

Ni on Graphene Oxide: A Highly Active and Stable Alkaline Oxygen Evolution Catalyst

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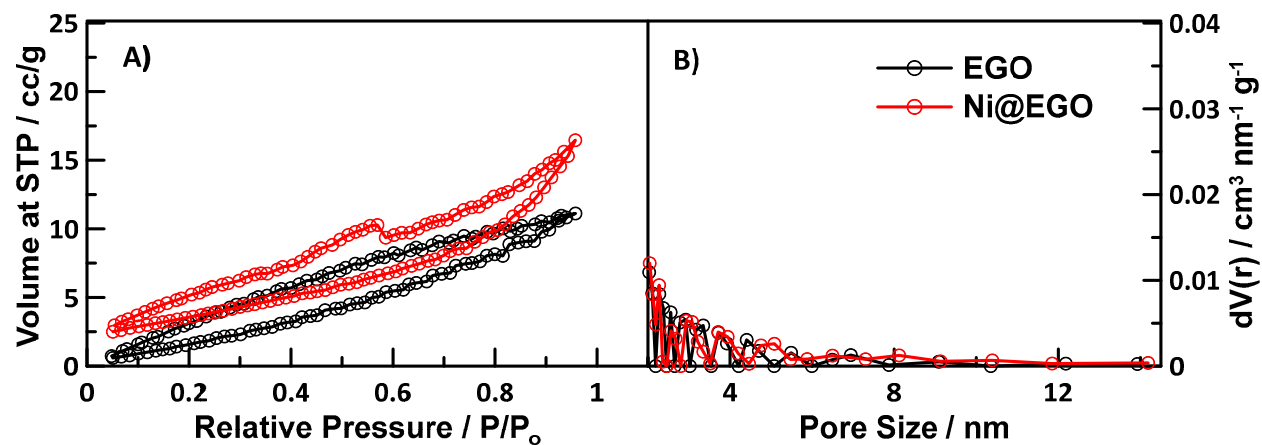


Figure S1. A) Pore size isotherms using N₂ as an adsorbate B) BJH pore size distributions obtained using N₂ as an adsorbate.

