

Co₉S₈ Nanoparticles Incorporated Carbon Nanofibers as High-Performance Supercapacitor Electrodes

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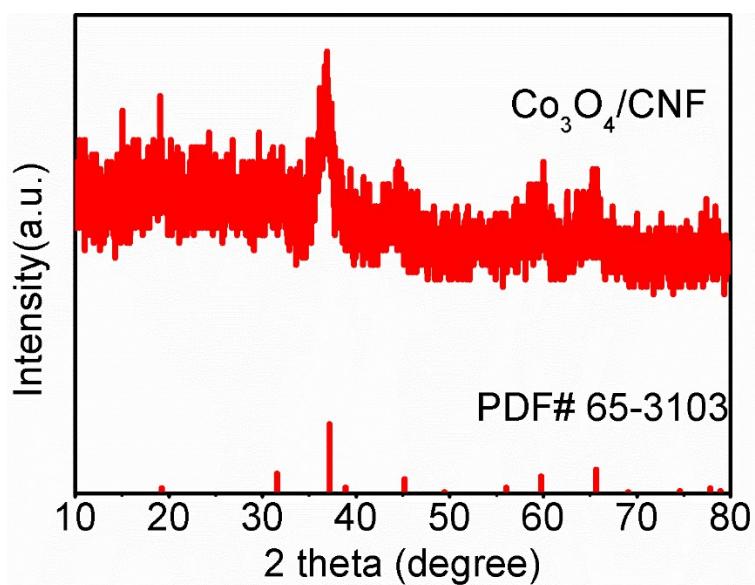


Figure S1: XRD pattern of the $\text{Co}_3\text{O}_4/\text{CNF}$, the sample was prepared without microwave-assisted sulfurization

Table S1: Elements content of the $\text{Co}_9\text{S}_8/\text{CNF}$ samples tested by XPS

| | Co atomic% | S atomic% | C atomic% |
|--------------------------------------|------------|-----------|-----------|
| $\text{Co}_9\text{S}_8/\text{CNF-1}$ | 5.5 | 3.9 | 90.6 |
| $\text{Co}_9\text{S}_8/\text{CNF-2}$ | 12.5 | 10.0 | 77.4 |
| $\text{Co}_9\text{S}_8/\text{CNF-3}$ | 20.5 | 15.8 | 63.7 |

