



Supplementary Materials

The Synergistic Effect of MoS₂ and NiS on the Electrical Properties of Iron Anodes for Ni-Fe Batteries

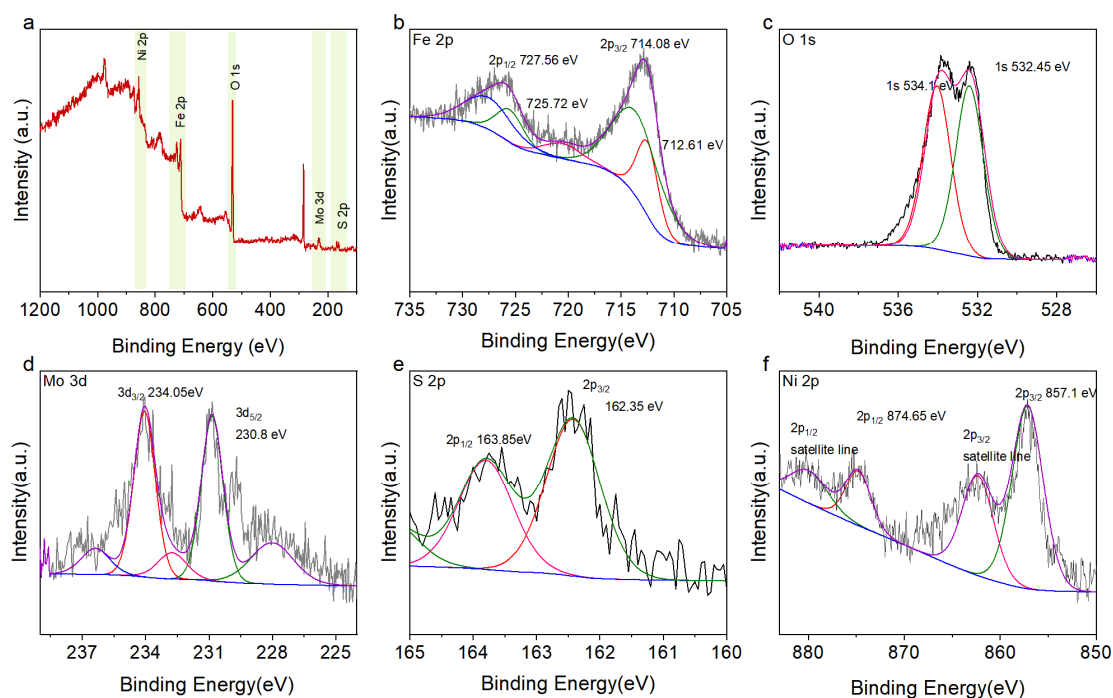


Figure S1. XPS results of Fe₃O₄/MoS₂/NiS (5%). (a) Wide-range scanning result of XPS spectrum. High-resolution XPS spectrum of Fe 2p (b), O 1s (c), Mo 3d (d), S 2p (e) and Ni 2p (f).

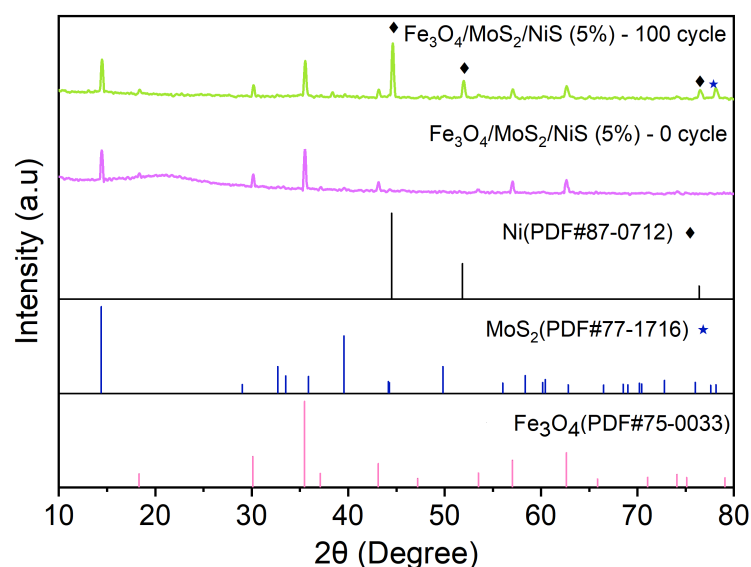


Figure S2. XRD patterns of the Fe₃O₄/MoS₂/NiS (5%) sample before cycle and after 100 cycles.

