Supplementary Information

Bifunctional Nickel and Copper Electrocatalysts for CO_2 Reduction and the Oxygen Evolution Reaction

Hanqing Pan and Christopher J. Barile*

Department of Chemistry, University of Nevada, Reno

e-mail: cbarile@unr.edu*

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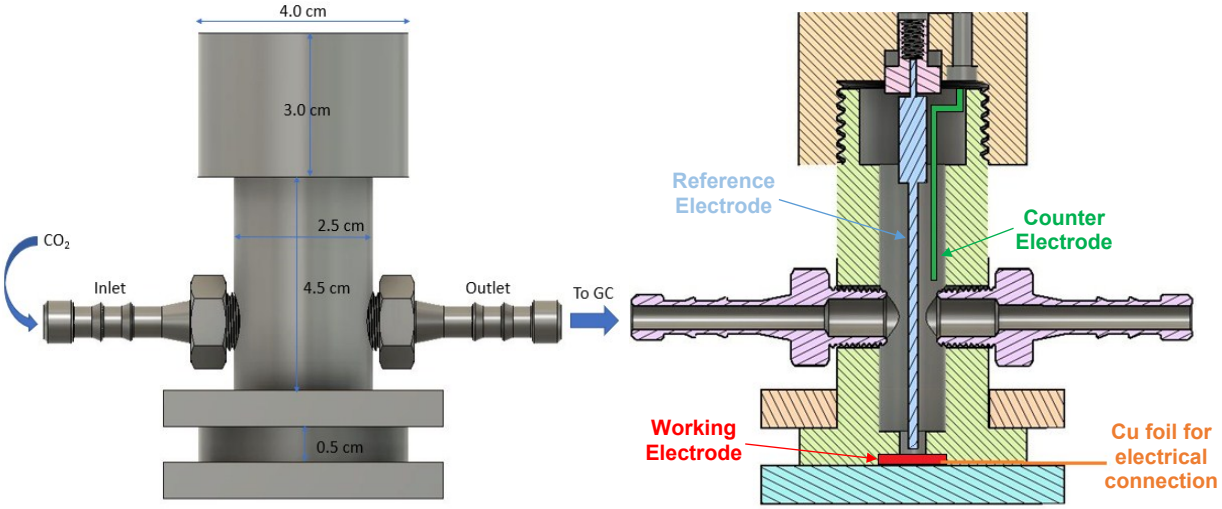

Figure S1. Schematics of custom-made cell for gas collection. The reference and counter electrodes were positioned through o-ring sealed ports on the top of the cell. The working electrode was placed on the bottom of the cell and was hermetically sealed using a compressed o-ring. The figure on the right highlights the positions of the three electrodes.

