Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Electrochemical control of the RWGS reaction over Ni nanoparticles deposited on yttria stabilized zirconia

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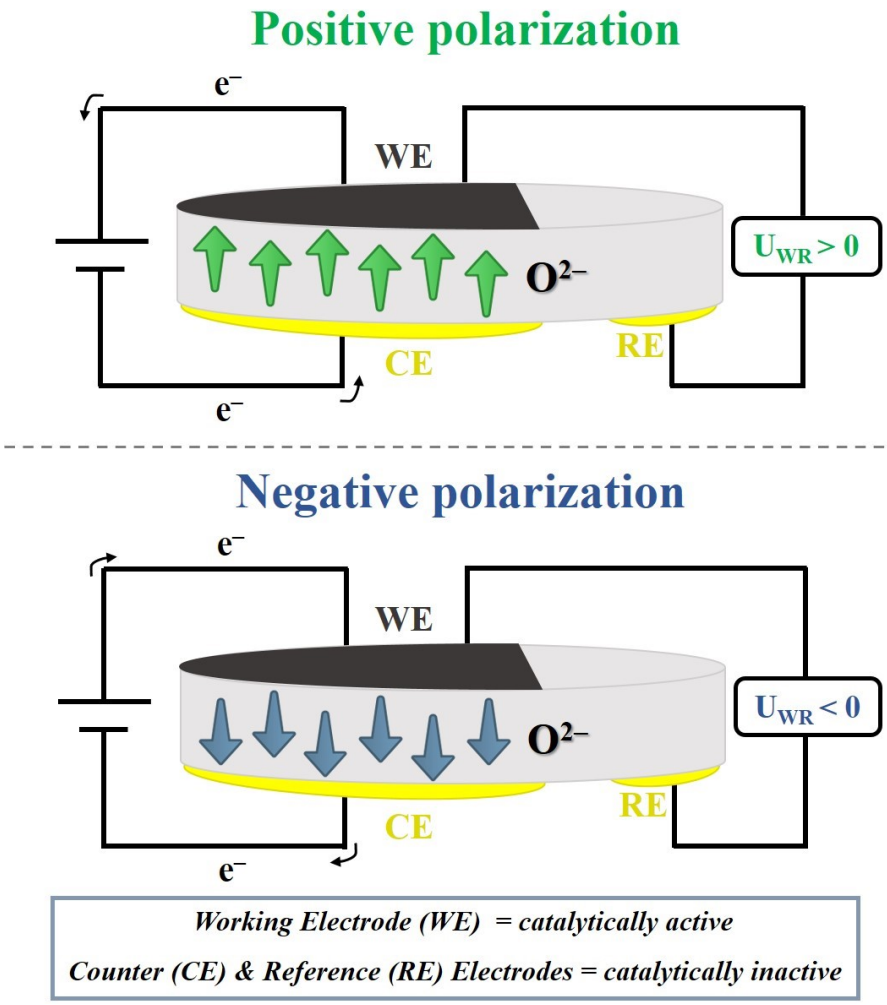

Figure S1. Principle and basic experimental setup for electrochemical promotion of catalysis (EPOC) experiments for an oxygen-ion conductor/solid electrolyte.

