Supplementary Material (ESI) for Faraday Discussions

The active site behaviour of electrochemically synthesised gold nanomaterials

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Electronic Supplementary Information

Supplementary Figures

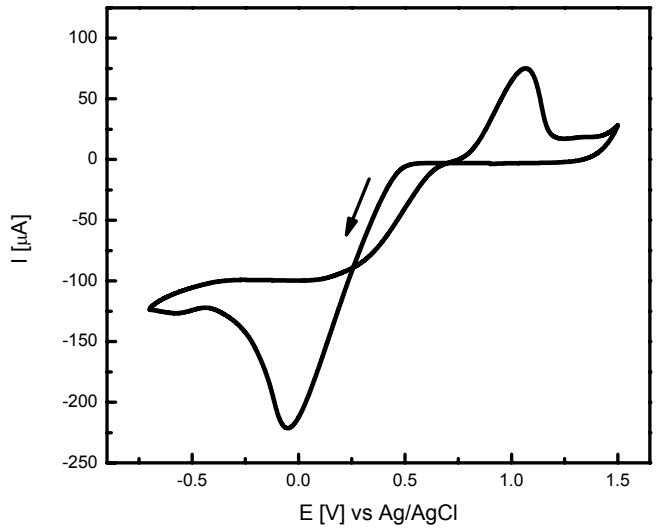

Figure S1: Cyclic voltammogram of Indium Tin Oxide substrate in 5 mM $KAuBr_4$, recorded at a sweep rate of 50 mV s^{-1}.

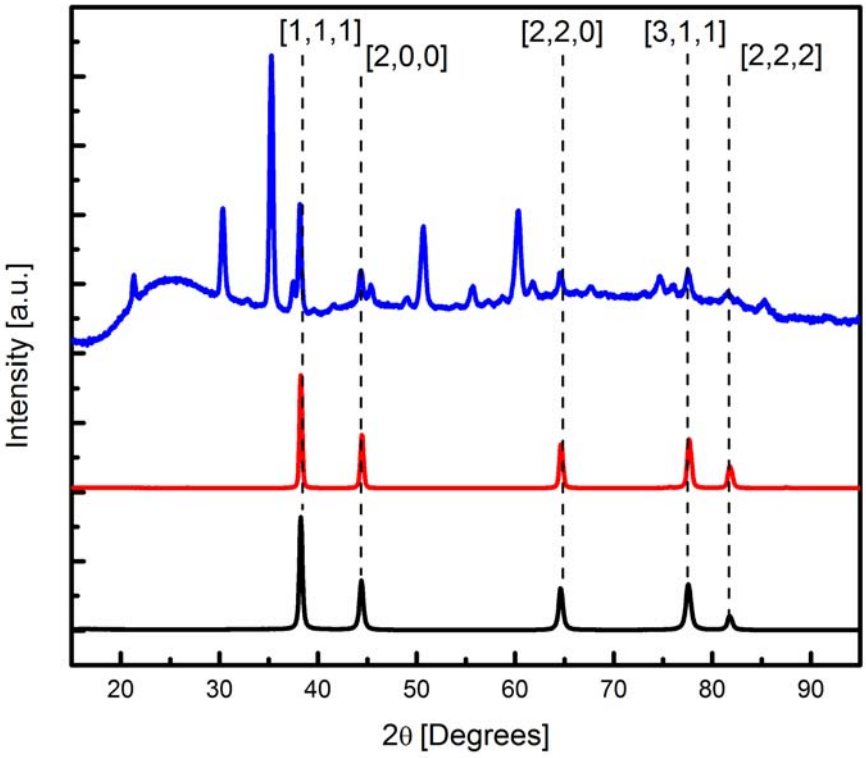

Figure S2: XRD patterns of a gold electrode (black), honeycomb gold (red) and anisotropic gold on ITO (blue) samples. The additionsl peaks for the anisotropic gold structures are due to the underlying ITO electrode.