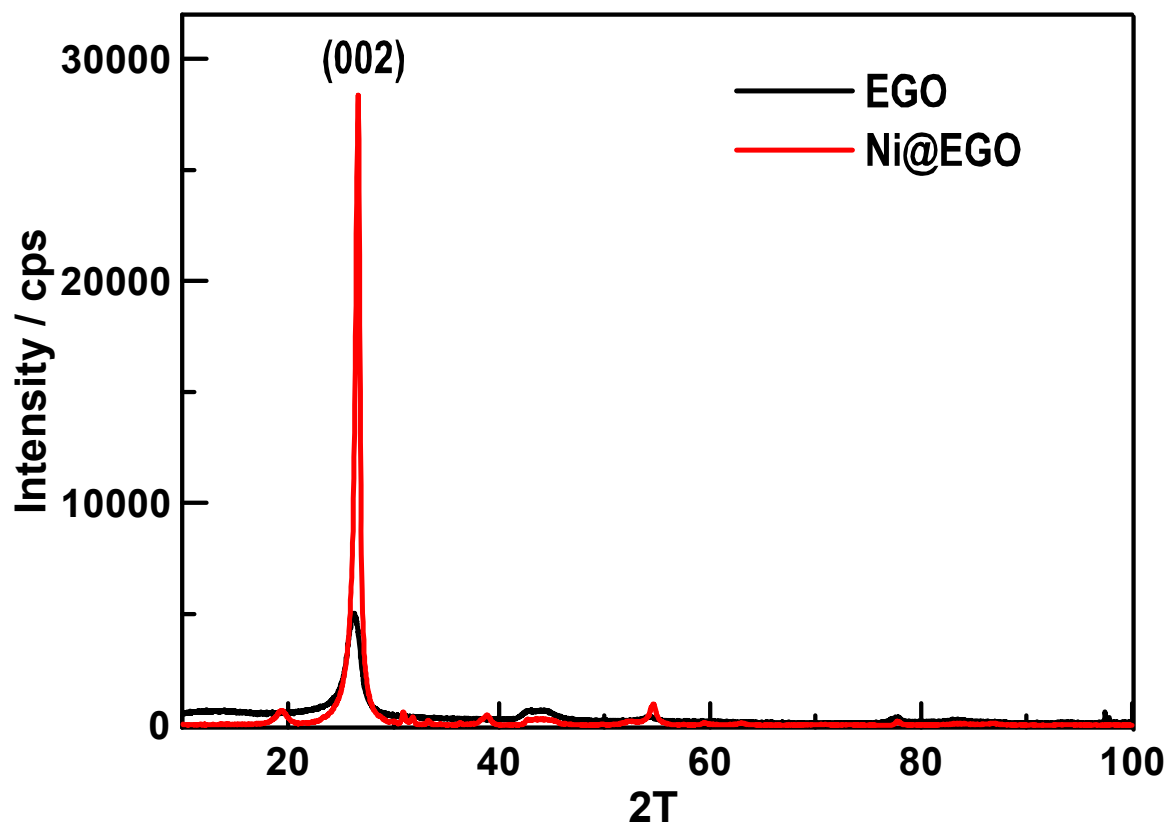


Figure S2. XRD spectra of the EGO compared to the Ni@EGO

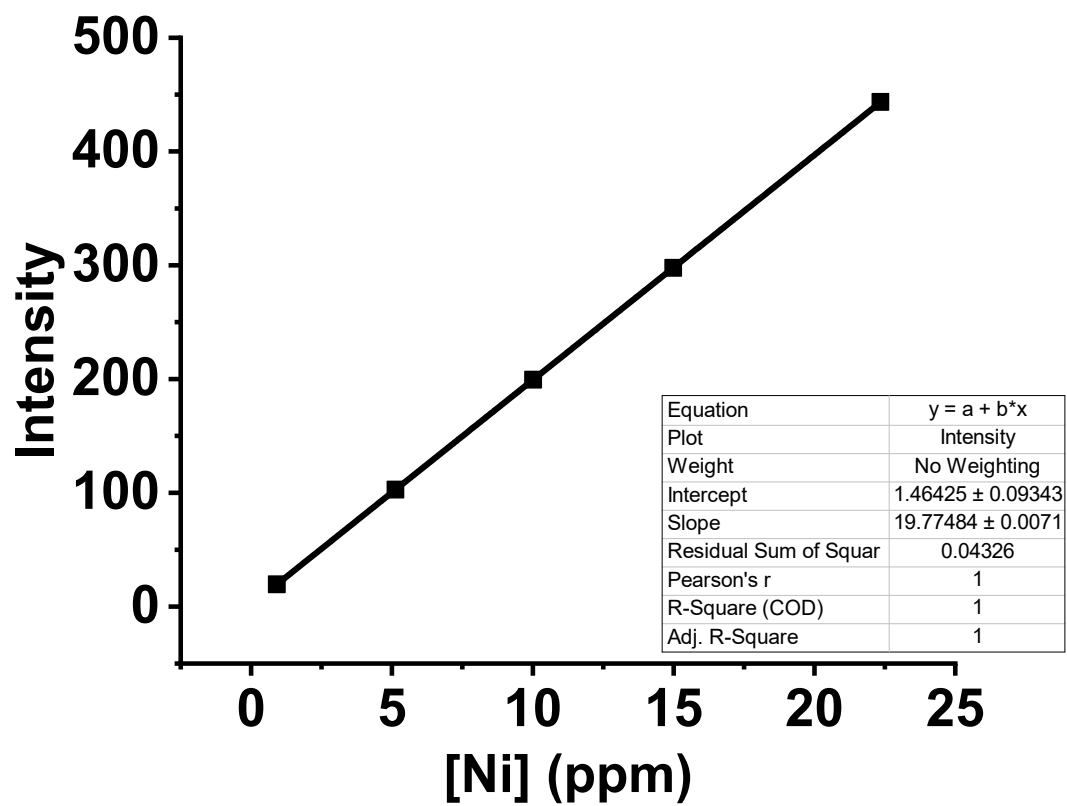


Figure S3. ICP-OES Calibration curve for the determination of nickel content in the Ni@EGO samples

