

Supporting Information

Electrodeposition of sulfur-engineered amorphous nickel hydroxides on MIL-53(Fe) nanosheets to accelerate the Oxygen Evolution Reaction

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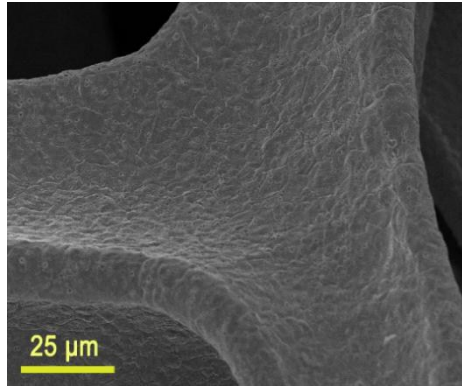


Figure S1. The SEM image of Ni foam.

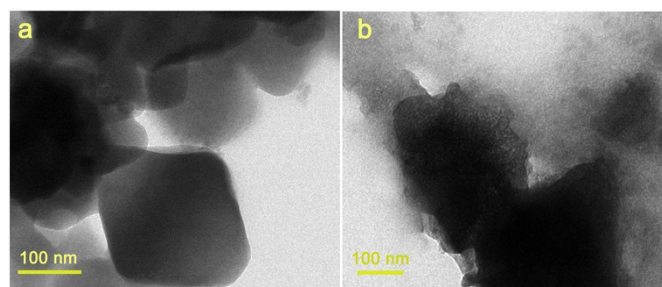


Figure S2. TEM spectra of (a) MIL-53(Fe) and (b) Ni/MIL-53(Fe).

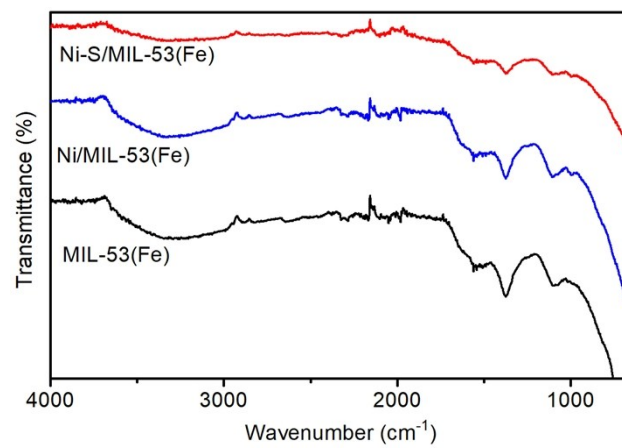


Figure S3. FT-IR spectrums of MIL-53(Fe), Ni-S/MIL-53(Fe) and Ni/MIL-53(Fe).

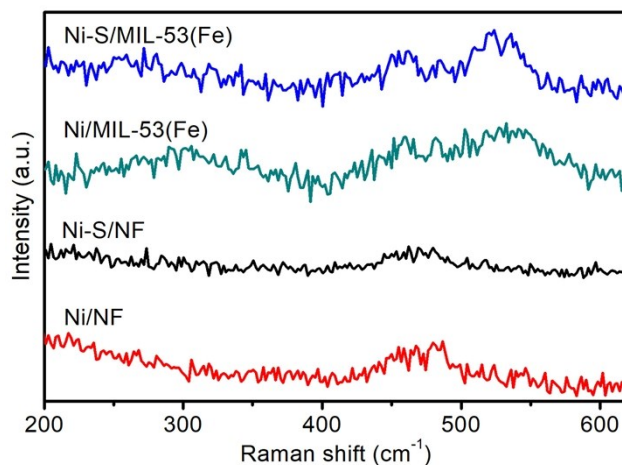


Figure S4. Raman spectrums of Ni/NF, Ni-S/NF, Ni/MIL-53(Fe) and Ni-S/MIL-53(Fe).

