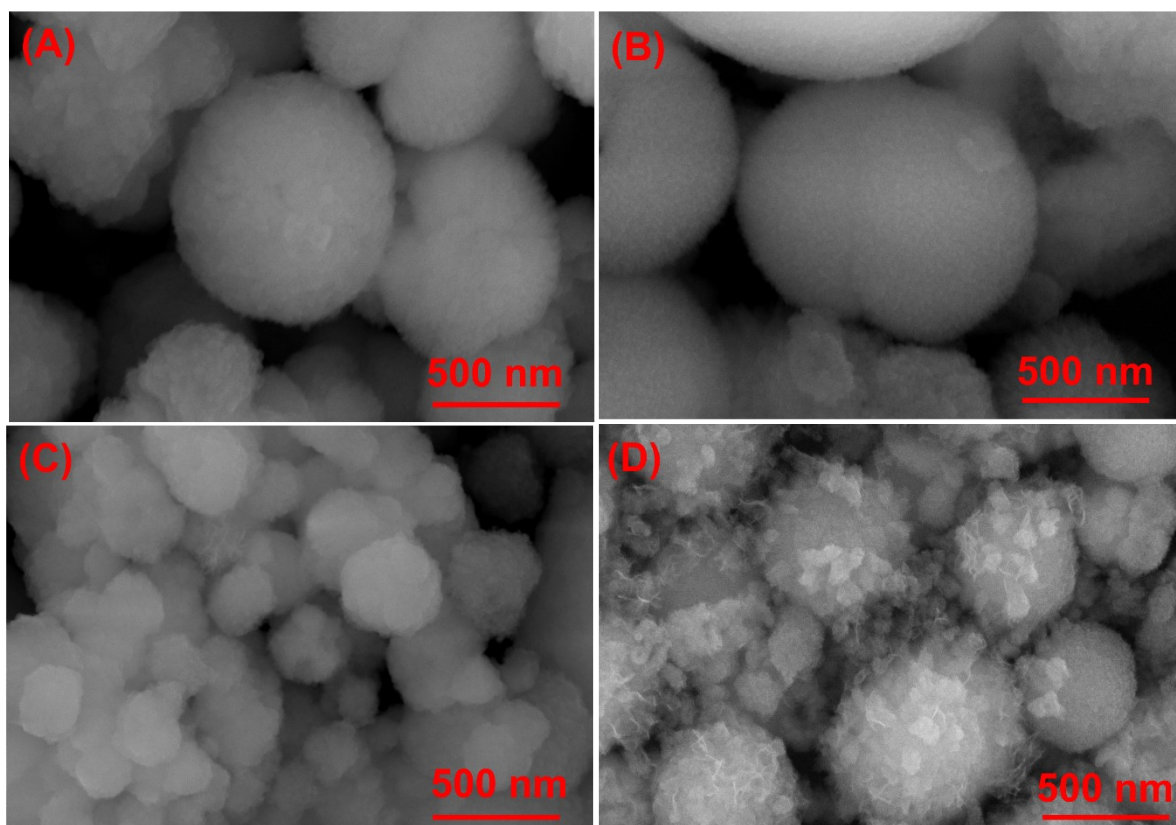


Figure S1. FESEM images of (A) Co-BTC, (B) NiCo-BTC-1, (C) NiCo-BTC-2, and (D) NiCo-BTC-3 sample.

