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Supporting Information for

Designed Construction of Hierarchical $NiCo_2S_4$@Polypyrrole Core-Shell Nanosheet Arrays as Electrode Materials for High-Performance Hybrid Supercapacitors

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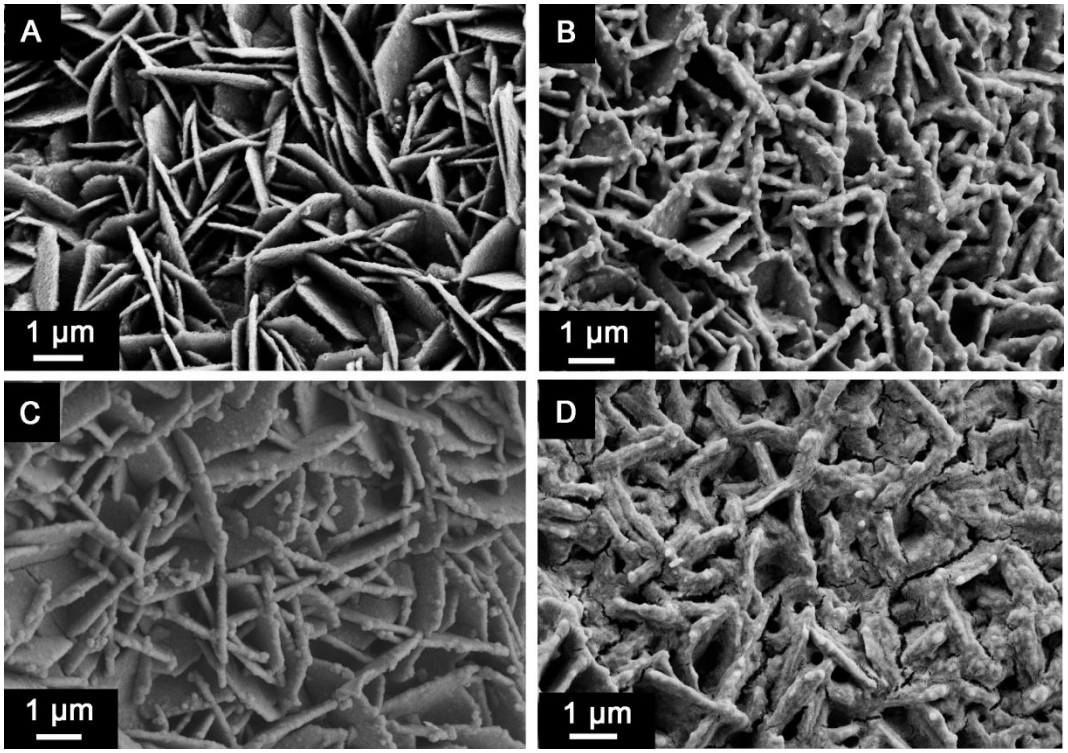

Figure S1. Typical SEM images of different $NiCo_2S_4$@PPy electrodes with different reaction time of PPy coating: (A) 100 s with PPy loading of 0.5 mg/cm^2, (B) 200 s with PPy loading of 1.6 mg/cm^2, (C) 300 s with PPy loading of 2.4 mg/cm^2, and (D) 500 s with PPy loading of 4.2 mg/cm^2.

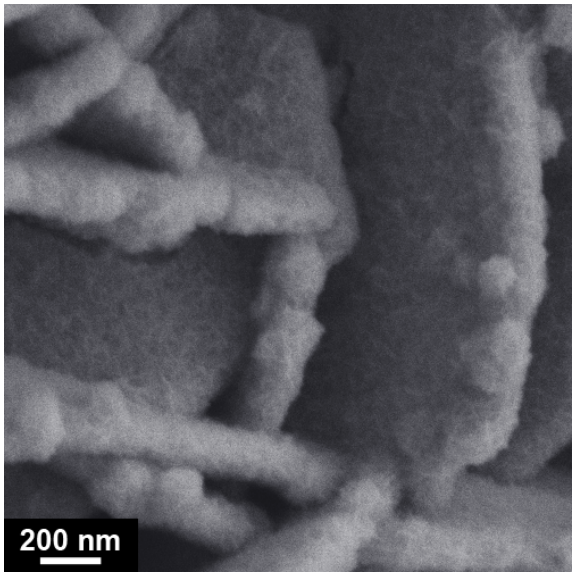

Figure S2. Enlarged SEM image of the $NiCo_2S_4$@PPy core-shell NSAs.