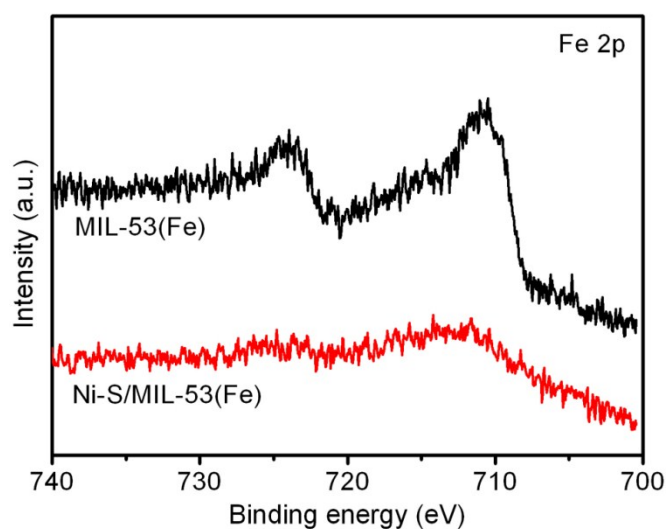


Figure S5. XPS spectra of Fe 2p for MIL-53(Fe) and Ni-S/MIL-53(Fe).

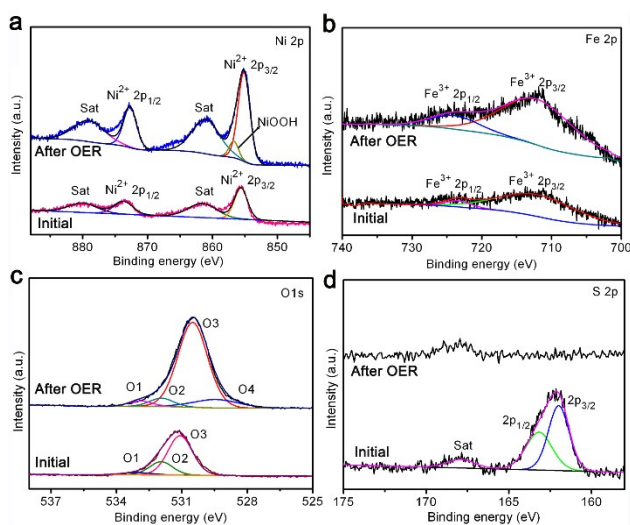


Figure S6. High resolution XPS spectra for the (a) Ni 2p, (b) Fe 2p, (c) O 1s and (d) S 2p regions of Ni-S/MIL-53(Fe) before and after 40 h of stability test.

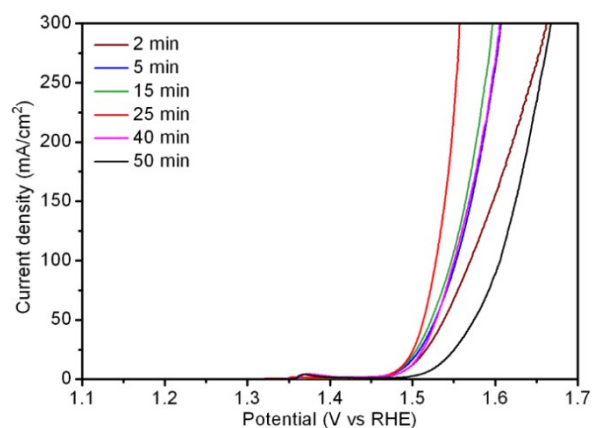


Figure S7. Polarization curves of Ni-S/MIL-53(Fe) with various deposition time in 1 M KOH.

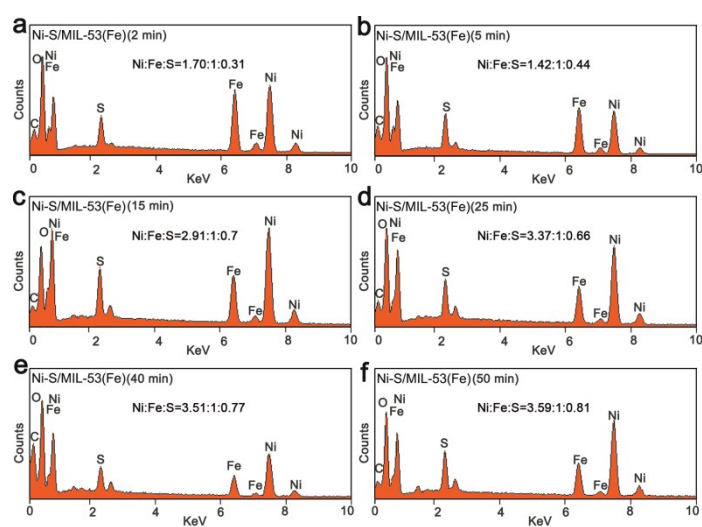


Figure S8. SEM-EDX spectra of Ni-S/MIL-53(Fe) with different electrodeposition time of (a) 2, (b) 5, (c) 15, (d) 25, (e) 40 and (f) 50 min, respectively.