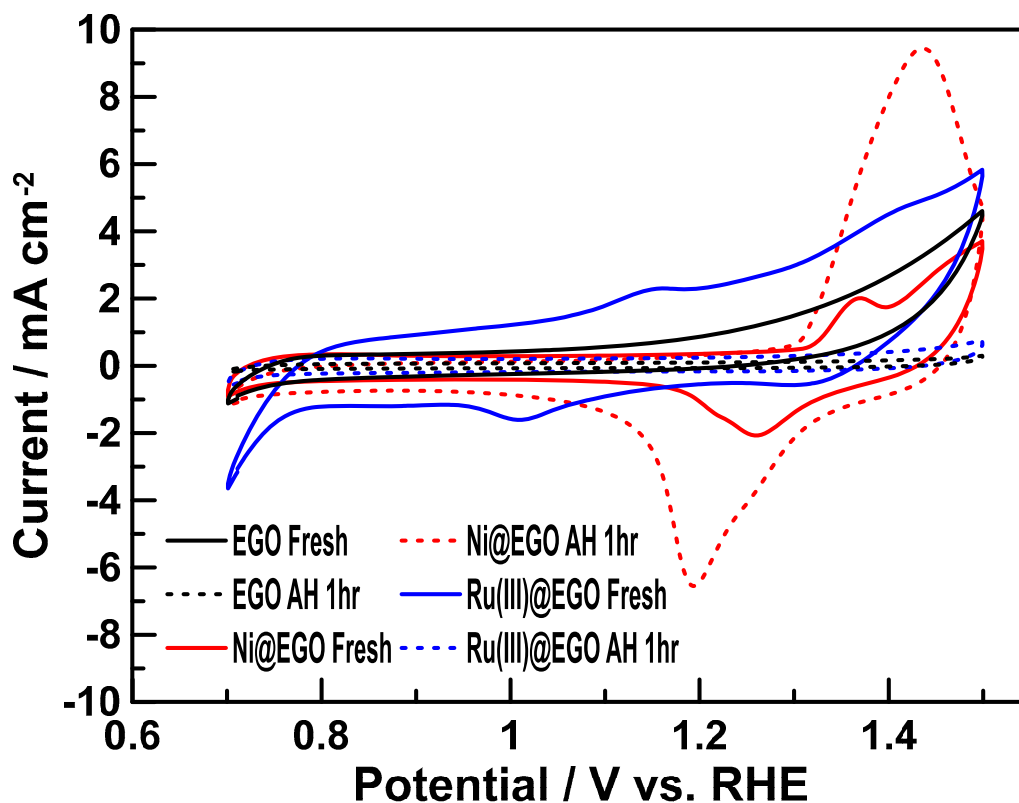


Figure S4. Cyclic Voltammograms of Ni@EGO and Ru(III)@EGO in 1 M KOH at a scan rate of 20 mV s⁻¹.

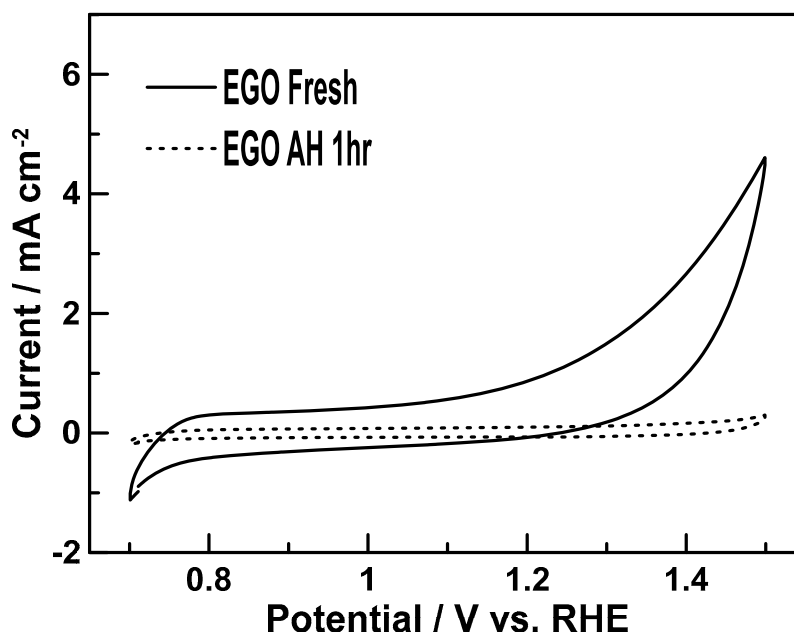


Figure S5. Cyclic Voltammograms of EGO in 1 M KOH at a scan rate of 20 mV s⁻¹.

