

Supporting Information for:

The Role of Tungsten Oxide in the Enhancement of Carbon Monoxide Tolerance of Platinum-Based Hydrogen Oxidation Catalysis

Douglas W. G. Stewart^{1,2*}, Keith Scott², Andrew J. Wain³, Timothy E. Rosser³, Edward Brightman^{1,5}, Donald Macphee^{1,4}, Mohamed Mamlouk².

¹ Enocell Ltd., BioCity Scotland, Motherwell, ML1 5UH, UK.

² Chemical Engineering, Newcastle University, Newcastle upon Tyne, NE1 7RU, UK.

³ National Physical Laboratory, Hampton Rd, Teddington, TW11 0LW, UK.

⁴ Department of Chemical and Process Engineering, University of Strathclyde, Glasgow, G1 1XJ, UK.

⁵ Department of Chemistry, University of Aberdeen, AB24 3UE, UK.

* d.stewart2@ncl.ac.uk

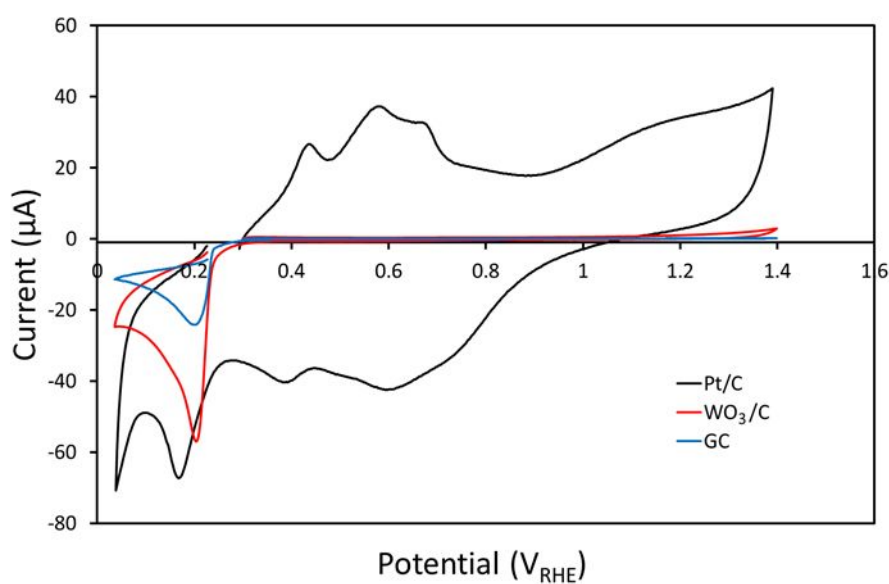


Figure S1 | Cu-ECSA Voltammograms of Pt/C, WO₃/C, and GC electrodes showing the absence of any interaction between copper ions and WO₃/C or GC electrodes within the potential region used for quantitative analysis (0.3 – 0.8 V_{RHE}).