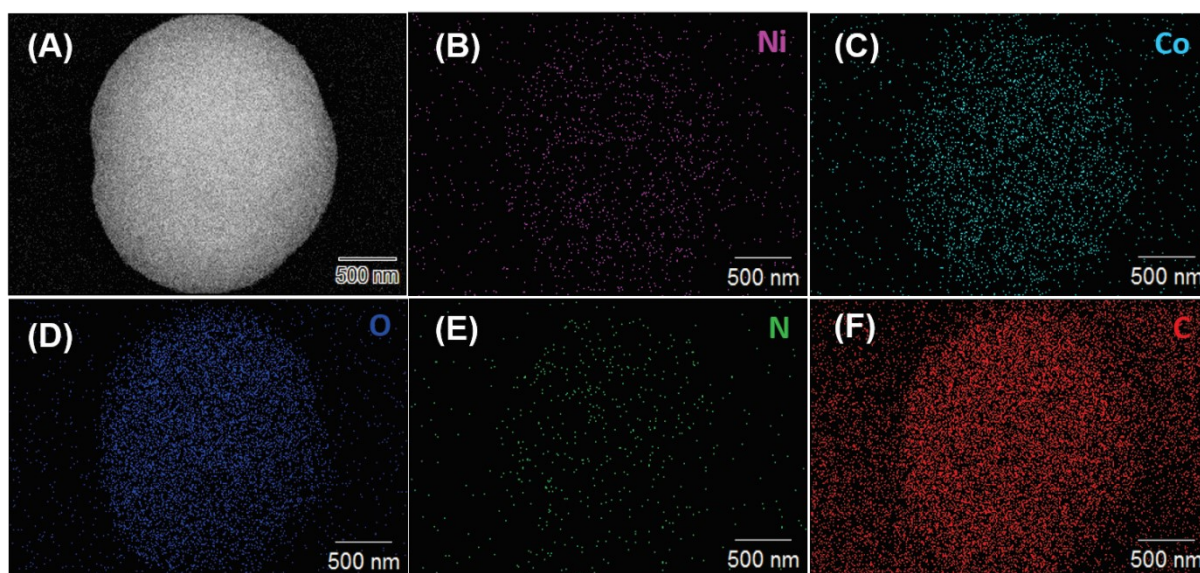


Figure S2. (A) FESEM images of NiCo-BTC-3 sample for elemental mapping Ni (B), Co (C), O (D), N (E), and C (F).

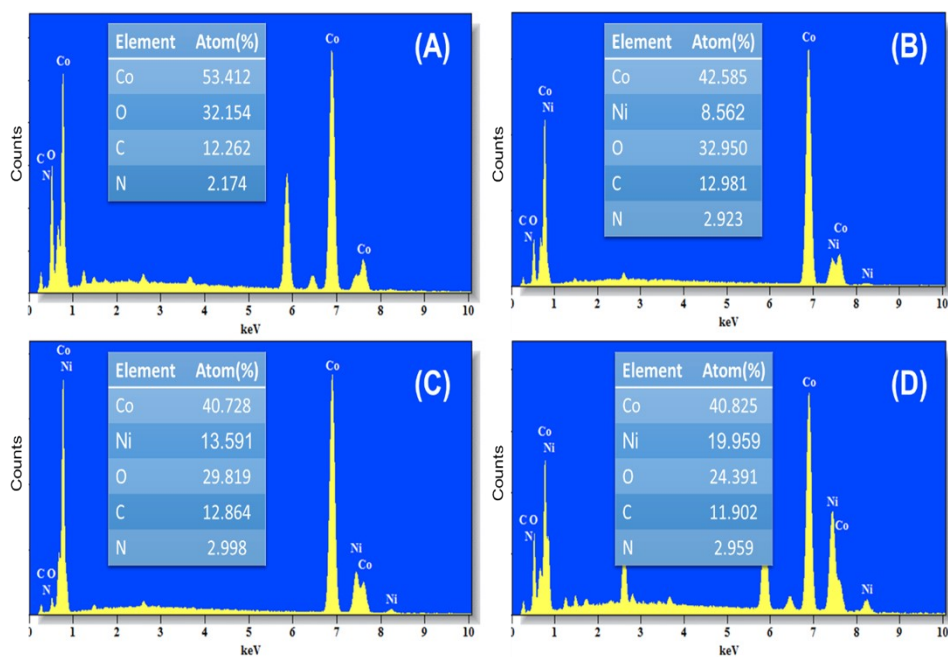


Figure S3. EDX spectrum of (A) $\text{Co}_3\text{O}_4/\text{NCS}$, (B) $\text{Ni}_x\text{-Co}_3\text{O}_4/\text{NCS-1}$, (C) $\text{Ni}_x\text{-Co}_3\text{O}_4/\text{NCS-2}$, and $\text{Ni}_x\text{-Co}_3\text{O}_4/\text{NCS-3}$ samples.