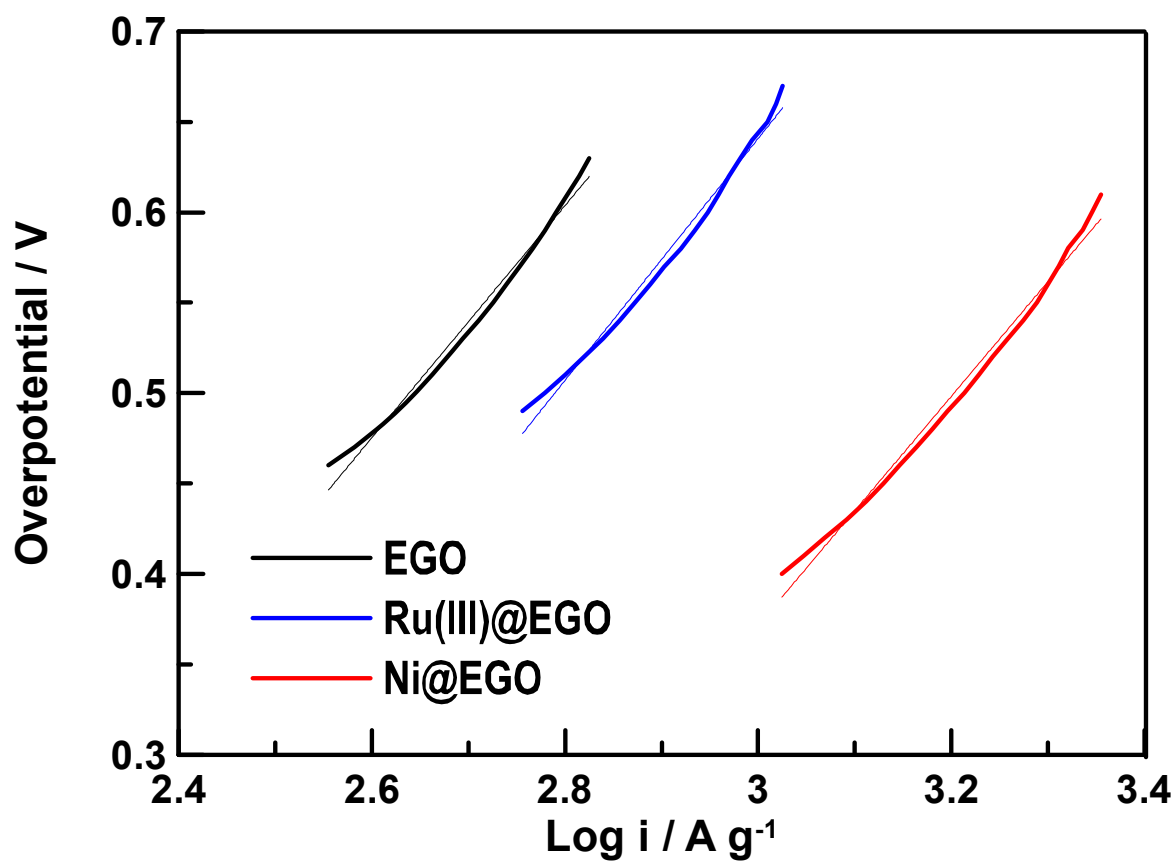


Figure S6. Tafel analysis of the catalysts studied in 1 M purified KOH.

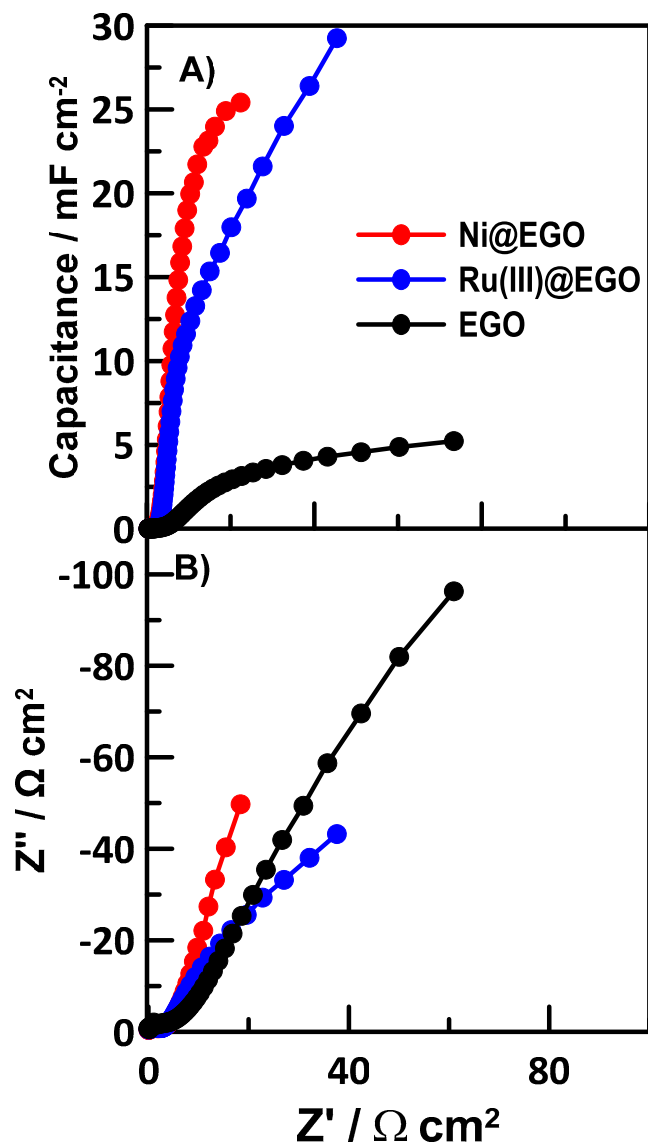


Figure S7. Electrochemical impedance spectroscopy of the catalysts at 1.46 V vs RHE **A)** Capacitance plot of the catalysts studied **B)** Nyquist plots of the catalysts studied