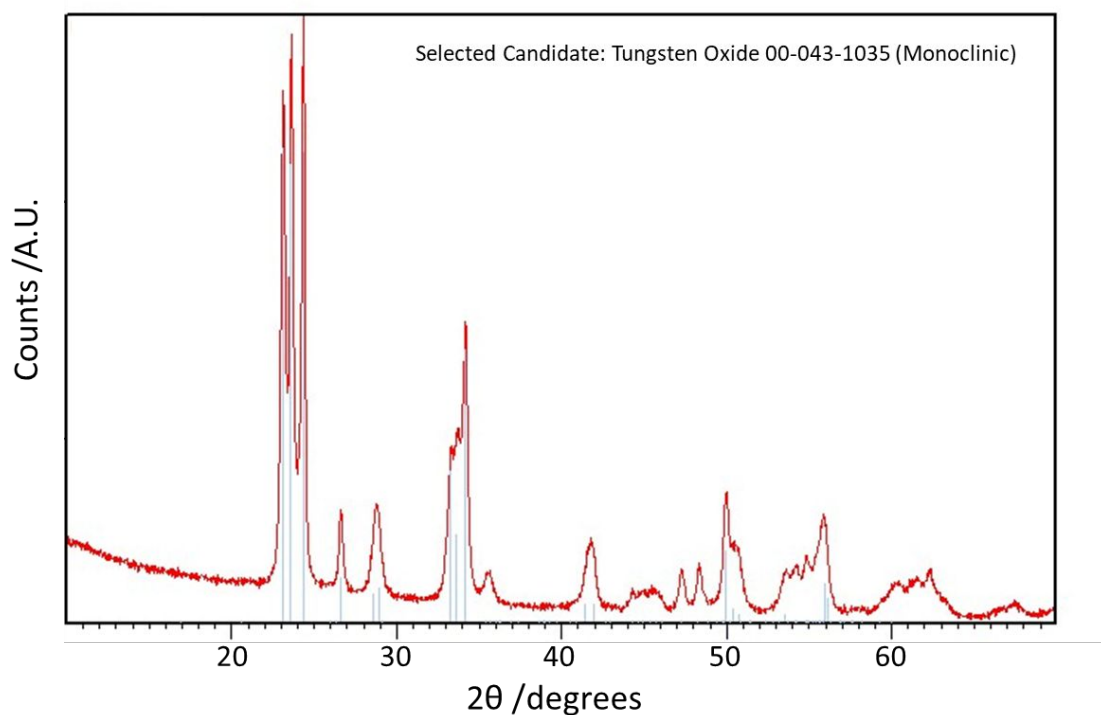


Figure S2 | XRD analysis of tungsten oxide.