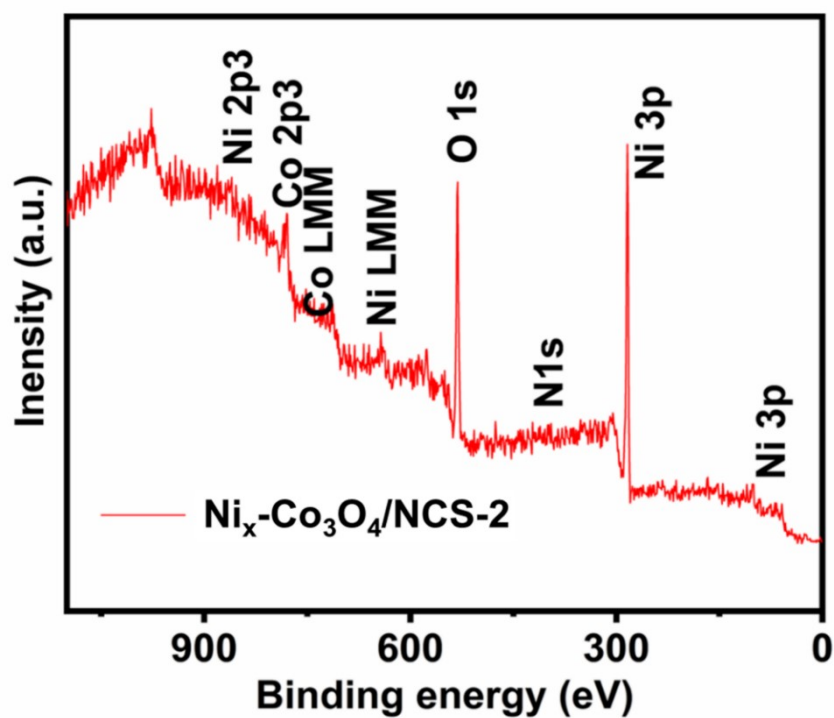


Figure S4. XPS survey spectrum of $\text{Ni}_x\text{-Co}_3\text{O}_4/\text{NCS-2}$ sample.

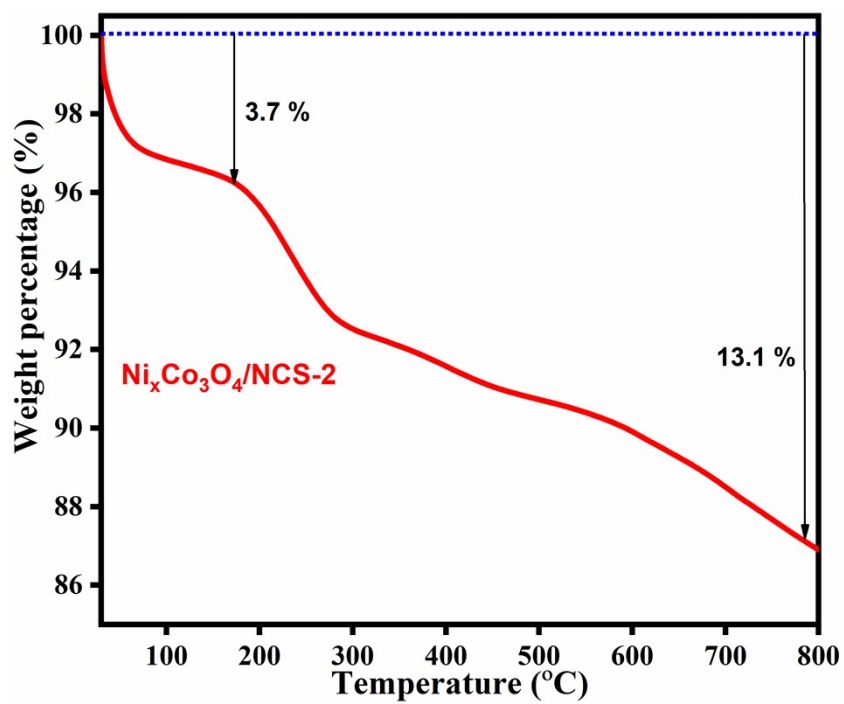


Figure S5. TGA curve of $\text{Ni}_x\text{Co}_3\text{O}_4/\text{NCS-2}$ in air with a heating rate of $5\text{ }^{\circ}\text{C min}^{-1}$