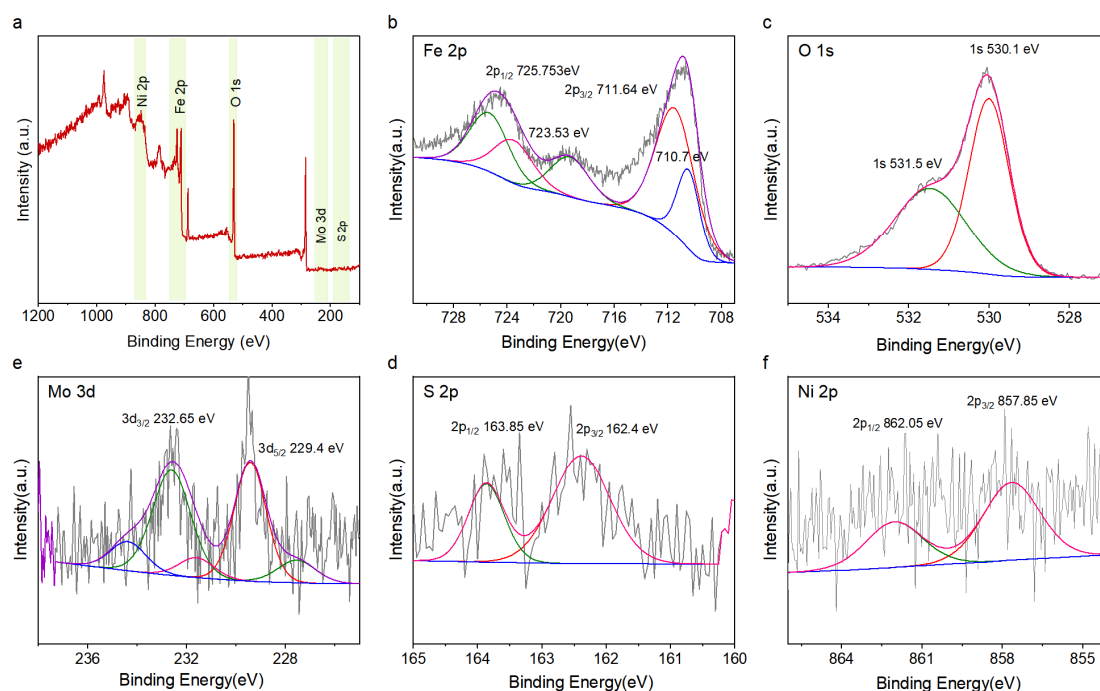


Figure S3. XPS results of $\text{Fe}_3\text{O}_4/\text{MoS}_2/\text{NiS}$ (5%) samples after 100 cycles. (a) Wide-range scanning result of XPS spectrum. High-resolution XPS spectrum of Fe 2p (b), O 1s (c), Mo 3d (d), S 2p (e) and Ni 2p (f).