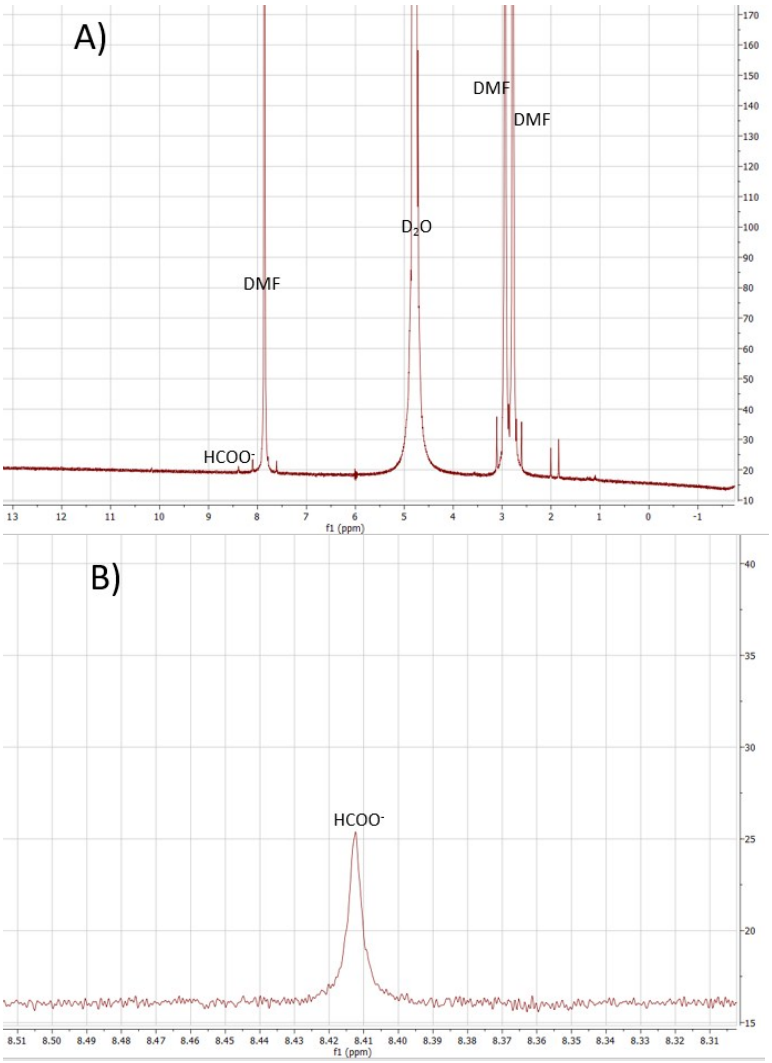

Figure S2. Representative NMR spectrum (a) and inset of the spectrum showing the formate peak (b). DMF was added as an internal standard.

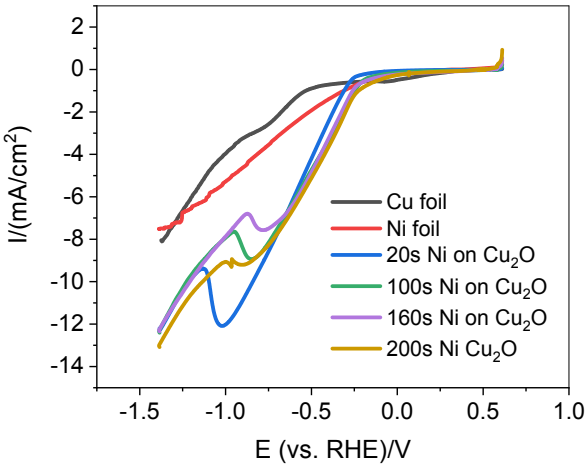

Figure S3. Linear sweep voltammogram (LSV) of bare carbon, Cu foil, Ni foil, and Cu_2O thin films with 20 s, 100 s, 160 s, and 200 s of electrodeposited Ni.