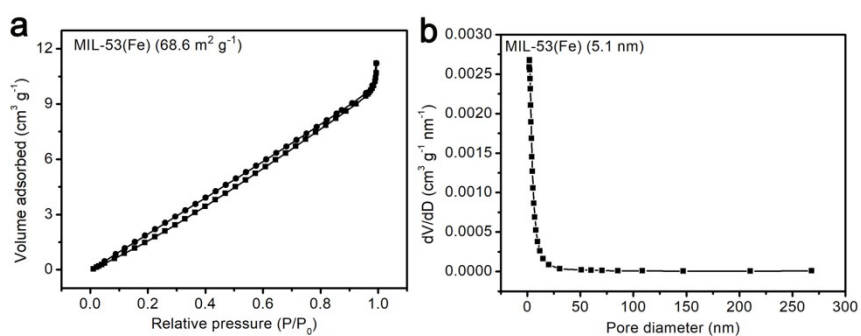


Figure S9. (a) N_2 adsorption/desorption isotherms, and (b) pore size distribution curve of MIL-53(Fe) electrode.

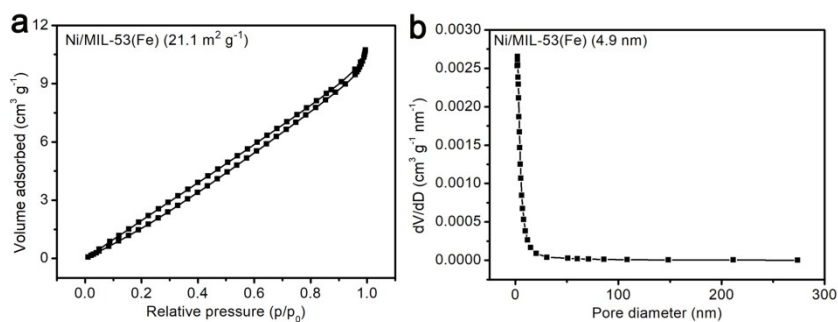


Figure S10. (a) N_2 adsorption/desorption isotherms, and (b) pore size distribution curve of Ni/MIL-53(Fe) electrode.

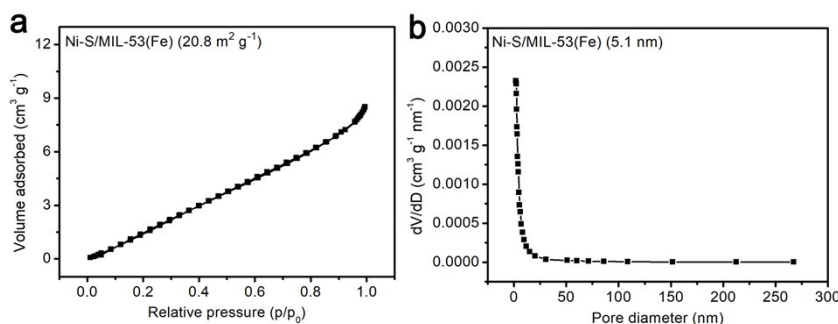


Figure S11. (a) N_2 adsorption/desorption isotherms, and (b) pore size distribution curve of Ni-S/MIL-53(Fe) electrode.

