Combination of Scanning Electron Microscopy in the Characterization of a Nanometer-Sized Electrode and Current Fluctuation Observed at a Nanometer-Sized Electrode

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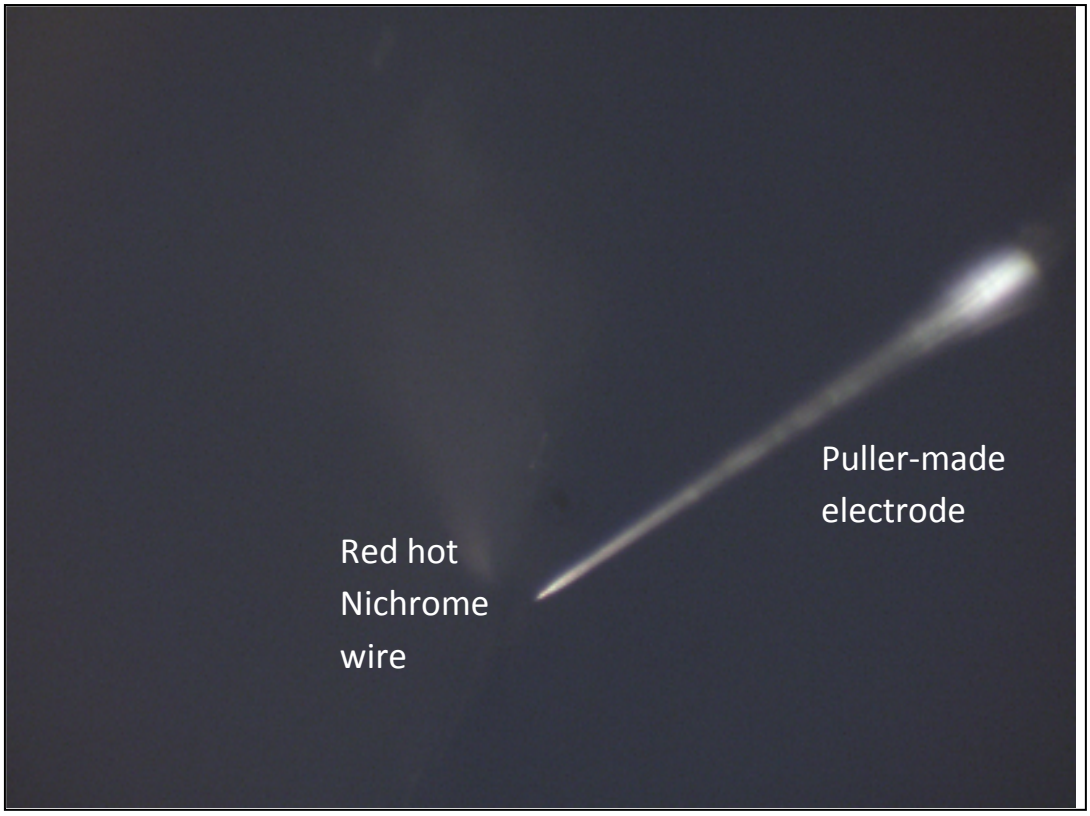


Figure S1: optical microscopy image of the setup used in local heating.