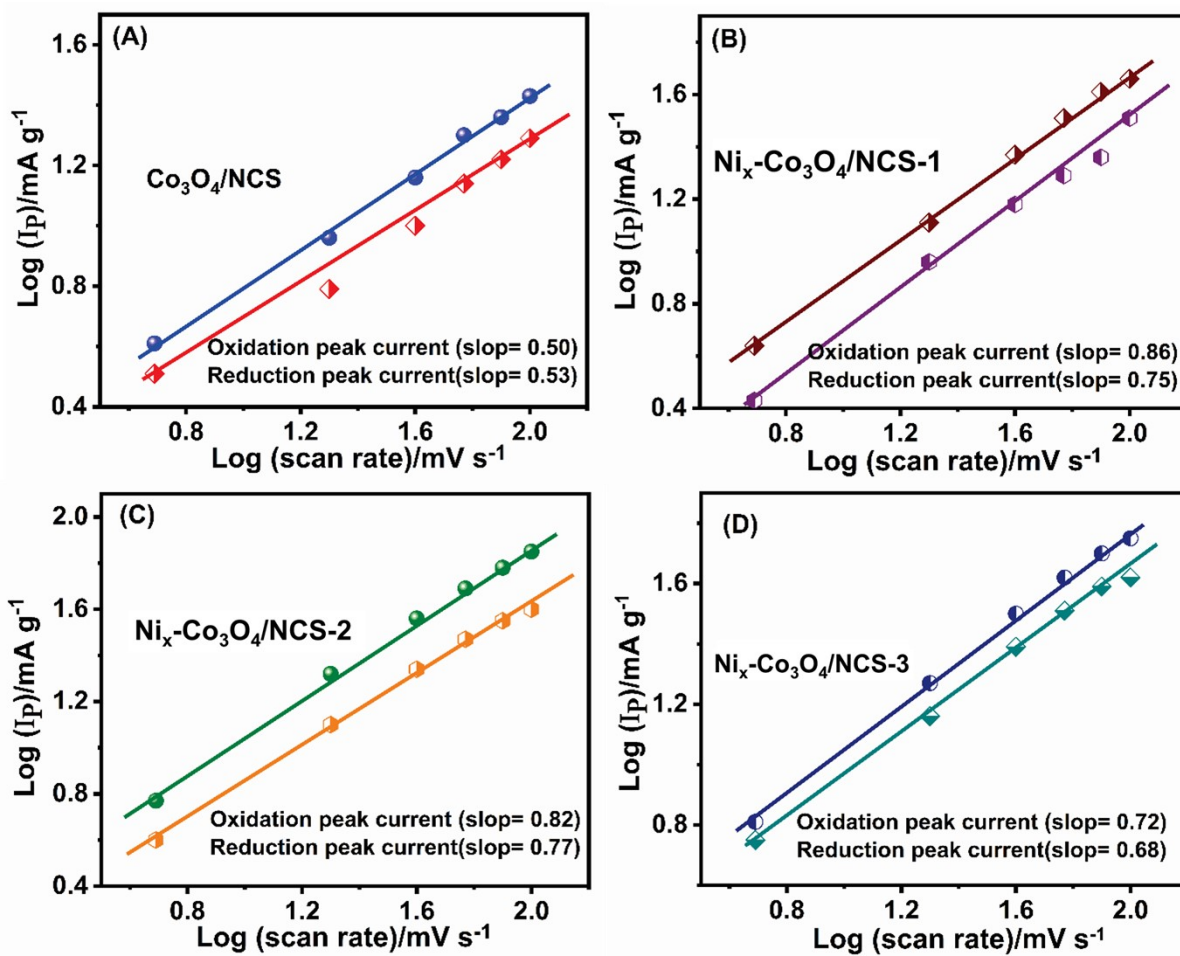


Figure S6. $\log(I_p)$ vs $\log(\text{scan rate})$ plot of (A) $\text{Co}_3\text{O}_4/\text{NCS}$, (B) $\text{Ni}_x\text{-Co}_3\text{O}_4/\text{NCS-1}$, (C) $\text{Ni}_x\text{-Co}_3\text{O}_4/\text{NCS-2}$ and $\text{Ni}_x\text{-Co}_3\text{O}_4/\text{NCS-3}$.