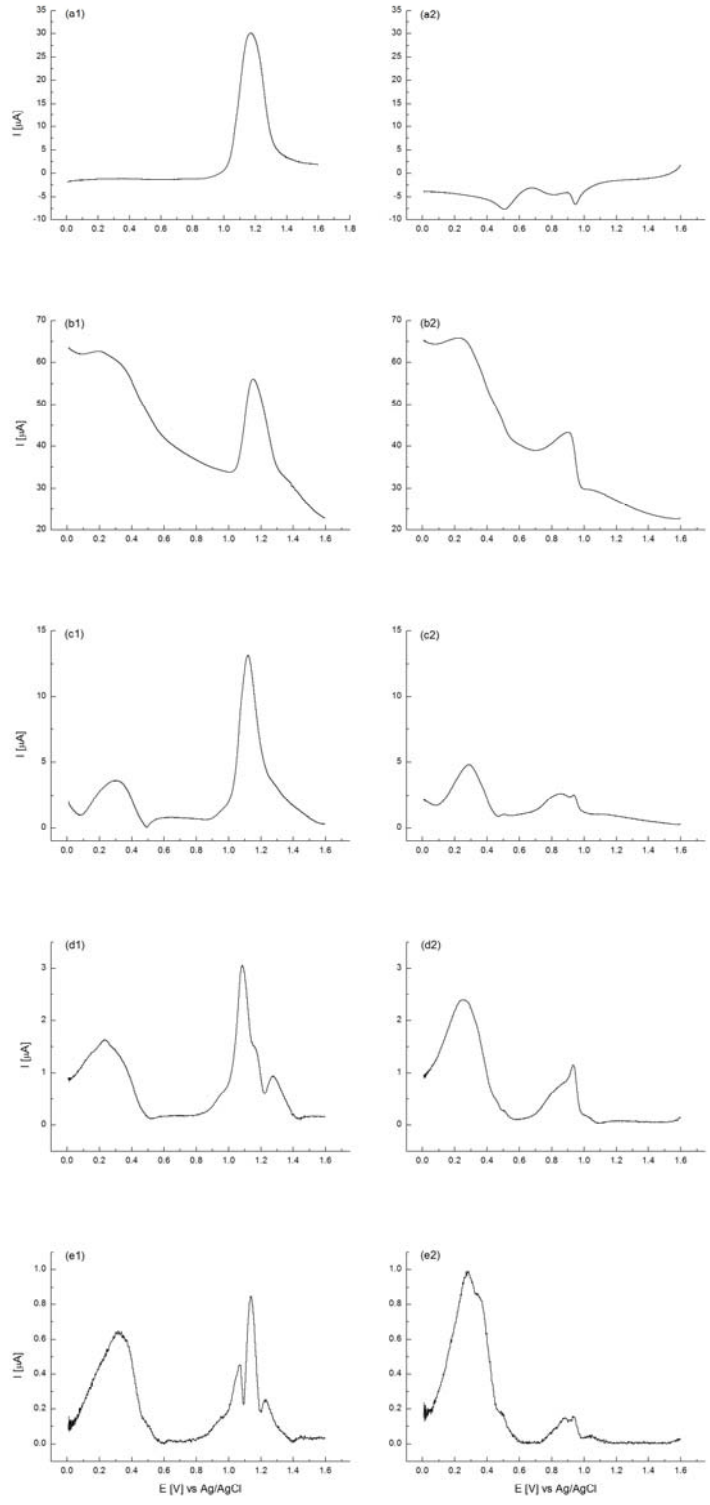

Figure S3: FT-ac voltammograms for anisotropic gold structures on ITO in 1 M H_2SO_4 obtained at a scan rate of 59.6 mV s^{-1}. For clarity the scans are separated into the forward and reverse components (1 and 2, respectively) for the DC scan (a), first harmonic (b), second harmonic (c), third harmonic (d) and fourth harmonic (e) ac responses.