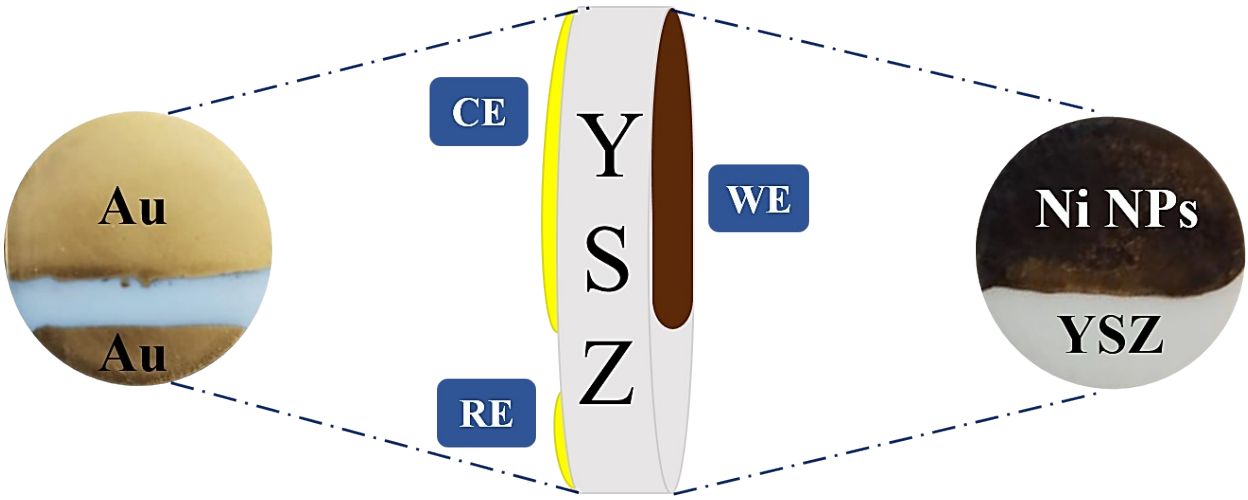

Figure S2. The fresh Ni/YSZ/Au sample.

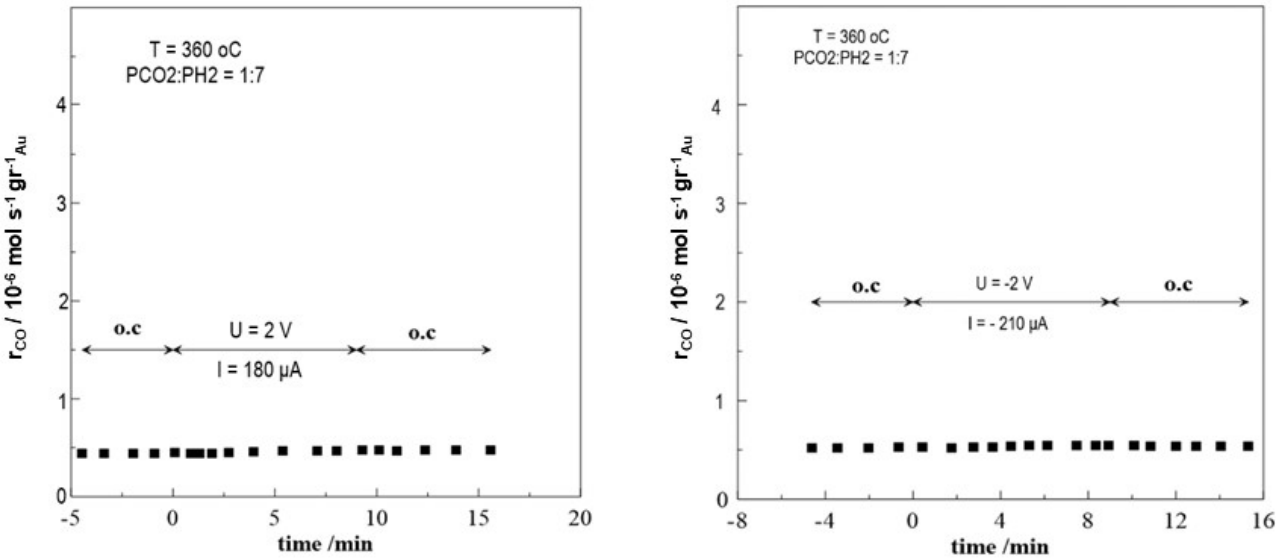

Figure S3. Transient effect of a constant (left) positive (+2 V) and (right) negative (–2 V) applied potential on the catalytic rate of CO formation over the Au/YSZ/Au sample (blank experiment).