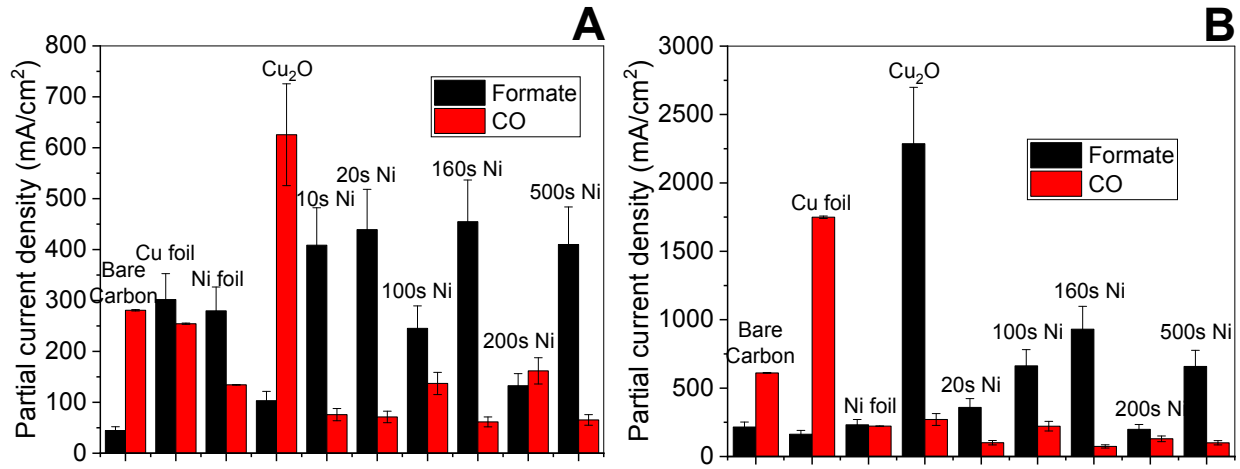

Figure S4. Partial current densities of all catalysts at -0.89 V (a) and -1.89 V (b).

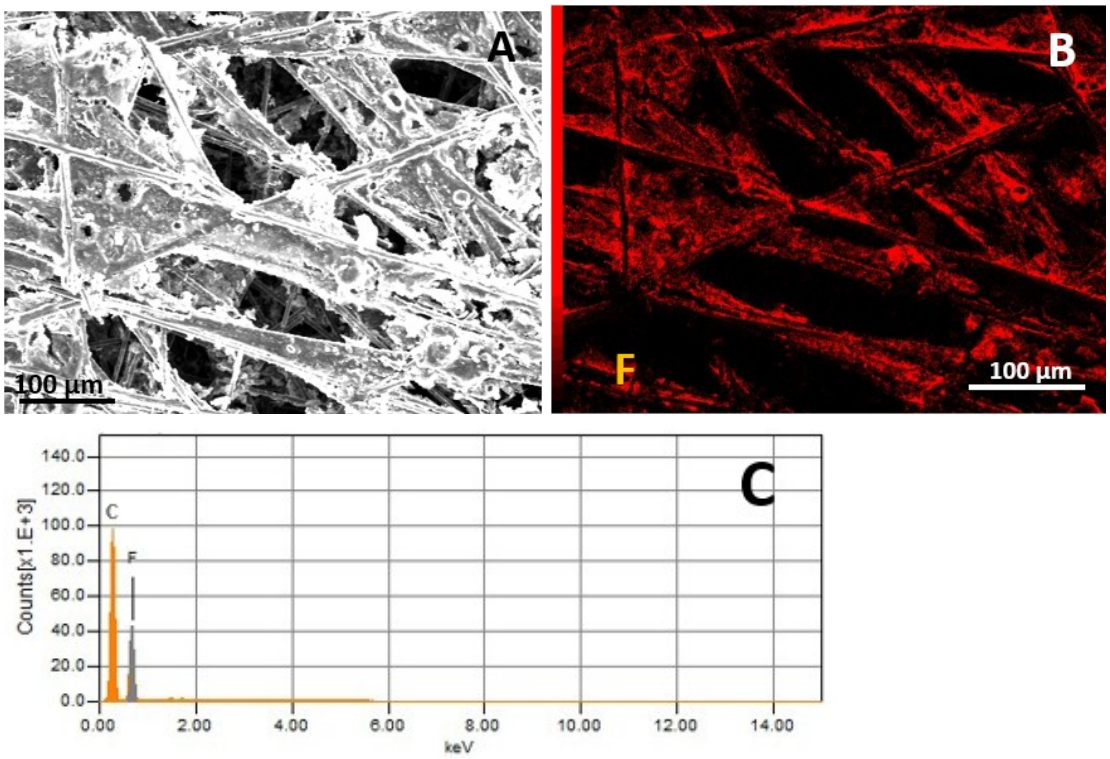

Figure S5. SEM image (a), EDS map (b), and EDS spectrum (c) of bare carbon paper. The data show that the electrode contains carbon and fluorine. The fluorine comes from PTFE used to treat the carbon paper.