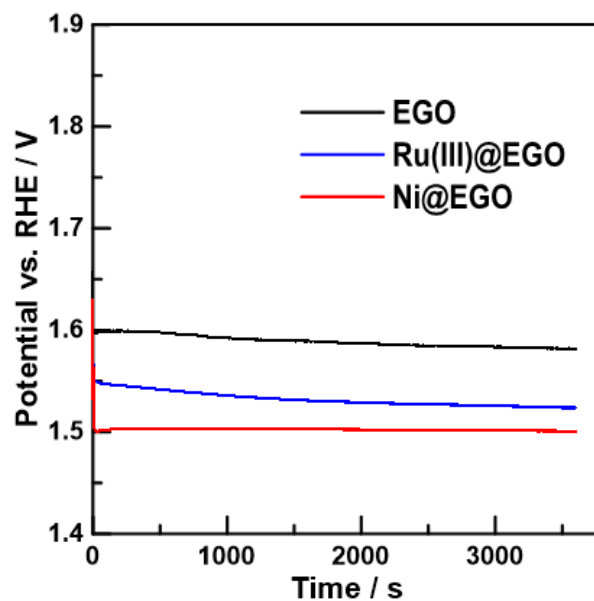


Figure S8. 1 hour galvanostatic hold at 1 mA cm^{-2} in 1 M KOH

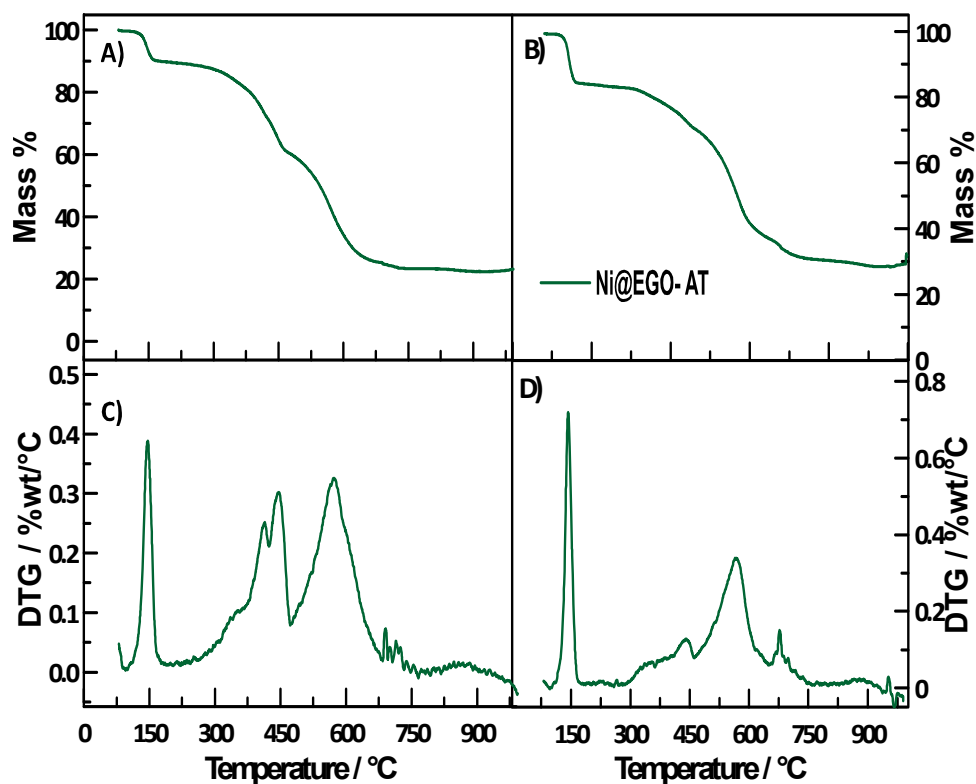


Figure S9. **A)** TGA of the Ni@EGO-AT at a scan rate of $10^\circ\text{C min}^{-1}$ in air atmosphere **B)** TGA of the Ni@EGO-AT at a scan rate of $10^\circ\text{C min}^{-1}$ in an argon atmosphere **C)** DTG of Ni@EGO-AT at a scan rate of $10^\circ\text{C min}^{-1}$ in air atmosphere **D)** DTG of the Ni@EGO at a scan rate of $10^\circ\text{C min}^{-1}$ in an argon atmosphere.