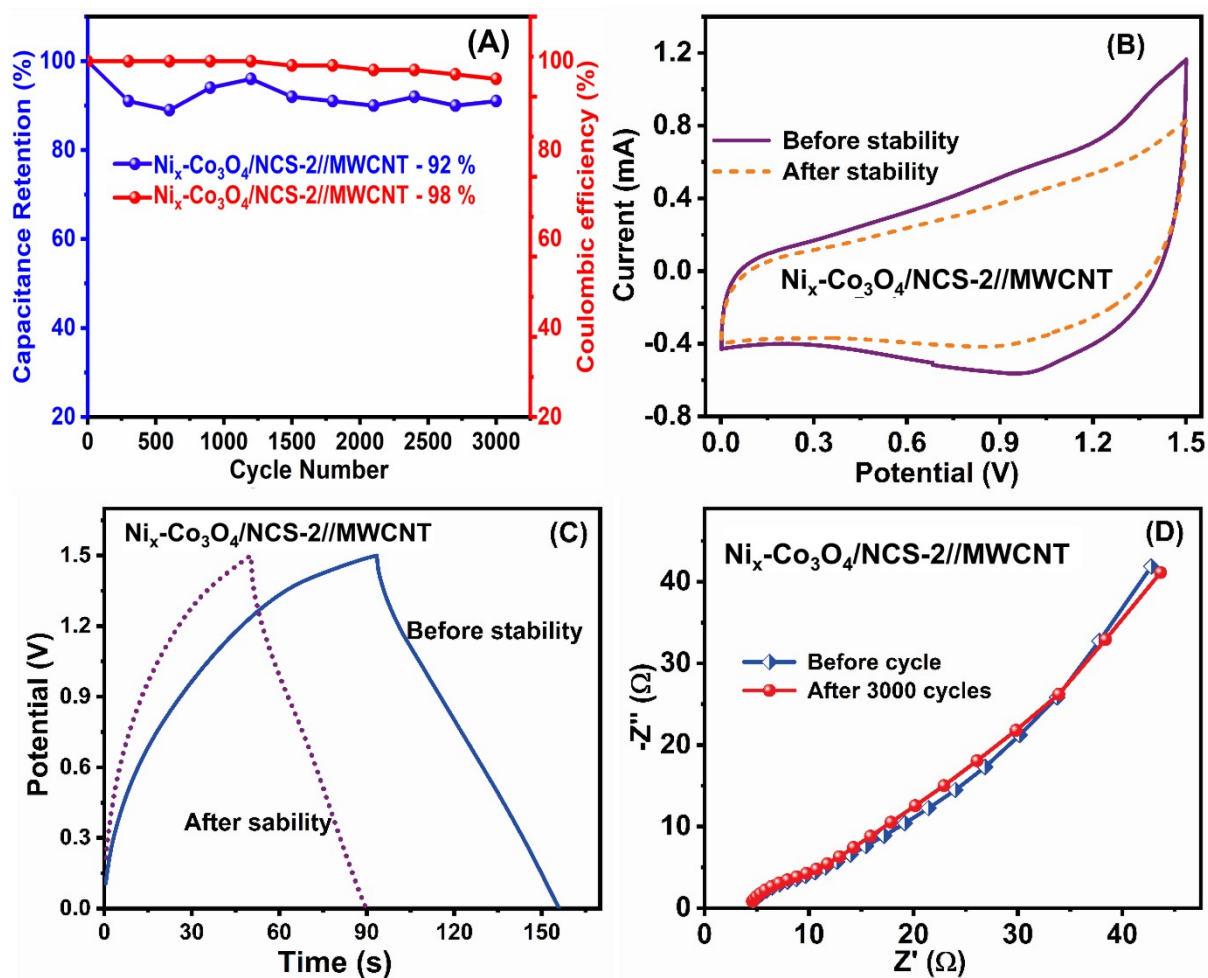


Figure S7. (A) the cycle stability and coulombic efficiency of $\text{Ni}_x\text{-Co}_3\text{O}_4/\text{NCS-2//MWCNT}$ electrode performance at 3000 cycles. (B) CV profile of the before and after cycle stability. (C) GCD profile of the before and after cycle stability. (D) EIS studies of the before and after cycle stability in 1 M KOH electrolyte.