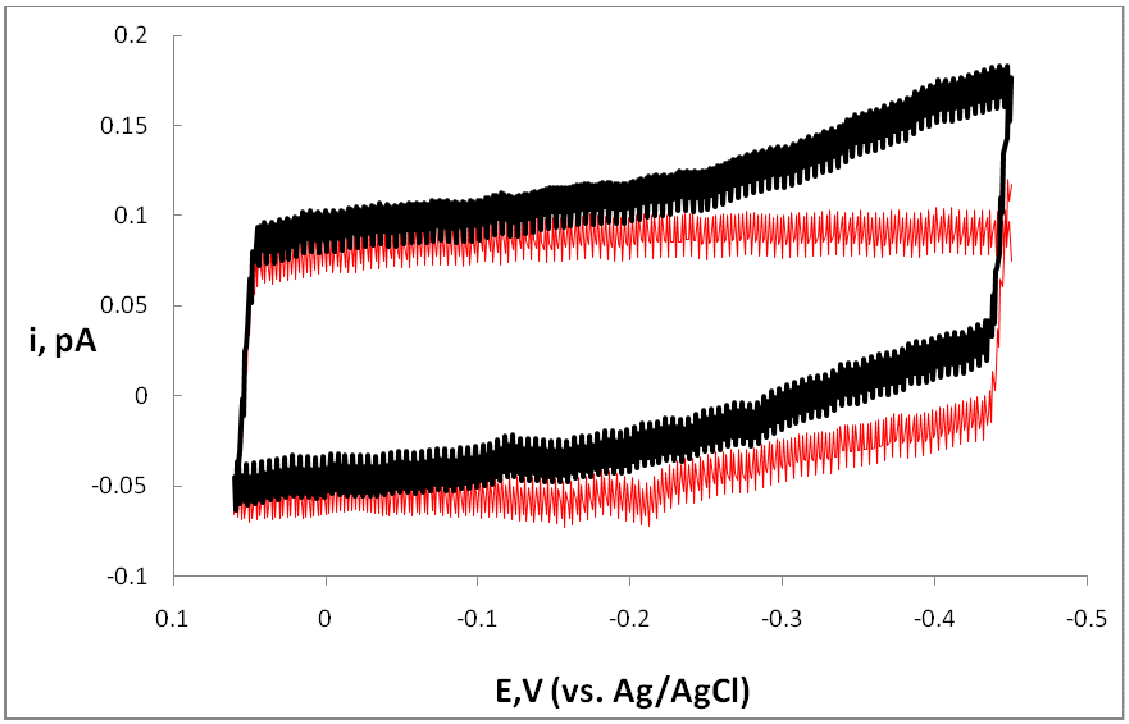


Figure S2: cyclic voltammograms obtained on a puller-made electrode after local heating in 10mM $Ru(NH_3)_6Cl_3$ and 0.02 HF/water (V/V) aqueous solution. The red and black curve was obtained before and after the Pt wire is just exposed. The scan rate is 300mV/s.

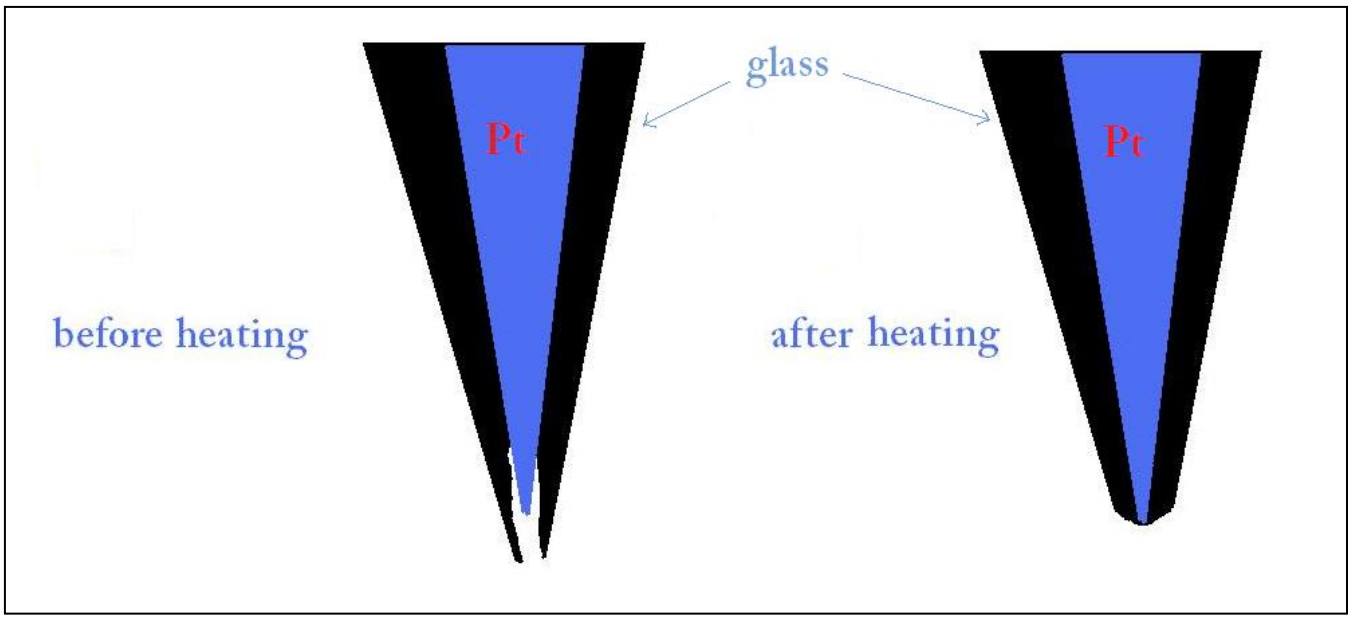


Figure s3: Schematic diagram of a puller made electrode before heating and after local heating.