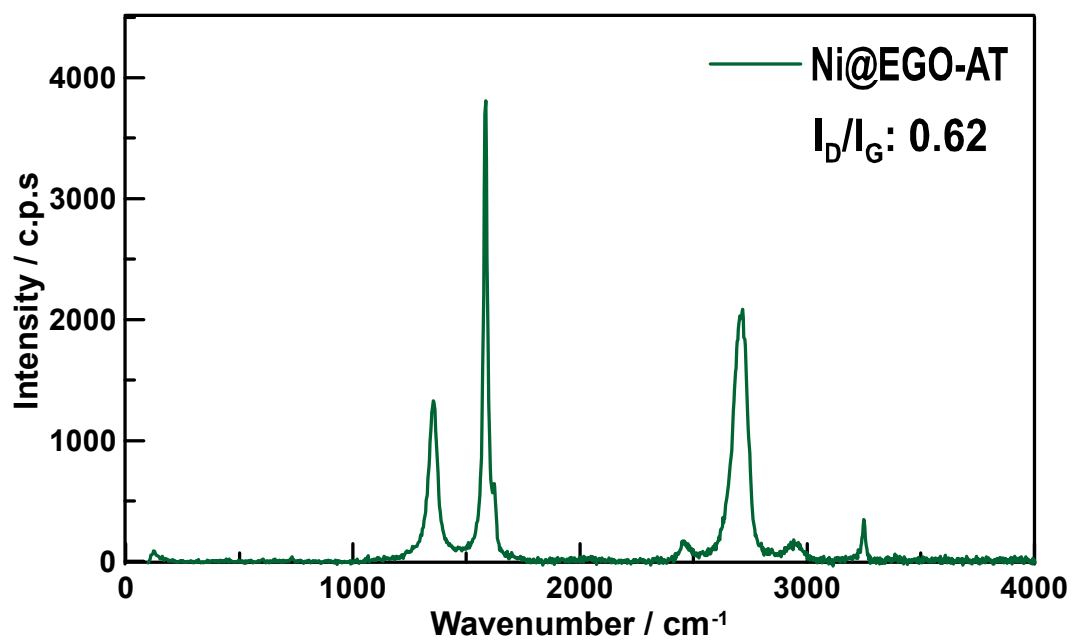


Figure S10. Raman spectra of the Ni@EGO-AT

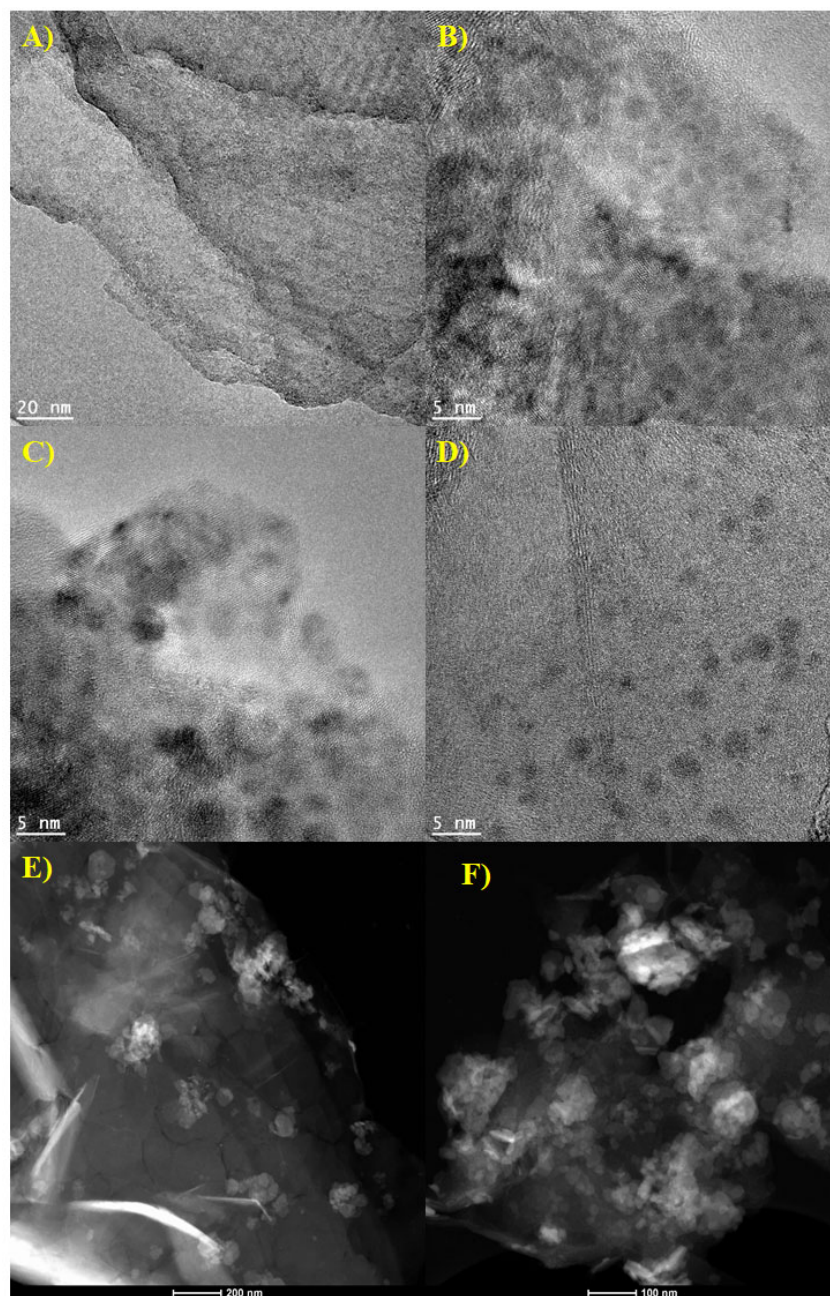


Figure S11. A-D) High-resolution TEM images of the Ni@EGO-AT