Supporting Information

FeCo Nanoalloys Embedded in Nitrogen-Doped Carbon Nanosheets/Bamboo-like Carbon Nanotubes for Oxygen Reduction Reaction

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**Figure S1.** Weight content of Fe and Co obtained by ICP-AES

**Figure S2.** HRTEM images of the calcinated sample Fe\textsubscript{1}Co\textsubscript{2}-N-C

**Figure S3.** HRTEM images of the calcinated sample Fe\textsubscript{1}Co\textsubscript{2}-N-C
Figure S4. HRTEM images of the calcinated sample Fe\textsubscript{1}Co\textsubscript{1}-N-C

Figure S5. HRTEM images of the calcinated sample Fe\textsubscript{2}Co\textsubscript{1}-N-C

Figure S6. Pore diameter size distribution of the samples
Figure S7. X-ray photoelectron spectra of all samples

Figure S8. (a) Linear sweep voltammograms of Fe\textsubscript{1}Co\textsubscript{3}-N-C at rotating rates from 625 rpm to 2500 rpm in O\textsubscript{2}-saturated 0.1M KOH. (b) K-L plots of Fe\textsubscript{1}Co\textsubscript{3}-N-C. (c) RRDE curve of Fe\textsubscript{1}Co\textsubscript{3}-N-C at 1600 rpm. (d) Peroxide yields and electron transfer numbers of Fe\textsubscript{1}Co\textsubscript{3}-N-C.
Figure S9. (a) Linear sweep voltammograms of Fe<sub>1</sub>Co<sub>2</sub>-N-C with rotating rates range from 625 rpm to 2500 rpm in O<sub>2</sub>-saturated 0.1M KOH. (b) K-L plots of Fe<sub>1</sub>/Co<sub>2</sub>-N-C. (c) RRDE curve of Fe<sub>1</sub>Co<sub>2</sub>-N-C at 1600 rpm. (d) Peroxide yields and electron transfer numbers of Fe<sub>1</sub>Co<sub>2</sub>-N-C calculated by RRDE data.

Figure S10. (a) Linear sweep voltammograms of Fe<sub>1</sub>Co<sub>1</sub>-N-C with rotating rates range from 625 rpm to 2500 rpm in O<sub>2</sub>-saturated 0.1M KOH. (b) K-L plots of Fe<sub>1</sub>/Co<sub>1</sub>-N-C. (c) RRDE curve of Fe<sub>1</sub>Co<sub>1</sub>-N-C at 1600 rpm. (d) Peroxide yields and electron transfer numbers of Fe<sub>1</sub>Co<sub>1</sub>-N-C.
Figure S11. (a) Linear sweep voltammograms of Fe$_2$Co$_1$-N-C with rotating rates range from 625 rpm to 2500 rpm in O$_2$-saturated 0.1M KOH. (b) K-L plots of Fe$_2$Co$_1$-N-C. (c) RRDE curve of Fe$_2$Co$_1$-N-C at 1600 rpm. (d) Peroxide yields and electron transfer numbers of Fe$_2$Co$_1$-N-C.

Figure S12. (a) Linear sweep voltammograms of Fe$_3$Co$_1$-N-C with rotating rates range from 625 rpm to 2500 rpm in O$_2$-saturated 0.1M KOH. (b) K-L plots of Fe$_3$Co$_1$-N-C. (c) RRDE curve of Fe$_3$Co$_1$-N-C at 1600 rpm. (d) Peroxide yields and electron transfer numbers of Fe$_3$Co$_1$-N-C.
Figure S13. (a-e) CV curves for the electrochemical double-layer capacitance at different scan rates in N$_2$-saturated KOH solution; (f) $C_{dl}$ calculation of all samples.

Figure S14. The ORR-LSV curves of Fe$_3$Co$_1$-N-C catalyst at 1600 rpm before/after the accelerated stability tests with 100 mV s$^{-1}$ in O$_2$-saturated 0.1 M KOH solution.
**Table S1.** The ORR parameters of $\text{Fe}_3\text{Co}_1$-N-C and other bimetallic FeCo-based multicomponent supported on N-doped carbon materials reported in the literatures.