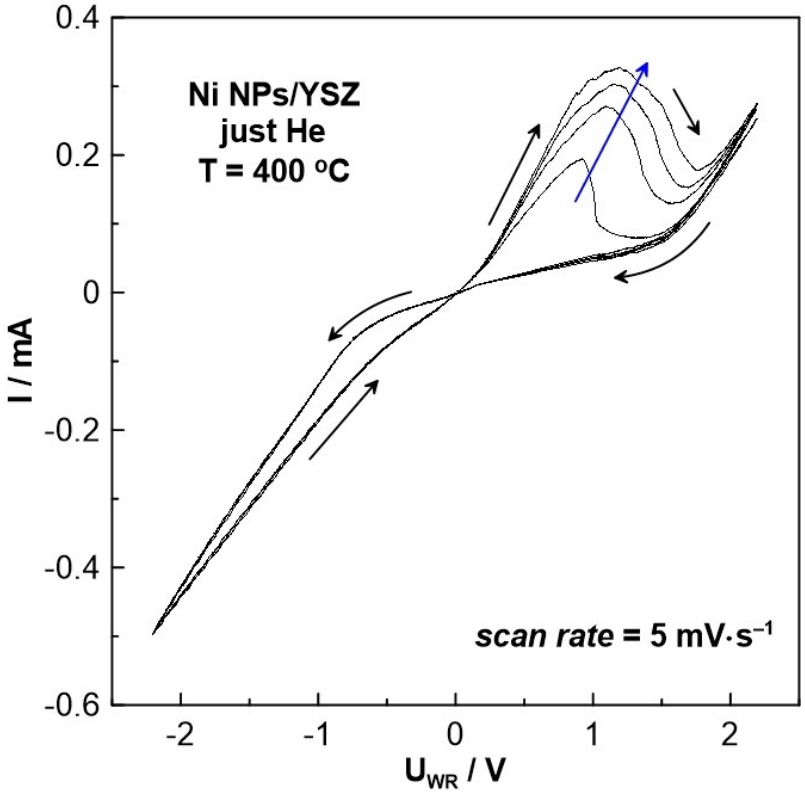

Figure S4. Cyclic voltammograms for the Ni NPs/YSZ sample under inert (i.e., He) atmosphere, T = 400 °C, scan rate = 5 mV·s^{-1}.