catalyst E-F) STEM images of the Ni@EGO-AT catalyst

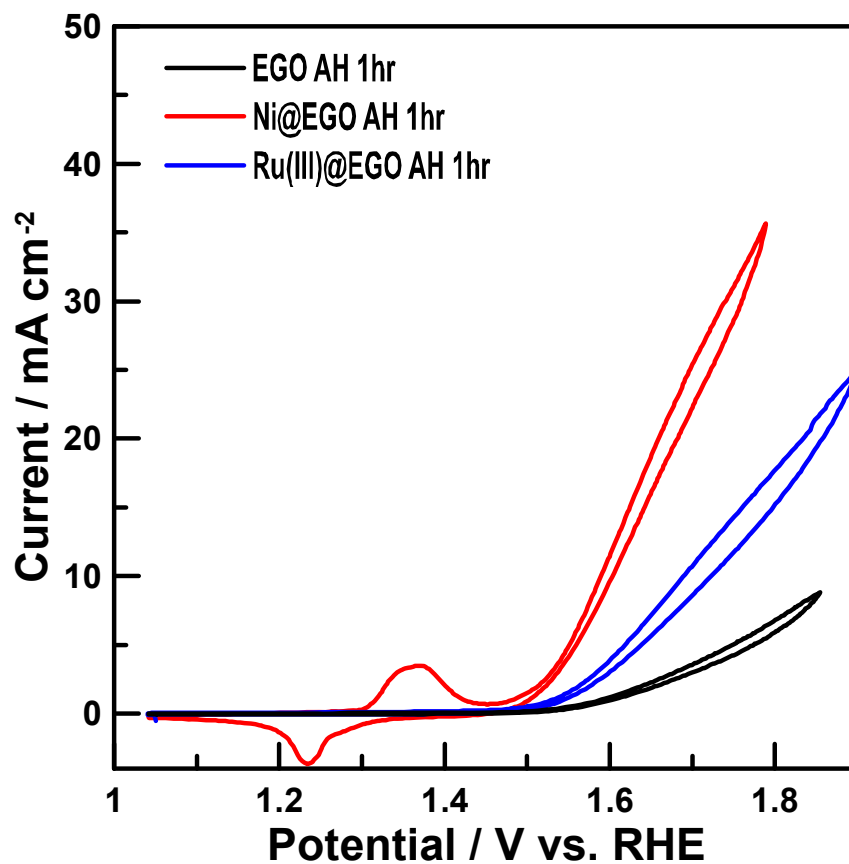


Figure S12. Cyclic Voltammograms of Ni@EGO and Ru(III)@EGO in 1 M KOH at a scan rate of 5 mV s⁻¹.