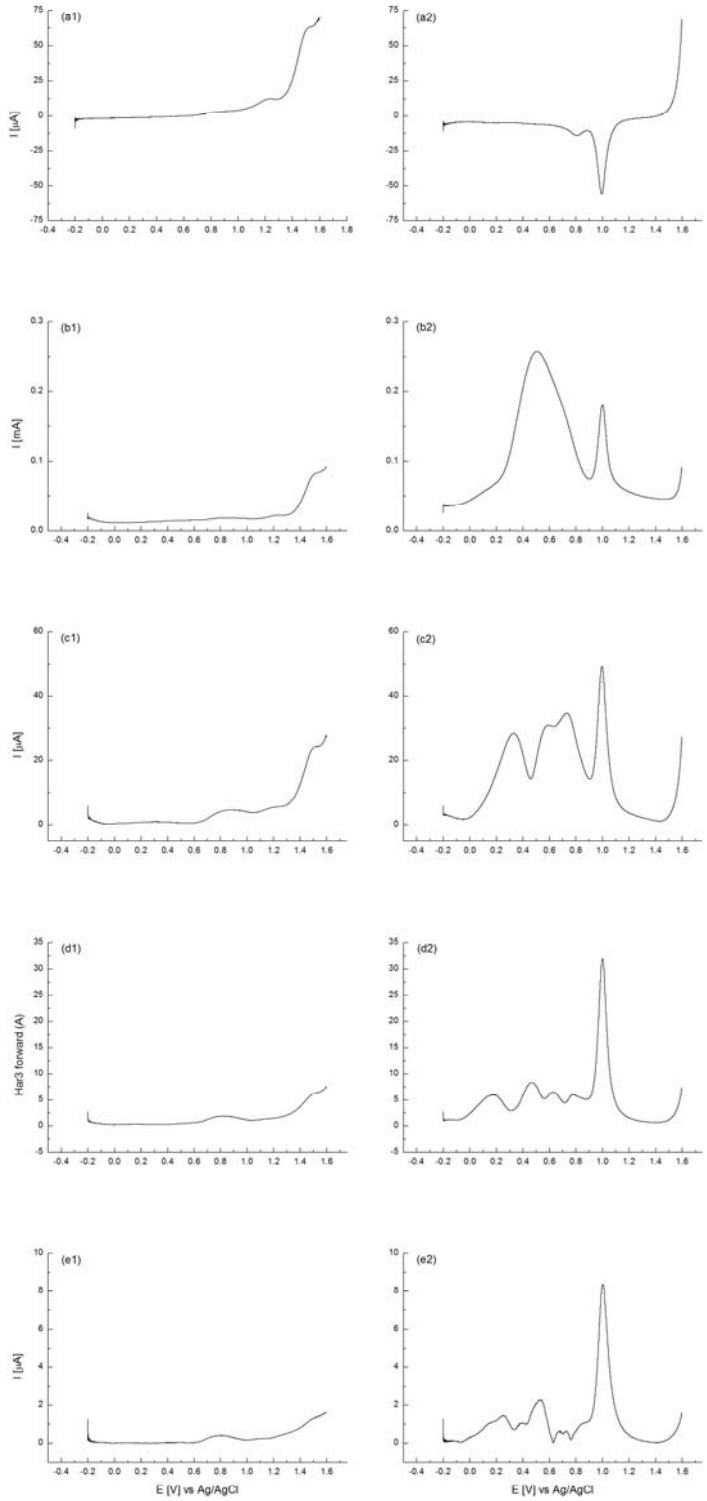

Figure S4: FT-ac voltammogram for evaporated gold in 1 M H_2SO_4 obtained at a scan rate of 67.1 mV s^{-1}. For clarity the scans are separated into the forward and reverse components (1 and 2, respectively) for the DC scan (a), first harmonic (b), second harmonic (c), third harmonic (d) and fourth harmonic (e) ac responses.

