**Synthesis of Ni$_{4.5}$Fe$_{4.5}$S$_8$/Ni$_3$S$_2$ Film on Ni$_3$Fe Foam as an Excellent Electrocatalyst for Oxygen Evolution Reaction**

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*Fig. S1* SEM images of (a, b) Ni$_3$Fe foam. (c, d) Ni$_{4.5}$Fe$_{4.5}$S$_8$/Ni$_3$S$_2$|$\mid$Ni$_3$Fe sample. (e, f) Ni$_{4.5}$Fe$_{4.5}$S$_8$/Ni$_3$S$_2$|$\mid$Ni$_3$Fe sample after 1000 CV cycles.
Fig. S2 The OER of Ni$_{4.5}$Fe$_{4.5}$S$_8$/Ni$_3$S$_2$ | Ni$_3$Fe prepared in different temperatures.

Fig. S3 EDS pattern of Ni$_{4.5}$Fe$_{4.5}$S$_8$/Ni$_3$S$_2$ | Ni$_3$Fe sample.

Fig.S4 Chronoamperometric durability test at a constant overpotential of 230 mV.
Fig. S5 XRD pattern of Ni$_{4.5}$Fe$_{4.5}$S$_8$/Ni$_3$S$_2$ || Ni$_3$Fe and after 1000 CV cycles.

Fig. S6 XPS spectra for (a) Ni$_{2p}$, (b) Fe$_{2p}$, (c) S$_{2p}$ of Ni$_{4.5}$Fe$_{4.5}$S$_8$/Ni$_3$S$_2$ || Ni$_3$Fe after 1000CV.

Fig. S7 XPS spectra for O$_{1s}$ of (a) Ni$_{4.5}$Fe$_{4.5}$S$_8$/Ni$_3$S$_2$ || Ni$_3$Fe. (b) After 1000 CV.
| Catalysts            | η at 10 mA cm\(^{-2}\) (mV) | η at 100 mA cm\(^{-2}\) (mV) | Tafel slope (mV dec\(^{-1}\)) | Substrate | References                                      |
|---------------------|-----------------------------|-------------------------------|-------------------------------|-----------|------------------------------------------------|
| Fe-Ni\(_2\)S\(_2\)  | 282                         | 490                           | 54                            | NiFe      | Small, 2017. 13(18): p. 1604161.                |
| N-Ni\(_2\)S\(_2\)   | ---                         | 330                           | 70                            | NF        | Adv. Mater. 2017. 29(30).                      |
| NiFeS               | 65                          | 189                           | 119.4                         | NF        | J. Mater. Chem. A, 2016 4(35): p.13499-13508.  |
| NiFe                | ---                         | 180                           | 55                            | NF        | J. Mater. Chem. A, 2016 4(42): p.16394-16402.  |
| MoS\(_2\)/Fe\(_2\)Ni\(_4\)S\(_8\) | 204                     | 240                           | 48                            | NiFe      | Adv. Mater, 2018: p. e1803151.                   |
| NiFe-NC             | 271                         | 340                           | 48                            | ---       | Interfaces.2017.9(48):p.41906-41915            |
| NiFeOF              | 320                         | ---                           | 38                            | Stainless steel | ACS Catalysis.2017. 7(12): p. 8406-8412.    |
| Fe-Ni(OH)\(_2\)     | 235                         | ---                           | 51.5                          | NF        | Chem. Commun (Camb). 2018. 54(5): p. 463-466.  |
| Ni\(_2\)FeN         | 190                         | ---                           | 72                            | CC        | ACS Appl. Mater Interfaces. 2018. 10(4): p. 3699-3706. |
| (NiFe)\(_2\)S\(_2\) | 260                         | 410                           | 56.2                          | ---       | Chem. Sci. 2018. 9(10): p. 2762-2767.          |
| NiFe                | 283                         | ---                           | 53                            | NiFe      | ACS Appl. Mater Interfaces. 2017. 9(34): p.28627-28634 |
| Ni\(_{0.5}\)Co\(_{0.5}\)-xS\(_2\)/Ni\(_2\)S\(_2\) | ---                     | 300                           | 95                            | NF        | Nano Energy, 2017. 35: p. 161-170.              |
| Co-NiO/NiFe\(_2\)O\(_4\) | 186                     | 220                           | 35                            | NF        | J. Mater. Chem. A, 2018. 6(1): p. 167-178.     |
| Ni-Fe-P             | 271                         | ---                           | 53                            | ---       | ACS. Appl. Mater Interfaces. 2017. 9(31): p.26134-26142. |
| Ni\(_{0.5}\)P@NiFe-LDH | 205                     | 230                           | 32                            | NF        | Chem. Sci. 2018. 9(5): p.1375-1384.           |
| Ni\(_{0.5}\)Fe\(_{4.5}\)S\(_2\)/Ni\(_2\)S\(_2\) | 166                     | 264                           | 63.15                         | Ni\(_3\)Fe| This work                                      |