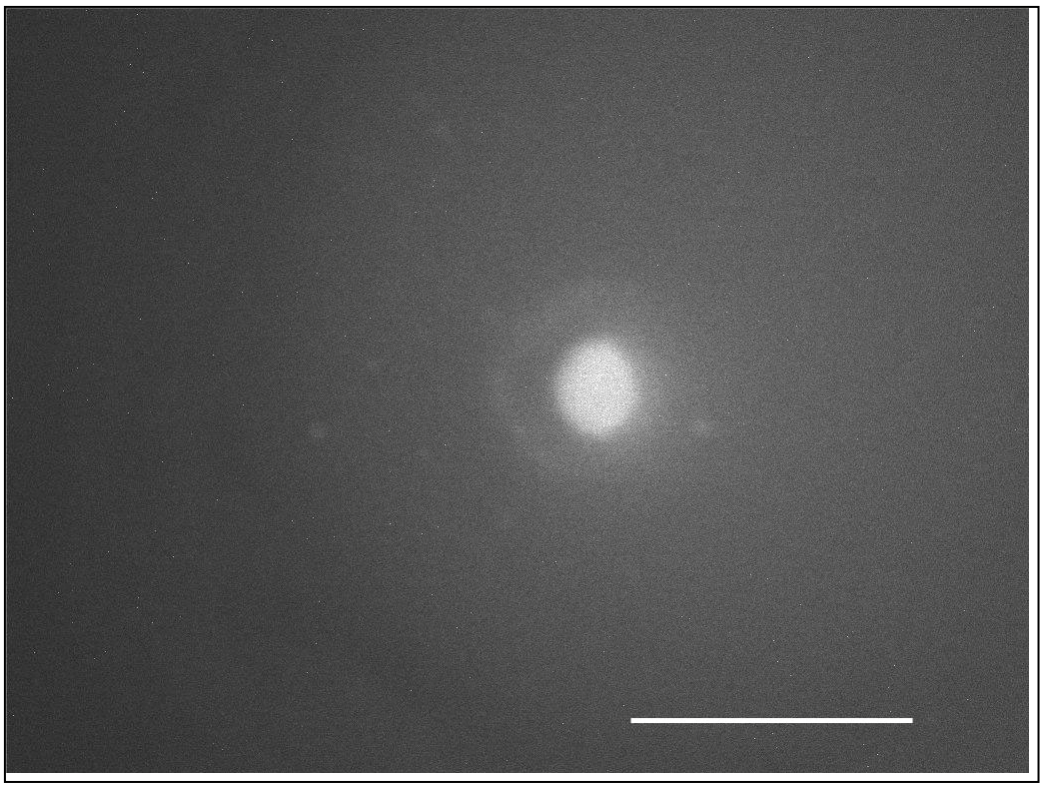
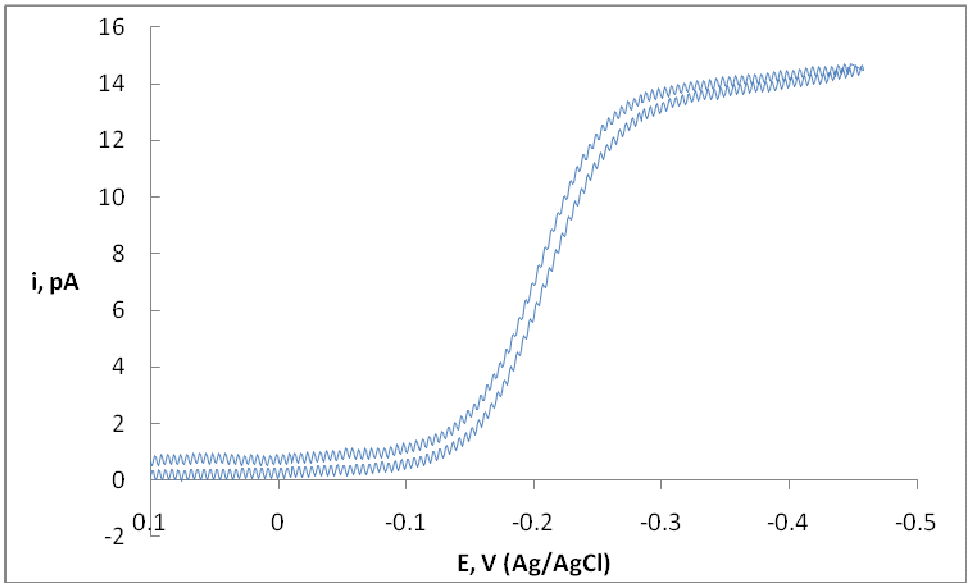


Figure s4A



Figures s4B

Figure s4: A) Scanning electron microscopy images of a 66.7±0.7nm in radius electrode. The scale bar in the picture is 500nm. B) Cyclic voltammograms obtained on the electrode in Figure s3A in 1mM $Ru(NH_3)_6Cl_3$ and 0.2M KNO_3 aqueous solution. The scan rate is 100mV/s. Its effective electrode radius calculated from equation 1 is 63.2±1.6nm.