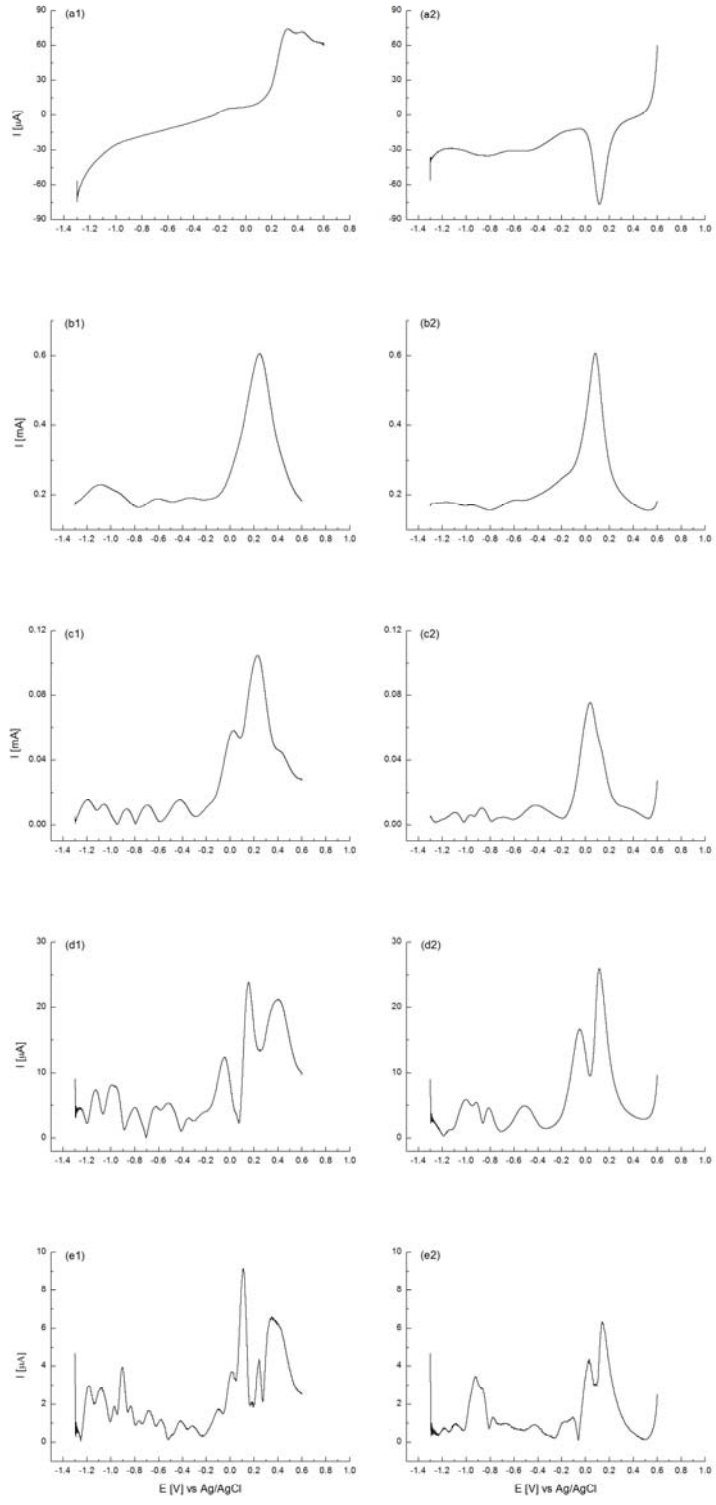

Figure S5: FT-ac voltammograms for evaporated gold in 1 M NaOH obtained at a scan rate of 70.8 mV s^{-1}. For clarity the scans are separated into the forward and reverse components (1 and 2, respectively) for the DC scan (a), first harmonic (b), second harmonic (c), third harmonic (d) and fourth harmonic (e) ac responses.

