Supporting Information

Scalable one-pot synthesis of amorphous iron-nickel-boride bifunctional electrocatalysts for enhanced alkaline water electrolysis

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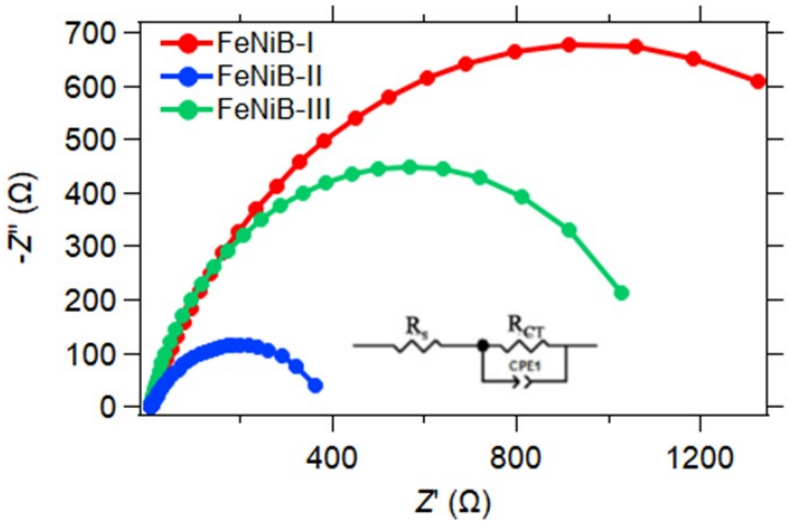

Figure S1. Nyquist plots obtained from EIS for FeNiB-I, FeNiB-II and FeNiB-III and the inset shows the equivalent circuit.

Table S1. Representing the resistance values obtained by fitting the EIS data from Nyquist plots.

Sample	**R_s (Ω)**	**Charge transfer resistance (Ω)**	**CPE Y0 (F)**
FeNiB-I	5.06	1908	4.41×10^{-5}
FeNiB-II	6.38	1946	4.15×10^{-5}
FeNiB-III	5.03	1119	1.70×10^{-5}