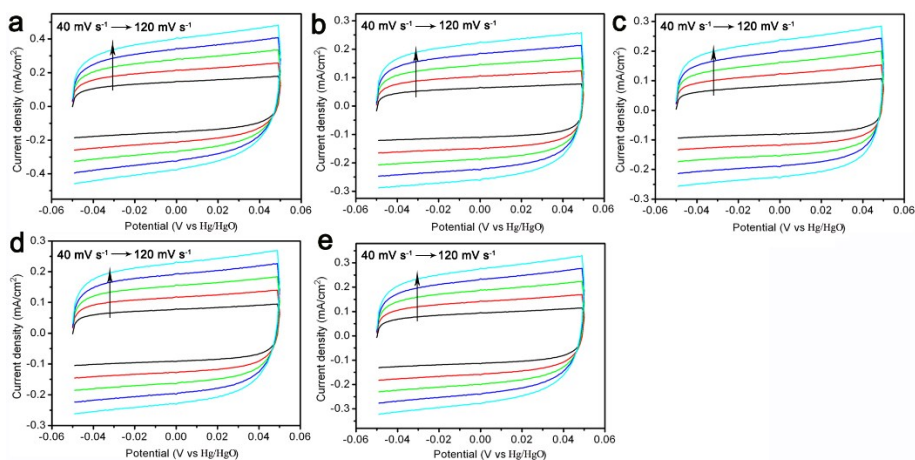


Figure S12. CVs of (a) Ni-S/MIL-53(Fe), (b) Ni/MIL-53(Fe), (c) MIL-53(Fe), (d) Ni-S/NF and (e) Ni/NF in the region of -0.05-0.05 V vs Hg/HgO at scan rates of 40, 60, 80, 100 and 120 $mV s^{-1}$.

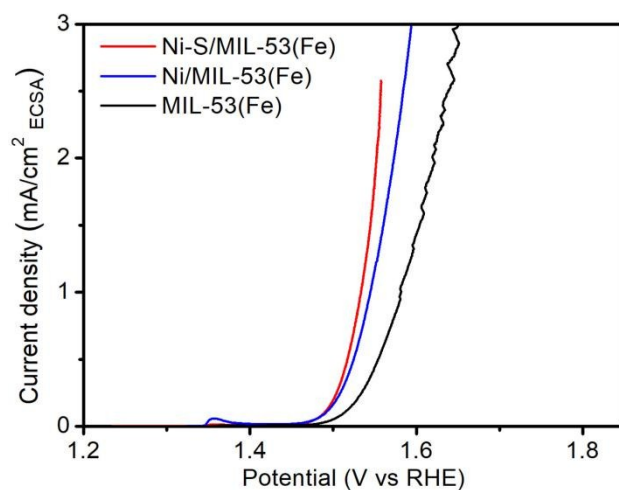


Figure S13. The OER activity of MIL-53(Fe), Ni/MIL-53(Fe) and Ni-S/MIL-53(Fe) after the electrochemical surface area normalization.

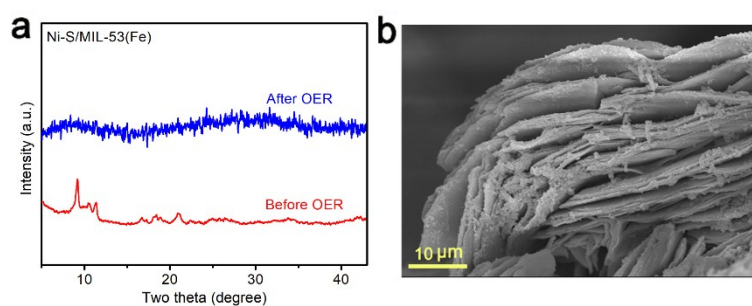


Figure S14. (a) XRD pattern and (b) SEM image of Ni-S/MIL-53(Fe) after 40 h of stability test.

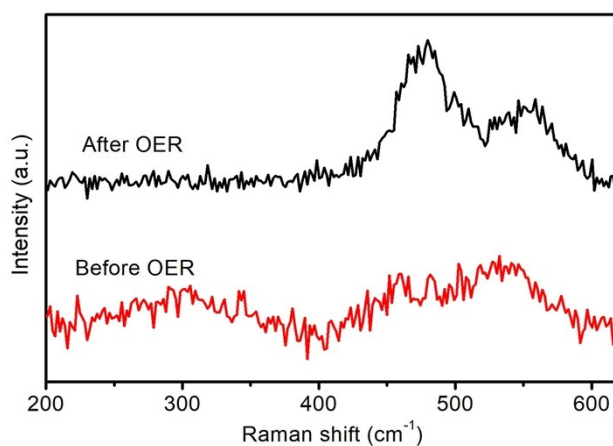


Figure S15. Raman spectra of Ni-S/MIL-53(Fe) before and after 40 h of stability test.