

Supplementary Materials

Enhancing Nickel-Iron Gas Diffusion Electrodes for Oxygen Evolution in Alkaline Water Electrolysis

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1. Tafel analysis

The Tafel slope (b) is the slope of the overpotential in the region between 0.2 and 0.3 V, and the current density region between -2 and -0.5 $\log(\text{A cm}^{-2})$. For the calculation of the exchange current density, Equation (4) was used.

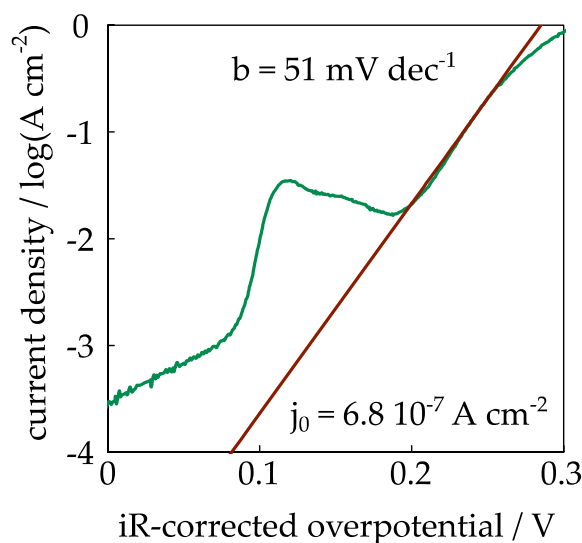


Figure S1. Tafel slope and exchange current density of the Blend GDE.

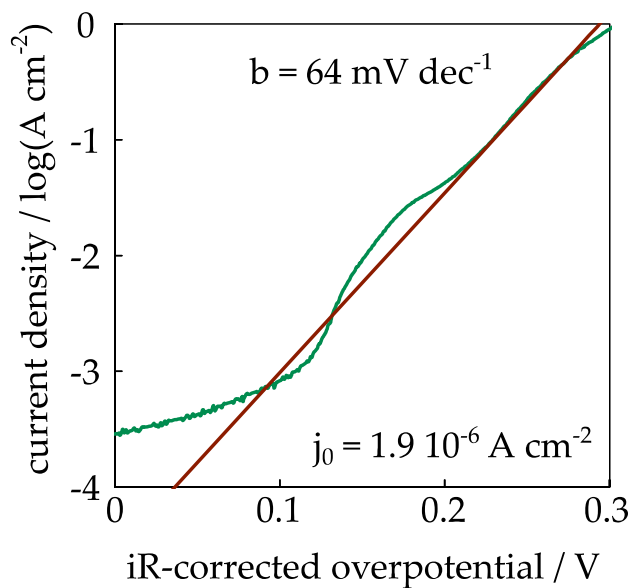


Figure S2. Tafel slope and exchange current density of the Gluc GDE.

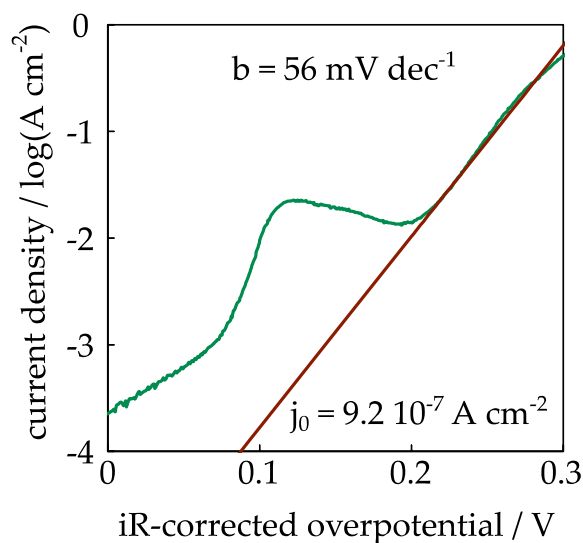


Figure S3. Tafel slope and exchange current density of the Lac GDE.

