

Nitrogen-doped carbon flowers with Fe and Ni dual metal centers for effective electroreduction of oxygen in alkaline media

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Table S1. Elemental compositions of the sample series from XPS measurements.

| Sample | C | N | Fe | Ni | O | Metal % | Fe/Ni Ratio |
|-------------|------|------|------|-------|------|---------|-------------|
| NCF | 90.1 | 6.2 | | - | 3.70 | | - |
| Fe-NCF | 92.2 | 2.28 | 0.15 | - | - | 0.15 | - |
| FeNi-NCF(1) | 90.6 | 2.21 | 0.13 | 0.13 | 6.97 | 0.26 | 1.0 |
| FeNi-NCF(2) | 89.5 | 4.09 | 0.18 | 0.091 | 6.10 | 0.27 | 2.0 |
| FeNi-NCF(3) | 91.3 | 4.10 | 0.17 | 0.049 | 4.41 | 0.22 | 3.5 |

Table S2. Binding energies of Fe and Ni in the sample series from XPS measurements.

| Sample | Fe (B.E.) | Ni (B.E) |
|-------------|-----------|----------|
| NCF | - | - |
| Fe-C | 710.11 | - |
| FeNi-NCF(1) | 710.43 | 854.45 |
| FeNi-NCF(2) | 710.11 | 854.61 |
| FeNi-NCF(3) | 709.58 | 854.69 |

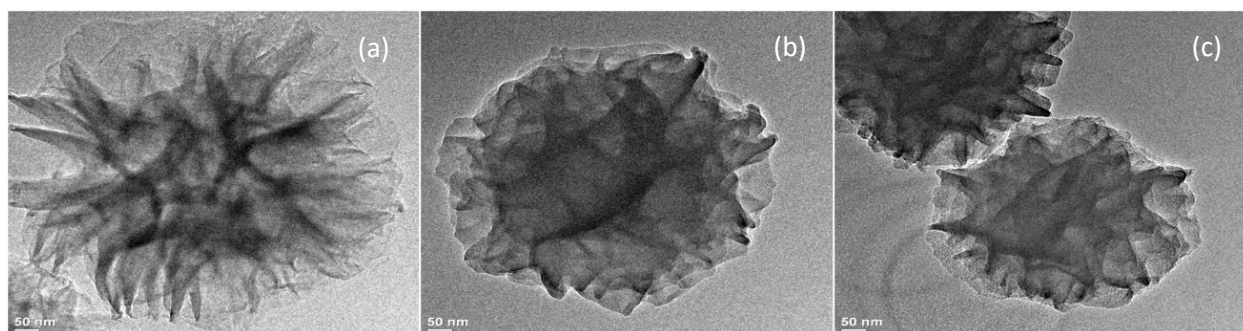


Figure S1. TEM images of (a) PACN-70, (b) PACN-230, and (c) NCF.

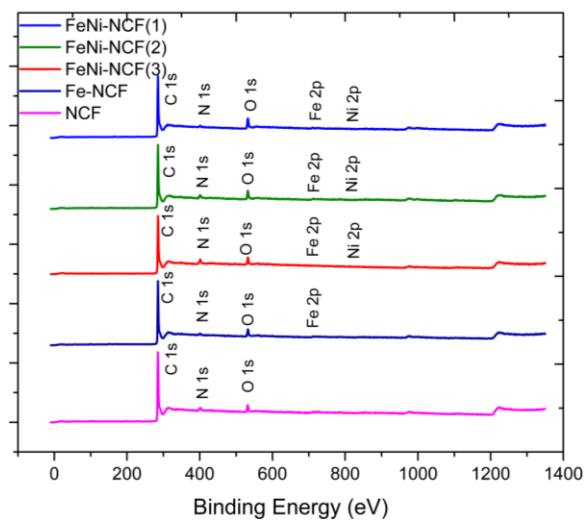


Figure S2. XPS survey spectra of FeNi-NCF(1), FeNi-NCF(2), FeNi-NCF(3), and NCF.