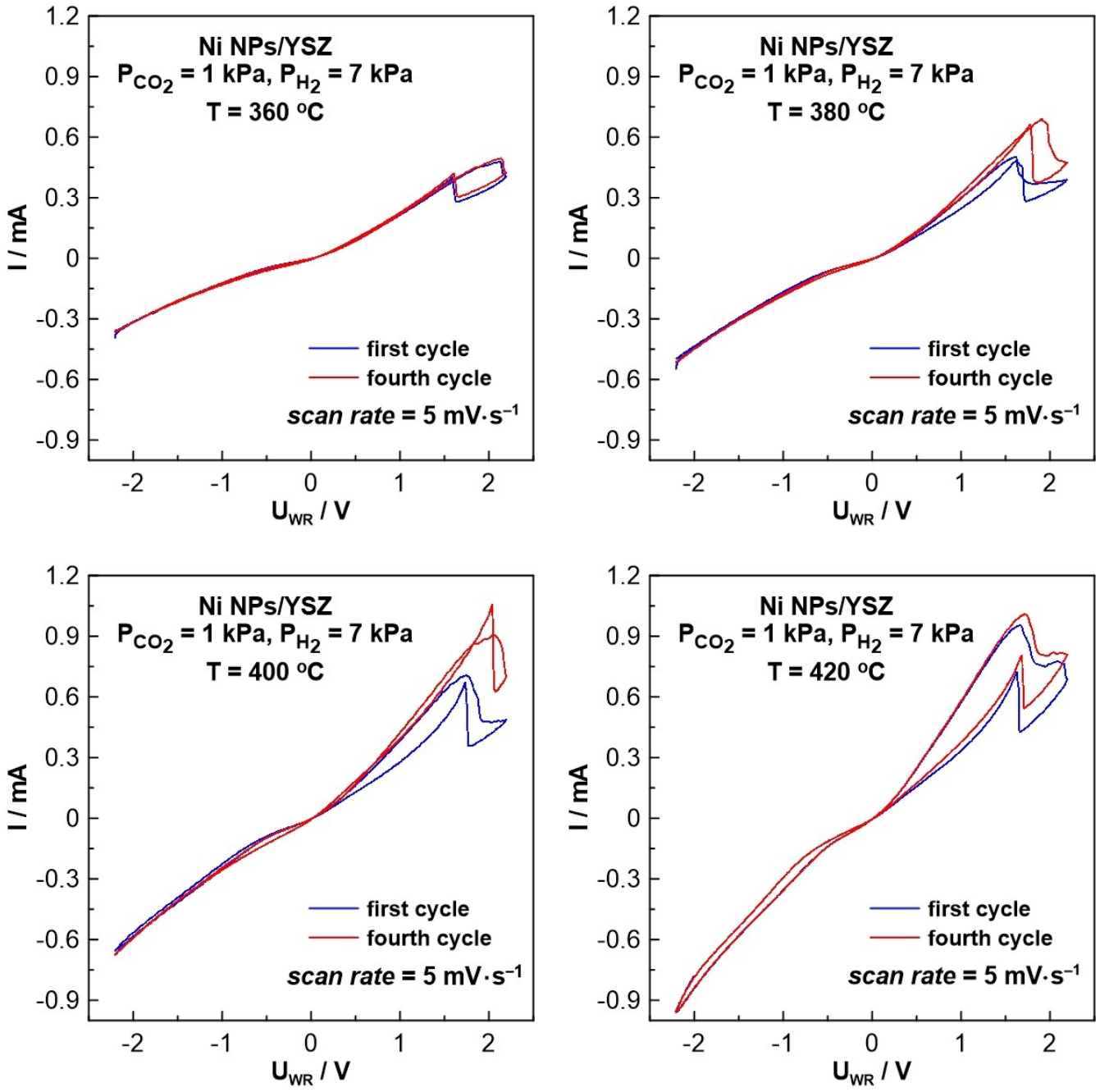

Figure S5. Effect of temperature on the shape of the cyclic voltammograms for Ni NPs on YSZ under reducing reaction conditions, scan rate = 5 mV·s^{-1}.