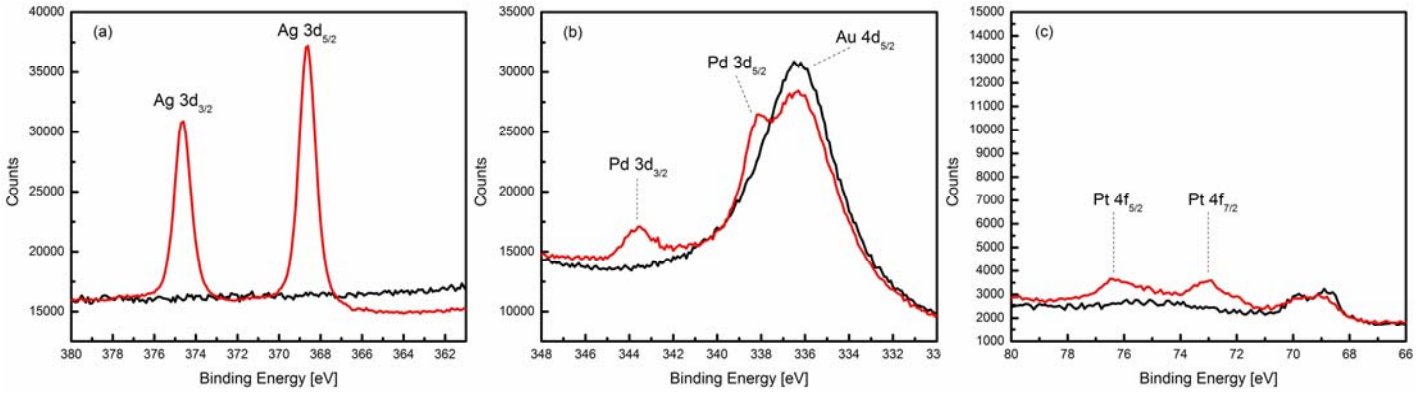

Figure S6: XPS spectra of porous gold after decoration with Ag (a), Pd (b) and Pt (c). Note that the data was aligned with the adventitious C 1s binding energy of 285 eV, after which peak assignments were made from the National Institute of Standards and Technology Database (NIST), found at http://srdata.nist.gov/xps

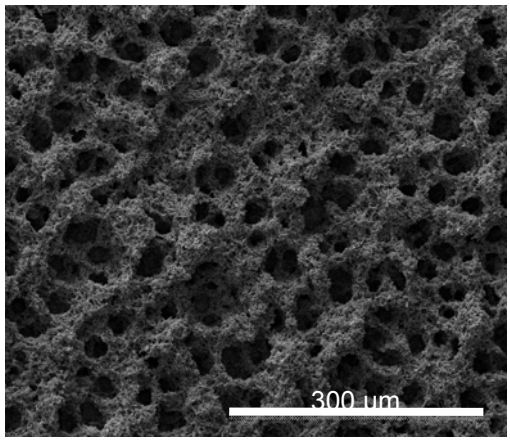

Figure S7: SEM image of porous gold after decoration with Ag.