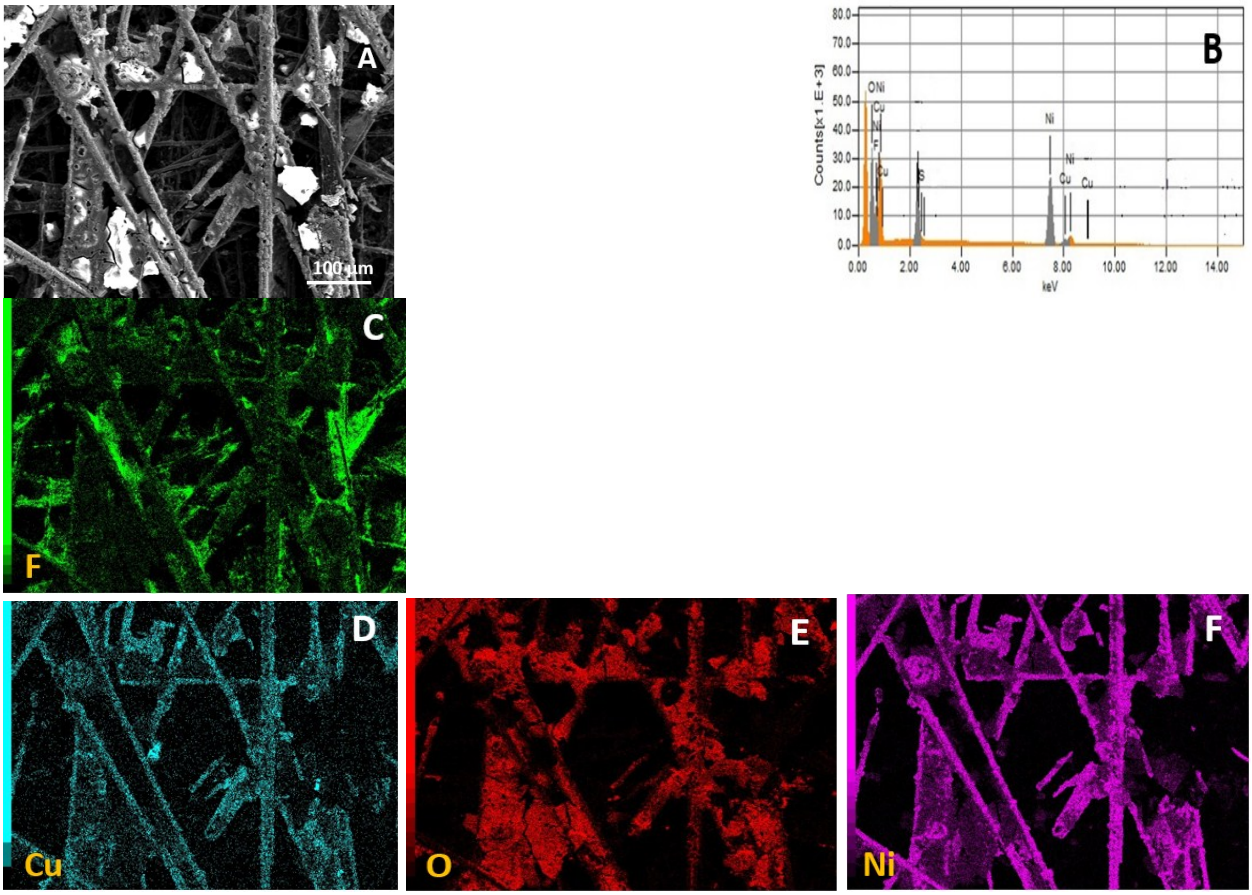

Figure S6. SEM image (a), spectrum (b), and elemental mapping (c-f) of a Cu_2O on carbon paper electrode modified with 500 s of Ni electrodeposition.