

## Electronic Supplementary Information for PCCP article

### Elucidating the oxide growth mechanism on platinum at the cathode in PEM fuel cells

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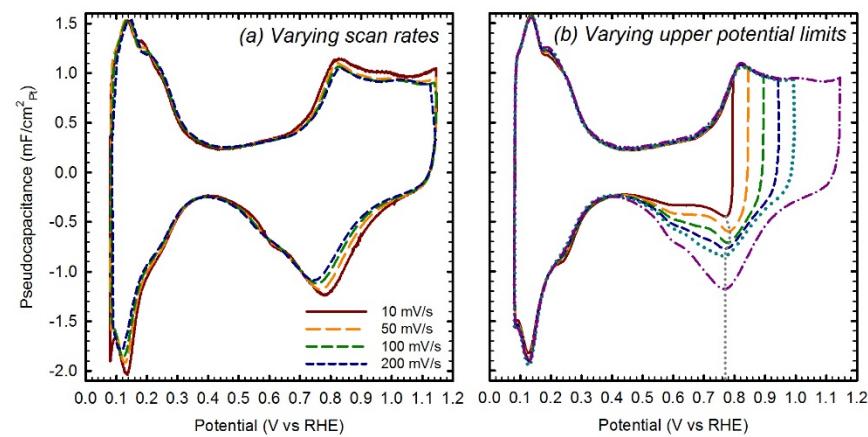


Figure S 1. Experimental CVs for varying scan rates and upper potential limits expanded to include information in the hydrogen adsorption/desorption region, which was used to calculate  $q_H$ .

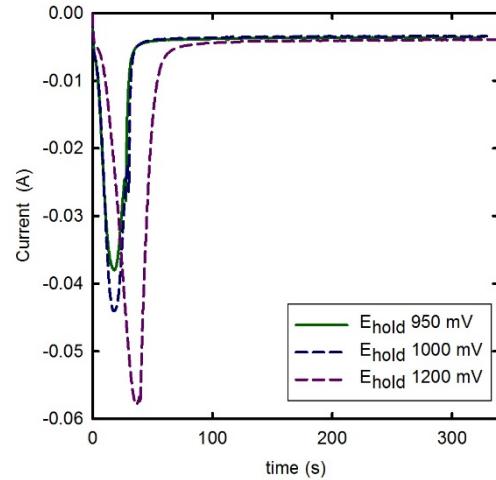


Figure S 2. Current versus time during oxide reduction. The potential is swept from the hold potential to 0.4 V at 20 mV/s, and held at 0.4 V for 300 s. The hold time during oxide formation was three hours, and complete reduction was achieved by approximately 100 s.

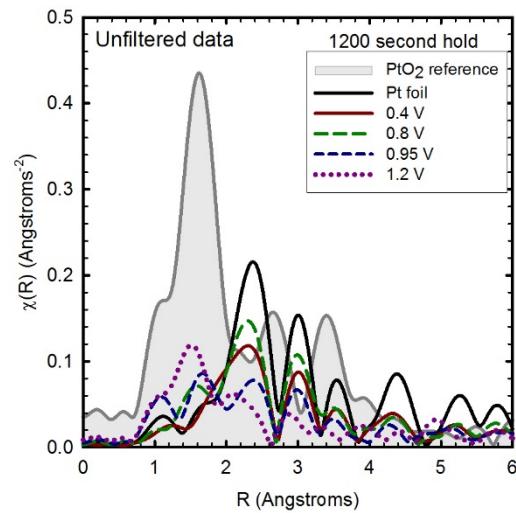


Figure S 3. Unfiltered EXAFS data at varying potential hold values, including 0.4 V to show that no oxide signal is observed.