<table>
<thead>
<tr>
<th>Catalyst</th>
<th>$E_{1/2}$ (V)</th>
<th>$j_L$ (mA cm$^{-2}$)</th>
<th>Tafel slope (mV dec$^{-1}$)</th>
<th>$n$</th>
<th>Mass load (mg cm$^{-2}$)</th>
<th>Ref.</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\text{Fe}_3\text{Co}_1$-N-C</td>
<td>0.81</td>
<td>5.18</td>
<td>65.6</td>
<td>3.7</td>
<td>0.228</td>
<td>This work</td>
</tr>
<tr>
<td>$\text{Fe}_3\text{Co}_1$-N-C</td>
<td>0.82</td>
<td>5.25</td>
<td>59.9</td>
<td>3.7</td>
<td>0.228</td>
<td>This work</td>
</tr>
<tr>
<td>$\text{FeCo@N-GCNT-FD}$</td>
<td>0.88</td>
<td>6.8</td>
<td>-</td>
<td>3.96</td>
<td>0.479</td>
<td>1</td>
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<td>$\text{Fe}<em>{0.3}\text{Co}</em>{0.7}$/NC cages</td>
<td>0.88</td>
<td>6.1</td>
<td>79</td>
<td>3.87</td>
<td>0.25</td>
<td>2</td>
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<td>meso/micro-FeCo-Nx-CN-30</td>
<td>0.886</td>
<td>6.3</td>
<td>-</td>
<td>-</td>
<td>0.1</td>
<td>3</td>
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<tr>
<td>$\text{CoFe/N-GCT}$</td>
<td>0.79</td>
<td>4.86</td>
<td>74</td>
<td>-</td>
<td>0.597</td>
<td>4</td>
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<td>N-C-CoFe</td>
<td>0.7</td>
<td>5.0</td>
<td>59</td>
<td>3.9</td>
<td>-</td>
<td>5</td>
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<tr>
<td>$\text{Co}<em>{1.08}\text{Fe}</em>{3.34}$@NGT</td>
<td>0.94</td>
<td>7.4</td>
<td>44</td>
<td>~4</td>
<td>0.202</td>
<td>6</td>
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<tr>
<td>$\text{FeCo@MNC}$</td>
<td>0.86</td>
<td>5.2</td>
<td>66</td>
<td>3.87</td>
<td>0.36</td>
<td>7</td>
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<td>$\text{FeCo-ISAs/CN}$</td>
<td>0.92</td>
<td>6.1</td>
<td>57</td>
<td>3.9-4.0</td>
<td>0.408</td>
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<tr>
<td>Fe-Co-N-C</td>
<td>0.76</td>
<td>7.5</td>
<td>-</td>
<td>-</td>
<td>0.635</td>
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<td>$\text{Fc}$/Co@N-C800</td>
<td>0.86</td>
<td>4.9</td>
<td>65.1</td>
<td>3.83</td>
<td>0.2</td>
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<tr>
<td>(Fe,Co)/CNT</td>
<td>0.95</td>
<td>4.9</td>
<td>-</td>
<td>3.95</td>
<td>0.501</td>
<td>11</td>
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<tr>
<td>CoFe/NC-0.2-900</td>
<td>0.82</td>
<td>6.4</td>
<td>73</td>
<td>3.91</td>
<td>0.1</td>
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<td>$\text{FeCo@NCs-0.15}$</td>
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<td>5.75</td>
<td>73</td>
<td>3.85</td>
<td>-</td>
<td>13</td>
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</table>

All the data was obtained from the RDE measurements with a rotating speed of 1600 rpm in O$_2$-saturated 0.1 M KOH solution.

**References**

4. X. Liu, L. Wang, P. Yu, C. Tian, F. Sun, J. Ma, W. Li and H. Fu, A Stable Bifunctional