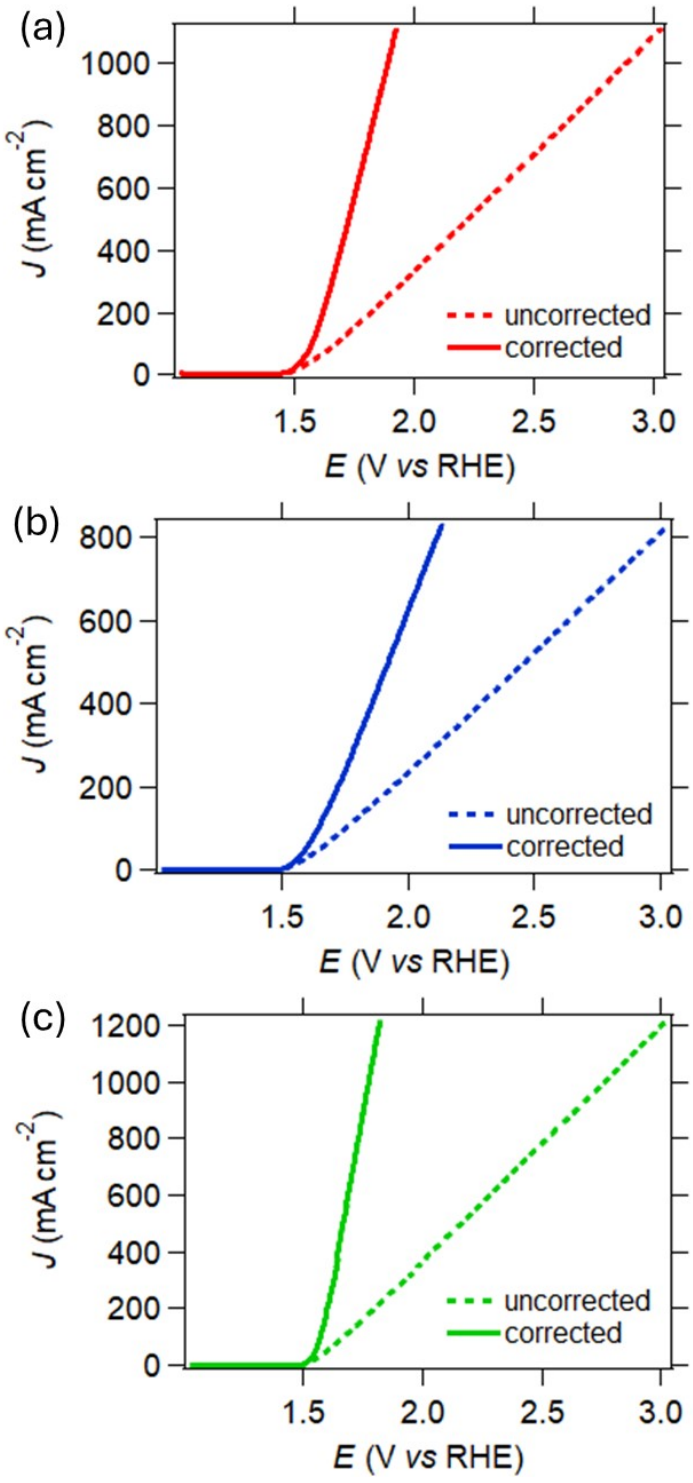

Figure S2. Corrected and un-corrected OER LSV curves of (a) FeNiB-I, (b) FeNiB-II, (c) FeNiB-III

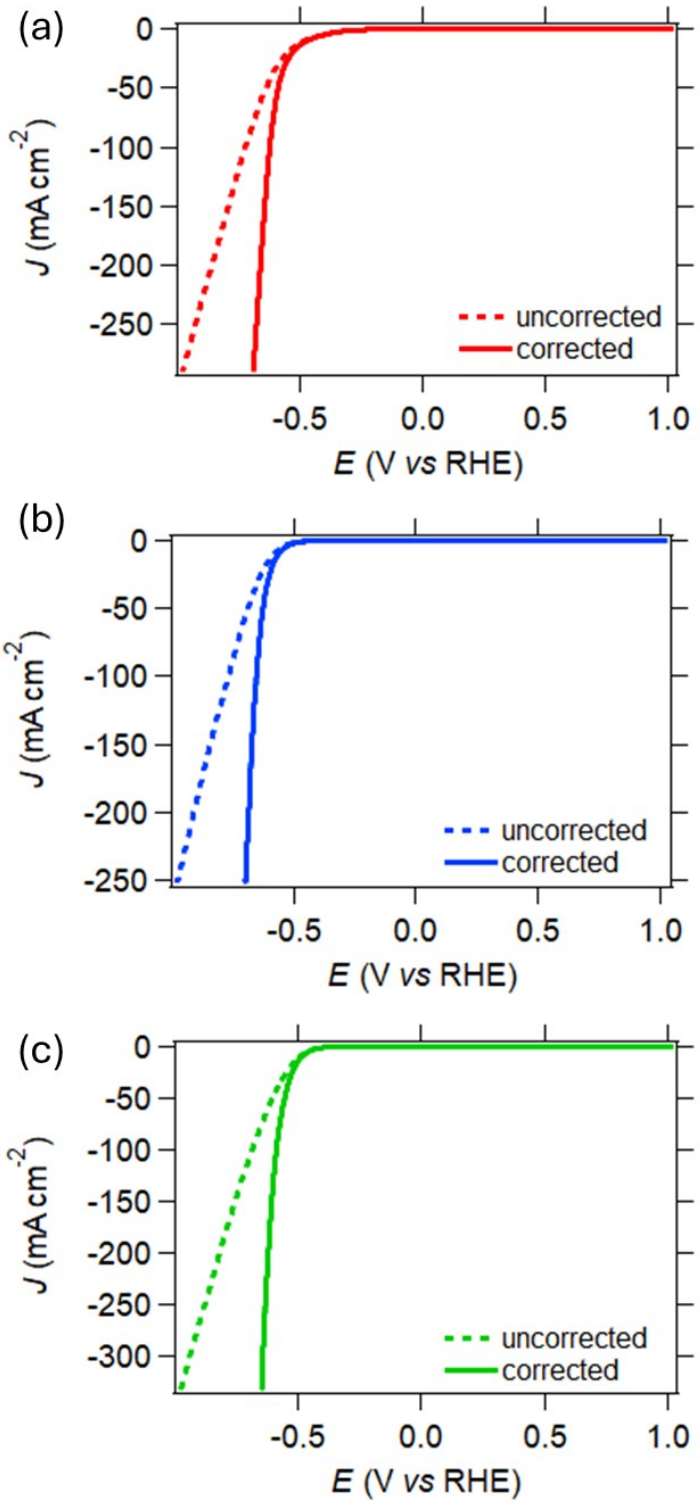

Figure S3. Corrected and un-corrected HER LSV curves of (a) FeNiB-I, (b) FeNiB-II, (c) FeNiB-III.