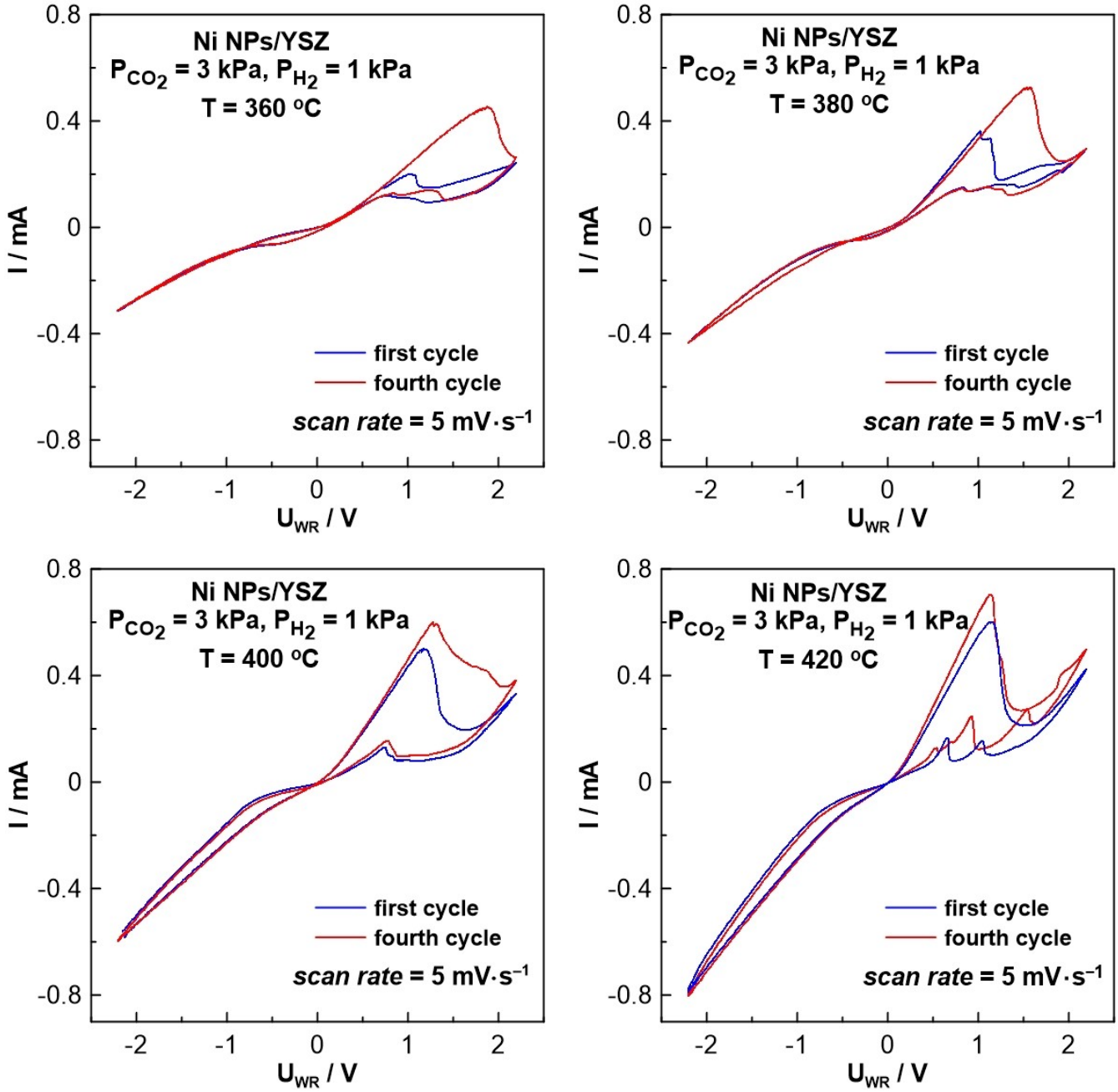

Figure S6. Effect of temperature on the shape of the cyclic voltammograms for Ni NPs on YSZ under oxidizing reaction conditions, scan rate = 5 mV·s^{-1}.