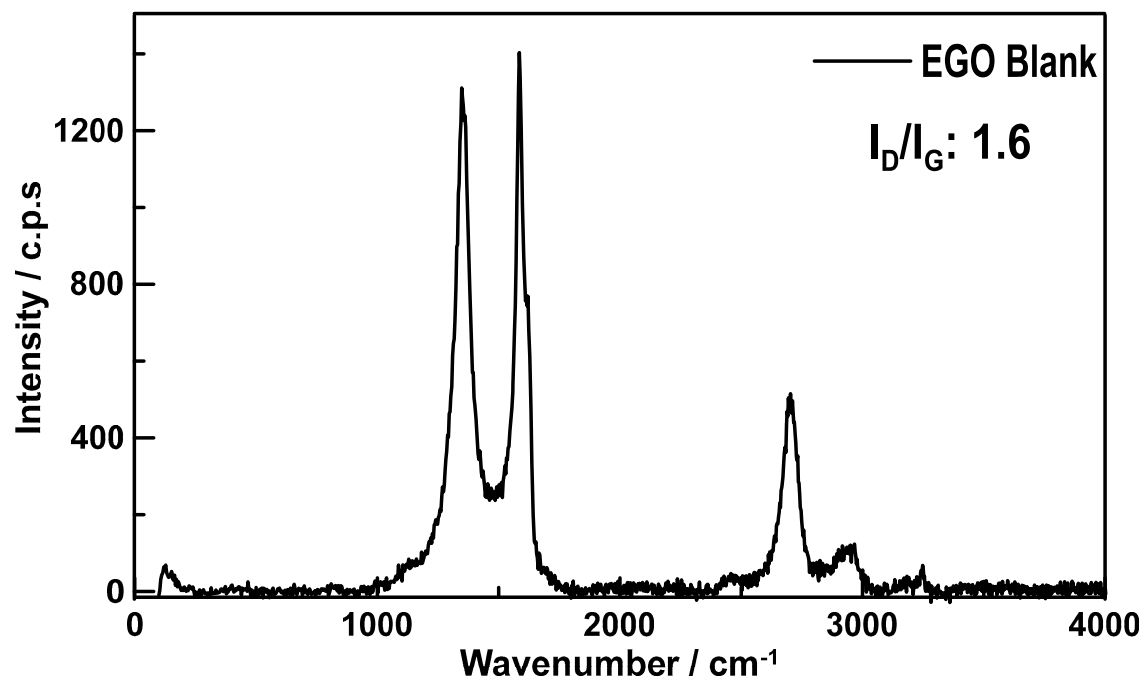


Figure S13. Raman spectra of the EGO synthesized in the same conditions without the addition of Ni

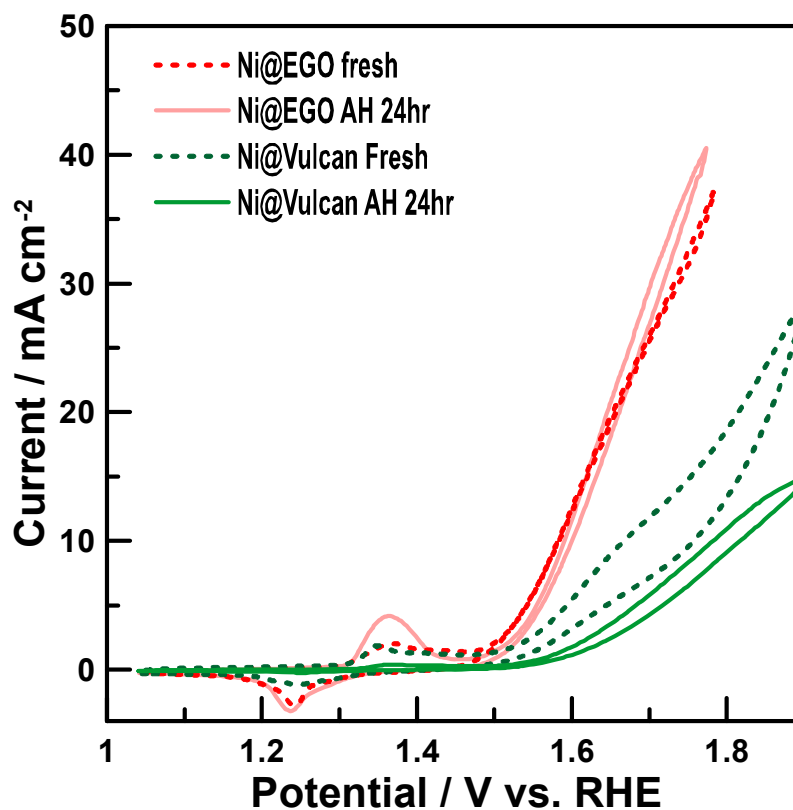


Figure S14. Cyclic Voltammograms of Ni@EGO and Ni@Vulcan in 1 M KOH at a scan rate of 5 mV s⁻¹.

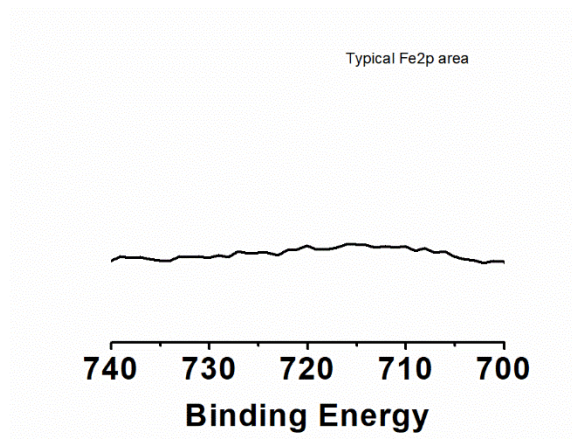


Figure S15. XPS spectra of the Fe 2p region of the Ni@EGO catalyst, which demonstrates no detectable amount of Fe is present in the sample.