Table S2. The roughness of each sample, as determined from 5 μm × 5 μm AFM topography images (n = 3).

Sample	Roughness (nm)
FeNiB-I	126 ± 25
FeNiB-II	254 ± 23
FeNiB-III	67 ± 10

Table S3. Maximum current in a ±3.0 V range, as determined from C-AFM IV measurements.

Sample	Max current
FeNiB-I (n=59/60)	4.9 ± 1.5 nA
FeNiB-II (n=35/160)	43.1 ± 20.5 pA
FeNiB-III (n=60/60)	8.0 ± 5.6 nA

Table S4. Resistance, as determined from maximum current.

Sample	Resistance
FeNiB-I (n=59/60)	649 ± 205 MΩ
FeNiB-II (n=35/160)	82 ± 30 GΩ
FeNiB-III (n=60/60)	782 ± 926 MΩ

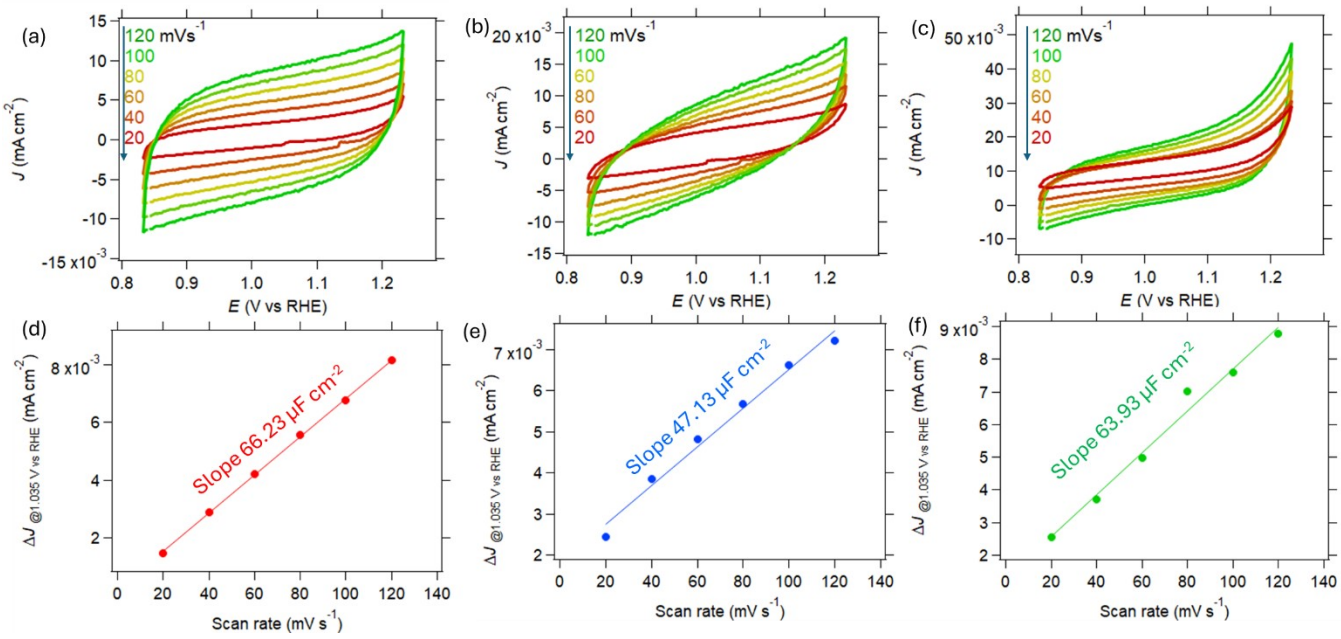

Figure S4. CV measurements in the non-Faradaic region (around the 0.62 V versus RHE) for FeNiB-I (a), FeNiB-II (b) and FeNiB-III (c). In this region scan rates were of 120, 100, 80, 60, 40, 20 mV s^{-1} were used to measure the current density and calculate the double layer capacitance (C_{dl}). The C_{dl} values were obtained by measuring gradients of current density versus scan rate for FeNiB-I (d), FeNiB-II (e) and FeNiB-III (f).

Table S5. Calculated double layer capacitance and electrochemical surface area.

Sample	**C_{dl} (µF cm^{-2})**	**ECSA (cm^2)**
FeNiB-I	132.46	3.32
FeNiB-II	94.26	2.36
FeNiB-III	127.86	3.20