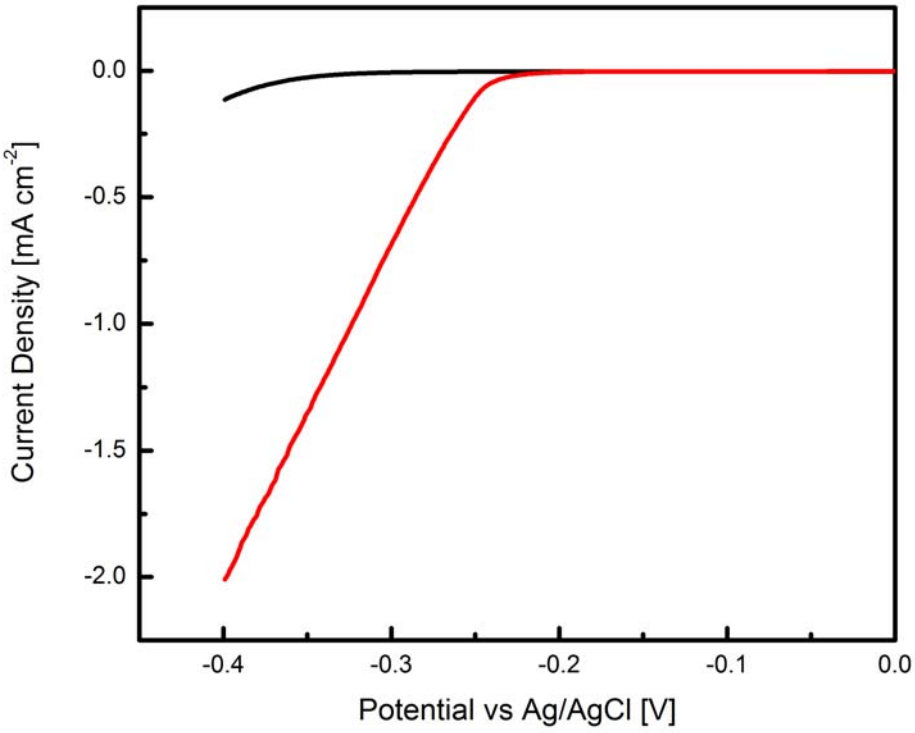

Figure S8: Linear sweep voltammogram of porous gold before (black) and after (red) Pt decoration in 1 M H_2SO_4, recorded at a sweep rate of 5 mV s^{-1}.

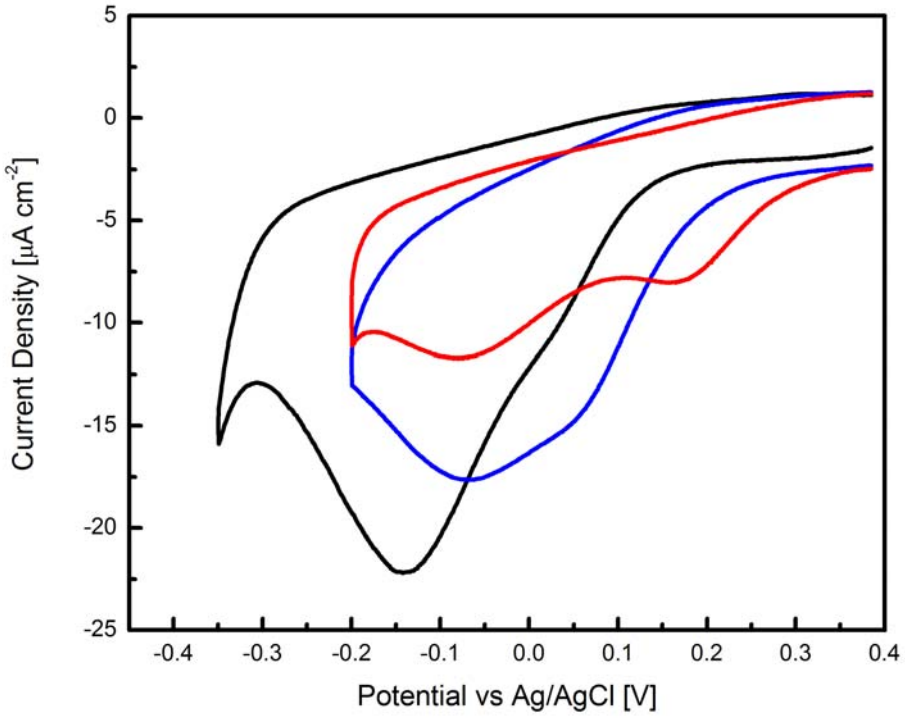

Figure S9: Cyclic voltammograms of porous gold before (black) and after Pd (blue) and Pt (red) decoration in oxygen saturated 1 M H_2SO_4, recorded at a sweep rate of 50 mV s^{-1}.