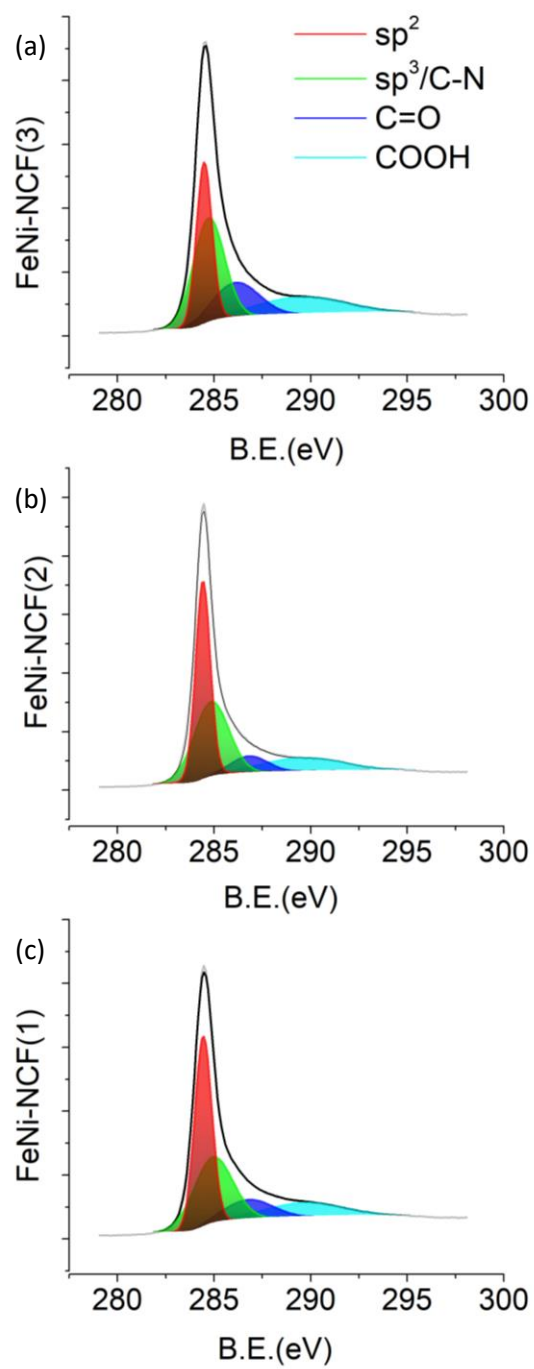


Figure S3. High-resolution C 1s spectra of the series of FeNi-NCF samples.

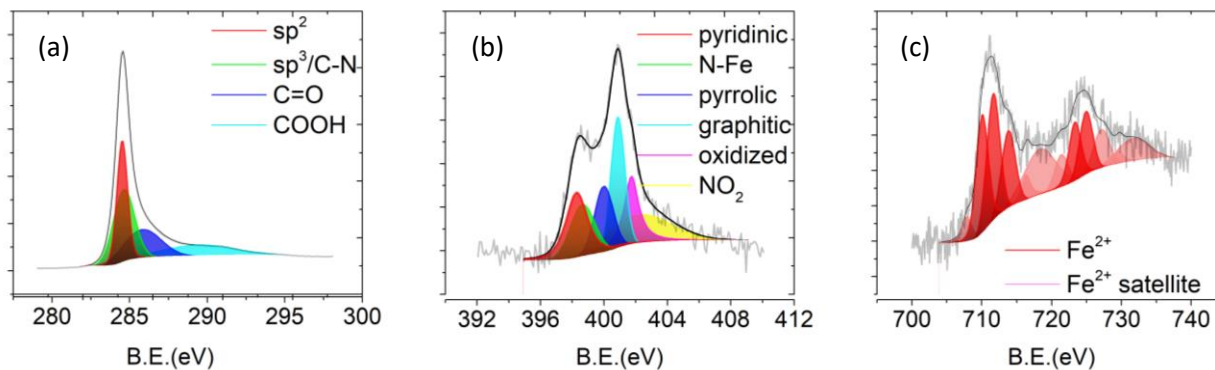


Figure S4. High-resolution scans of the (a) C 1s, (b) N 1s, and (c) Fe 2p electrons of Fe-NCF.

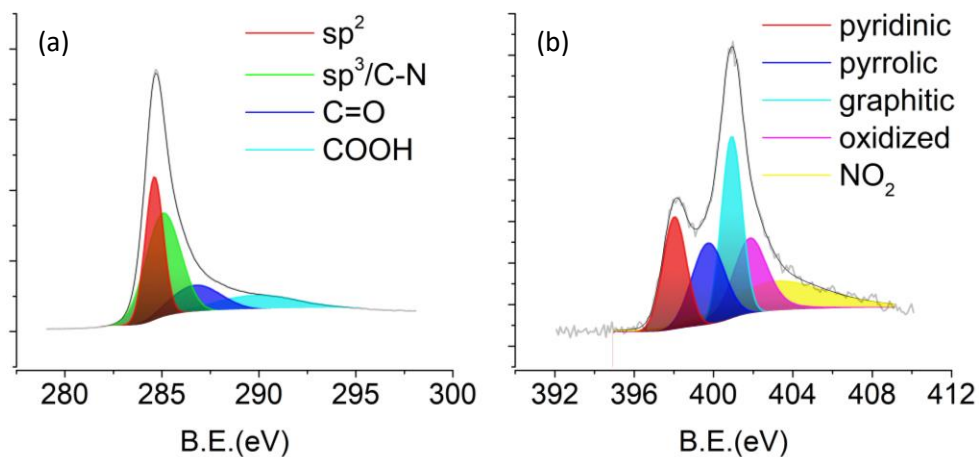


Figure S5. High-resolution XPS scans of the (a) C 1s and (b) N 1s electrons of NCF.