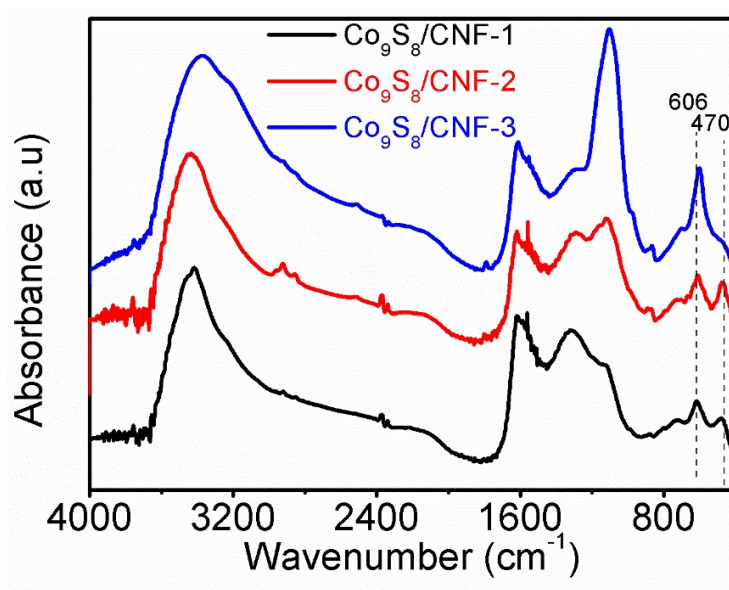


Figure S2: FTIR spectra of the $\text{Co}_9\text{S}_8/\text{CNF}$ samples

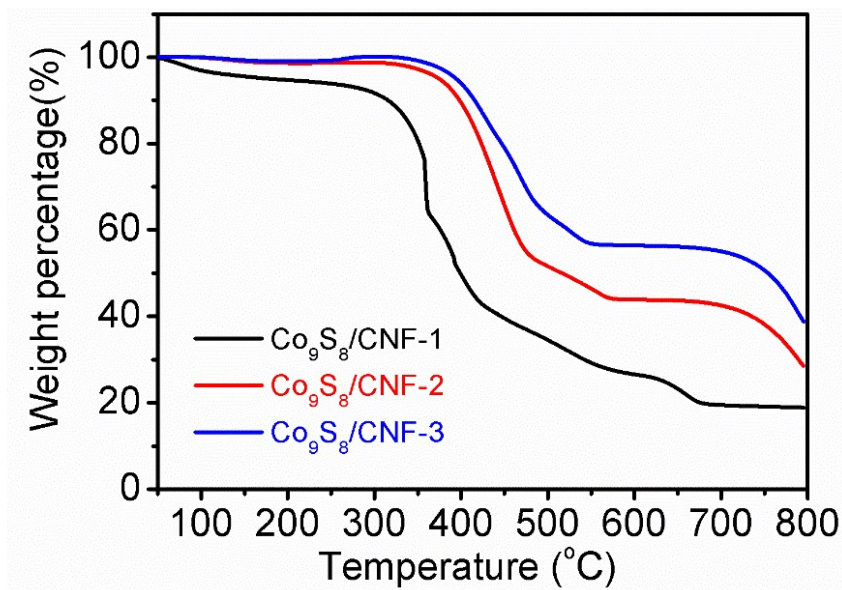


Figure S3: TGA curves of the $\text{Co}_9\text{S}_8/\text{CNF}$ samples

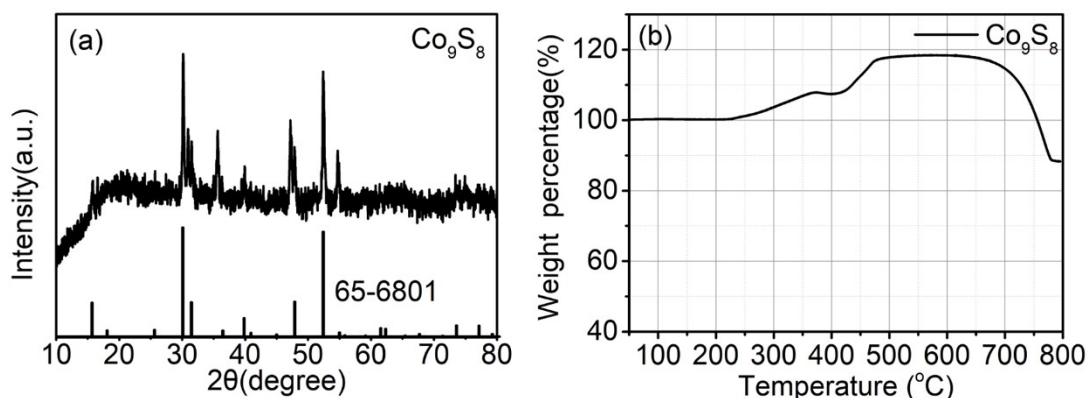


Figure S4: (a) XRD pattern of the Co_9S_8 sample, and (b) TGA curve of the Co_9S_8 sample

The pristine Co_9S_8 was synthesized via a simple one-step microwave hydrothermal process similar to the synthesis of $\text{Co}_9\text{S}_8/\text{CNF}$ series samples. Briefly, cobalt acetates and thioacetamide were dissolved in 10 mL deionized water and the concentration was 0.1M. The mixture was then stirred at room temperature until a pink solution was obtained. After that the mixture was loaded in to the microwave hydrothermal apparatus and heated at high temperature. The temperature and the durations were 120 °C and 1 h. After reaction, the black precipitate was collected, washed with DI water and dried at 60 °C for 6h.

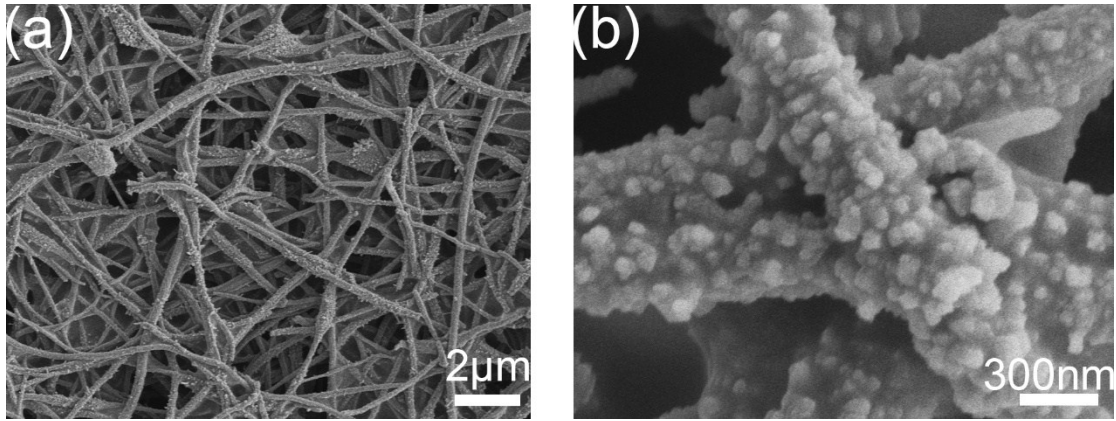


Figure S5: SEM images of the $\text{Co}_3\text{O}_4/\text{CNF-3}$, (a) low magnification and (b) high magnification

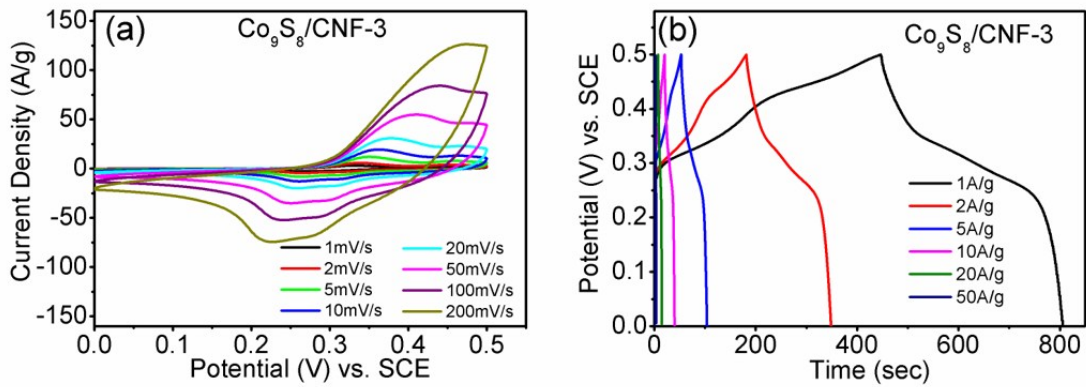


Figure S6: (a) CV curves of $\text{Co}_9\text{S}_8/\text{CNF-3}$ electrode at different scan rates (1 mV/s to 200 mV/s), and (b) GCD curves of $\text{Co}_9\text{S}_8/\text{CNF-3}$ electrode at different current densities (1 A/g to 50 A/g)