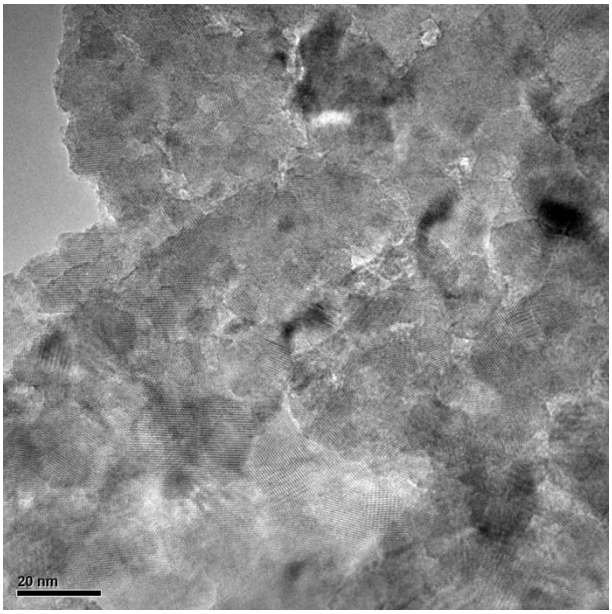

Figure S3. HRTEM image of an individual $NiCo_2S_4$ nanosheet.

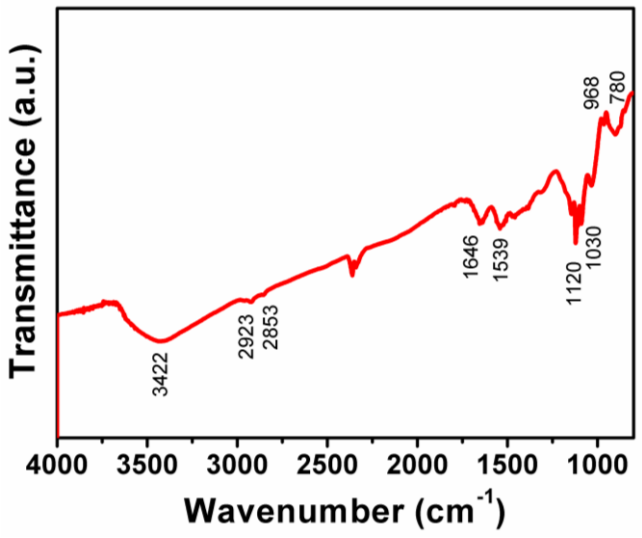

Figure S4. FTIR spectra of $NiCo_2S_4$@PPy sample. The peaks at 2923 and 2853 cm^{-1} can be assigned to the N-H bond in the aromatic amines; the peak at 1646 cm^{-1} is due to the C=C/C-C vibration; the peak at 1539 cm^{-1} is attributed to the symmetric stretching vibration of C=C bond in PPy rings; the peaks at 1120 and 1030 cm^{-1} are associated with C-N stretching vibration and N-H in-plane vibration; the peaks at 968 and 780 cm^{-1} indicate the presence of polymerized pyrrole.

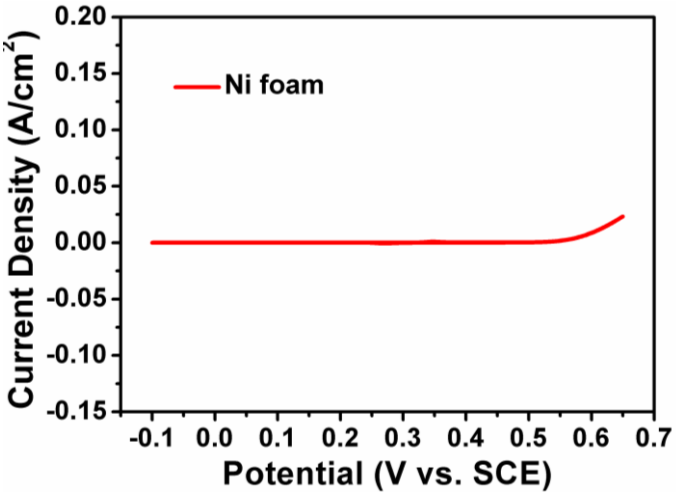

Figure S5. CV curve of the Ni foam substrate at a scan rate of 10 mV/s.

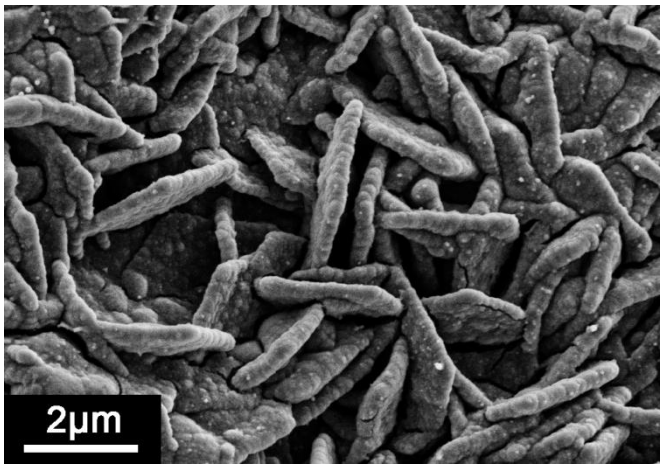

Figure S6. SEM image of the $NiCo_2S_4$@PPy electrode obtained from the HSC device after 3000 cycles.