2. EIS measurements

For the calculation of the specific resistance, the measured resistance was multiplied with the geometrical surface area (3.14 cm²) of the electrode. The specific resistances presented in chapter 2.2.3 were obtained from the intercept of the real resistance at zero imaginary resistance in the Nyquist plot, Figure S1. During the temperature increase, the resistance decreases.

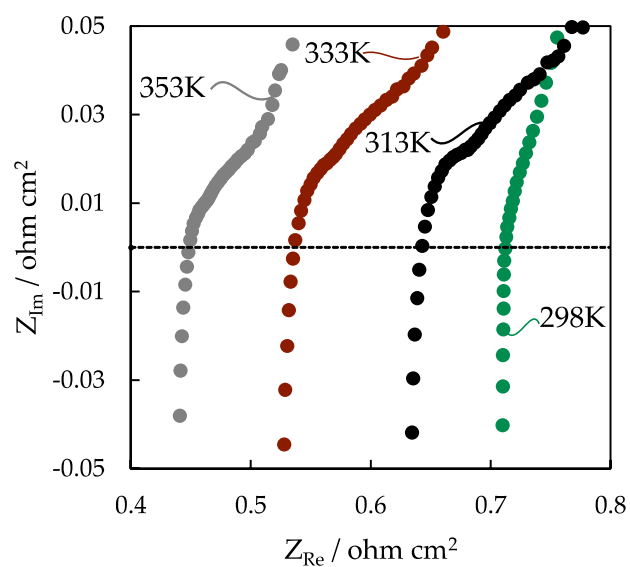


Figure S4. Nyquist plots of the Blend GDE at different temperatures before the LSV measurements.

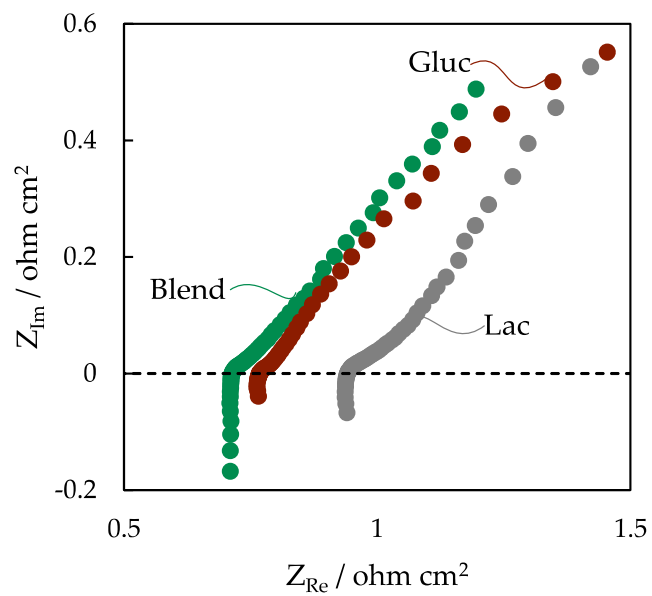


Figure S5. Nyquist plots of the Blend, Lac, and Gluc GDE at a current density of 10 mA cm^{-2} .