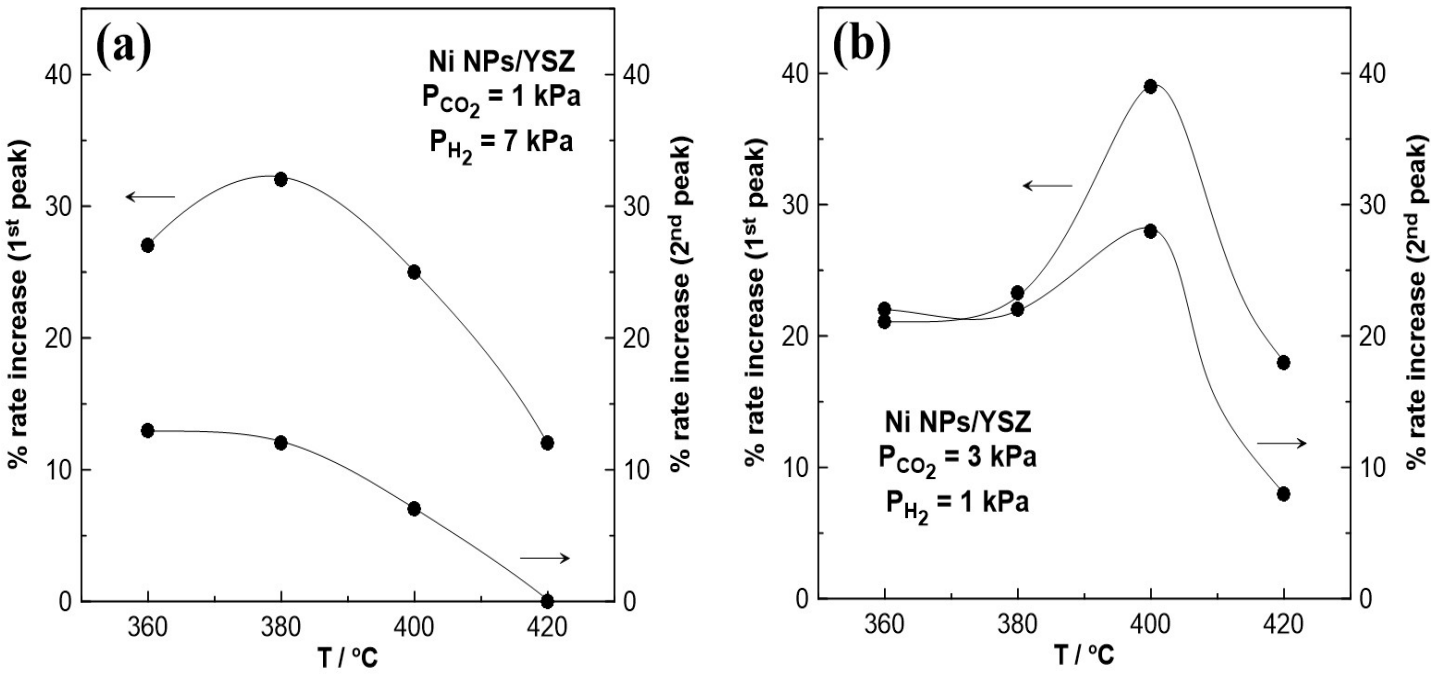

Figure S7. Effect of temperature on the % rate increase of the first- and second-rate peaks of CO formation upon positive (+2 V) polarization under: (a) reducing and (b) oxidizing reaction conditions.

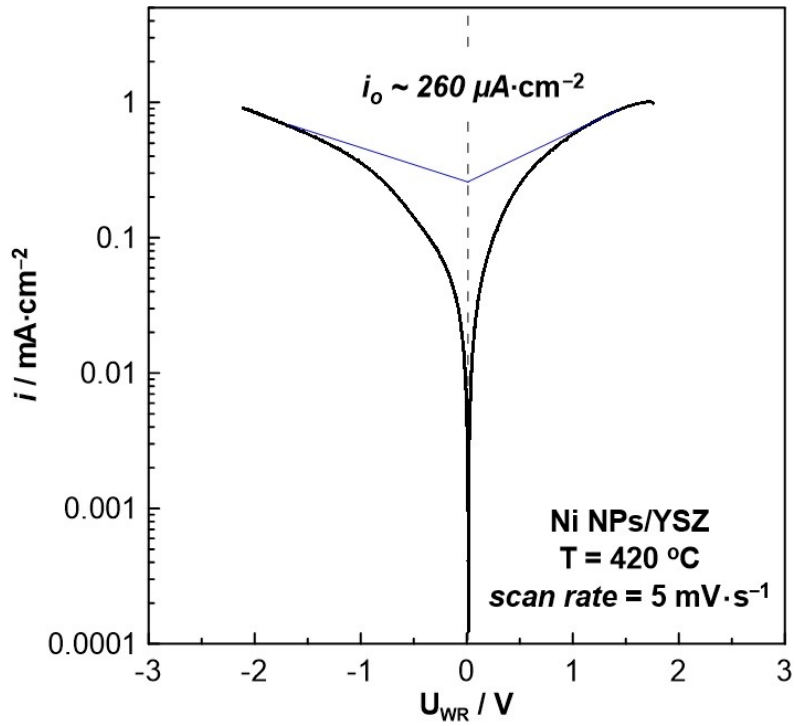

Figure S8. Tafel plot for Ni NPs on YSZ at 420 °C under reducing (P_{CO2} = 1 kPa, P_{H2} = 7 kPa) conditions, scan rate = 5 mV·s^{-1}.