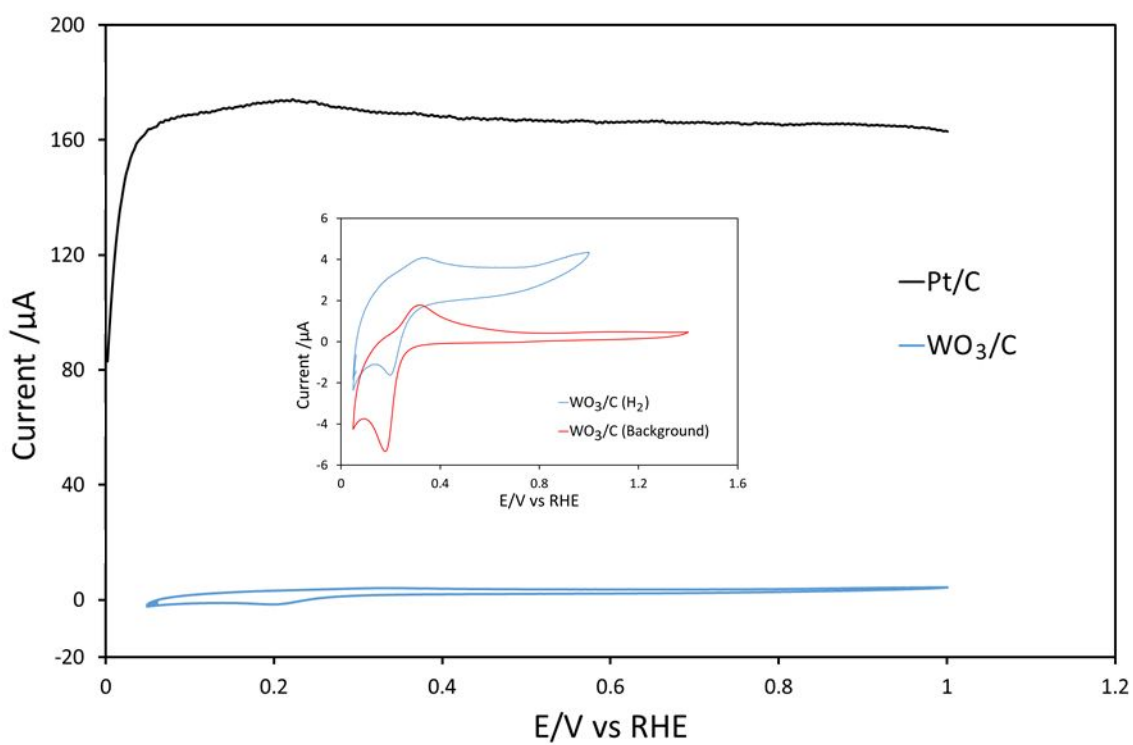


Figure S3 | Plot showing the hydrogen oxidation current produced by a Pt/C electrode in comparison to current produced by a WO₃/C electrode in the presence of hydrogen. Inset: CVs of a WO₃/C electrode in the presence (WO₃/C H₂) and absence (WO₃/C Background) of hydrogen. CVs of electrodes in the presence of hydrogen performed under rotation at 400 rpm, 10 mV/s.

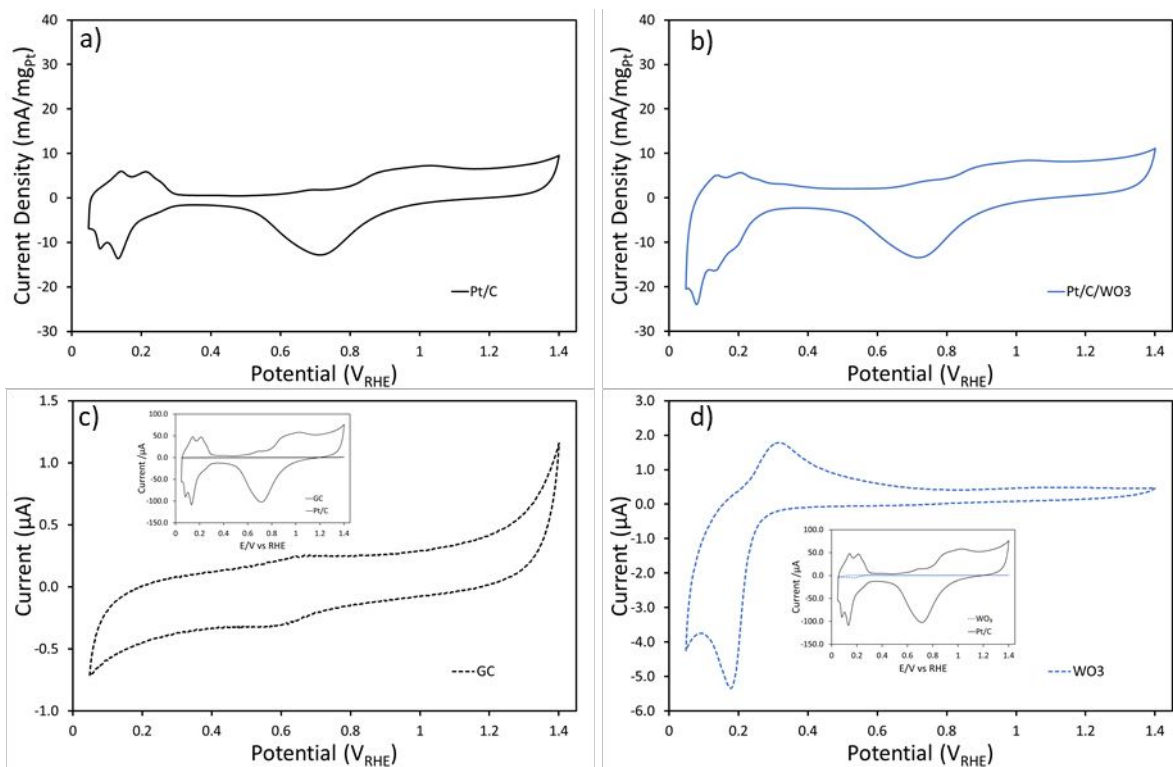


Figure S4 | Cyclic voltammetry of catalyst materials and GC electrode in supporting electrolyte. *Note: current scale is not consistent for plots c) and d). $0.1 \text{ M H}_2\text{SO}_4$, 10 mV/s .*