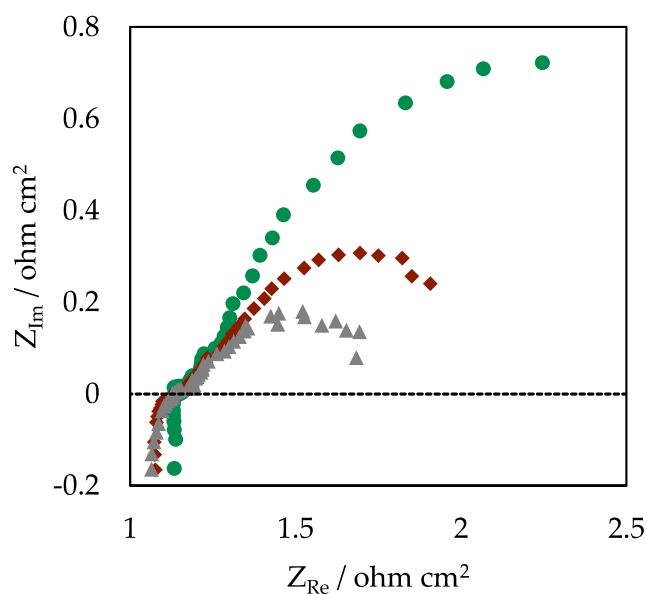


Figure S6. Nyquist plots of the Blend GDE at different potentials. Grey triangles depict measurements at a potential of 1.4 V vs. RHE, red squares refer to 1.475 V vs. RHE, and green circles to 1.5 V vs. RHE.

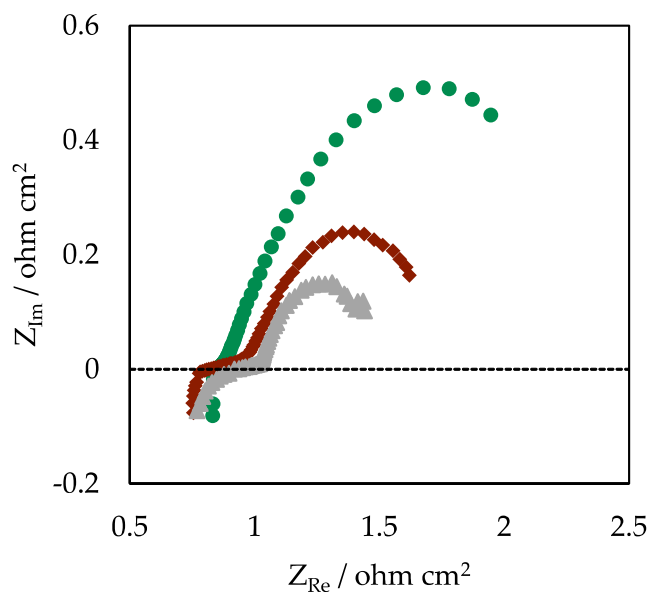


Figure S7. Nyquist plots of the Gluc GDE at different potentials. Grey triangles refer to a potential of 1.4 V vs. RHE, red squares to 1.475 V vs. RHE, and green circles to 1.5 V vs. RHE.

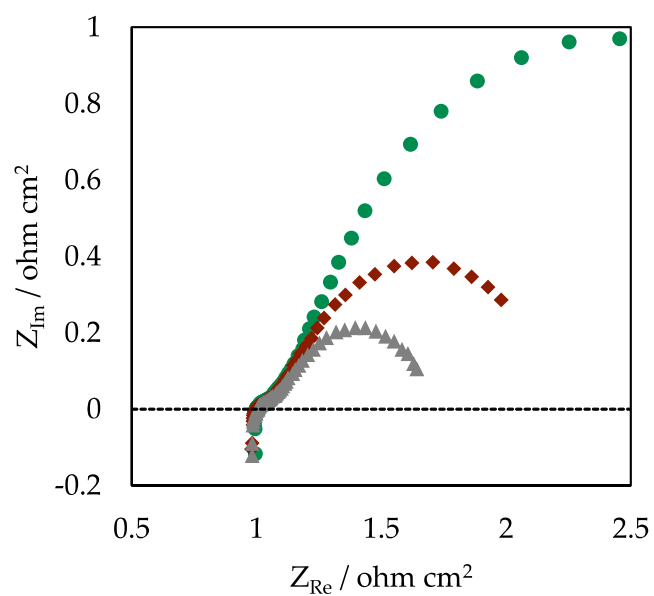


Figure S8. Nyquist plots of the Lac GDE at different potentials. Grey triangles refer to a potential of 1.4 V vs. RHE, red squares to 1.475 V vs. RHE, and green circles to 1.5 V vs. RHE.