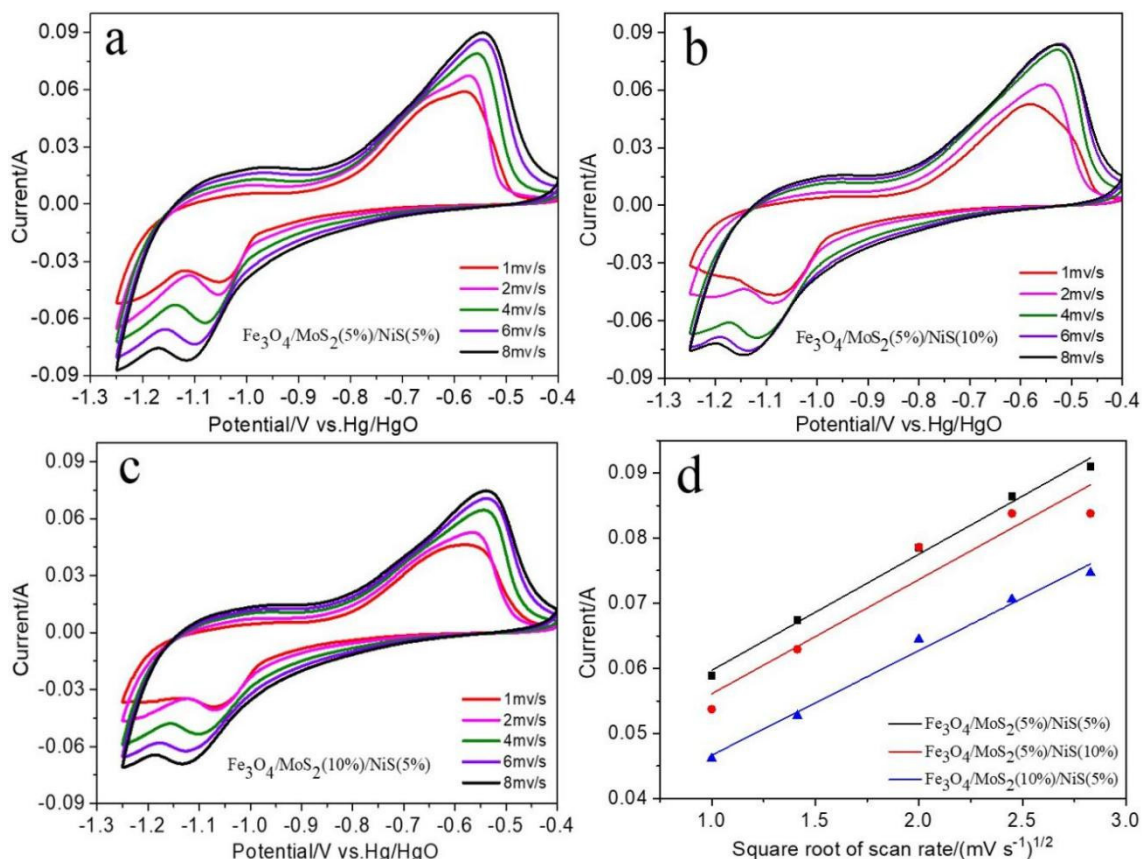


Figure S4. (a-c) Cyclic voltammetry curves of three samples; (d) relationships between the maximum oxidation peak currents of the three electrodes and the square root of the scanning rate.

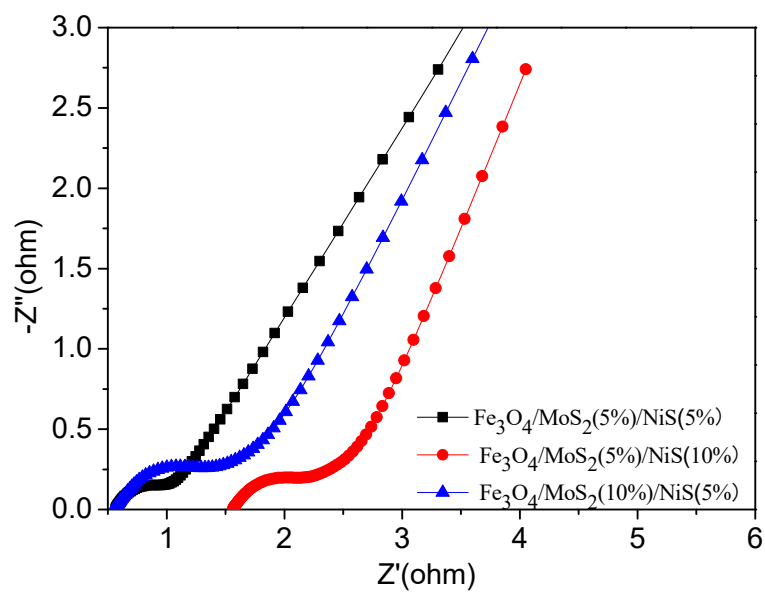


Figure S5. AC impedance spectra of the $\text{Fe}_3\text{O}_4/\text{MoS}_2$ (5%)/NiS (5%), $\text{Fe}_3\text{O}_4/\text{MoS}_2$ (5%)/NiS (10%) and $\text{Fe}_3\text{O}_4/\text{MoS}_2$ (10%)/NiS (5%) electrodes.

Table S1. Anode and cathode potentials and potential differences of three sample electrodes.

Electrode	E_O (mV)	E_R (mV)	ΔE_{O-R} (mV)
$\text{Fe}_3\text{O}_4/\text{MoS}_2$ (5%)/NiS (5%)	583	1053	470
$\text{Fe}_3\text{O}_4/\text{MoS}_2$ (5%)/NiS (10%)	582	1080	498
$\text{Fe}_3\text{O}_4/\text{MoS}_2$ (10%)/NiS (5%)	576	1075	499