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Supporting Information

Copper nanostructures modified laser scribed electrodes based on graphitic carbon for electrochemical detection of dopamine and glucose

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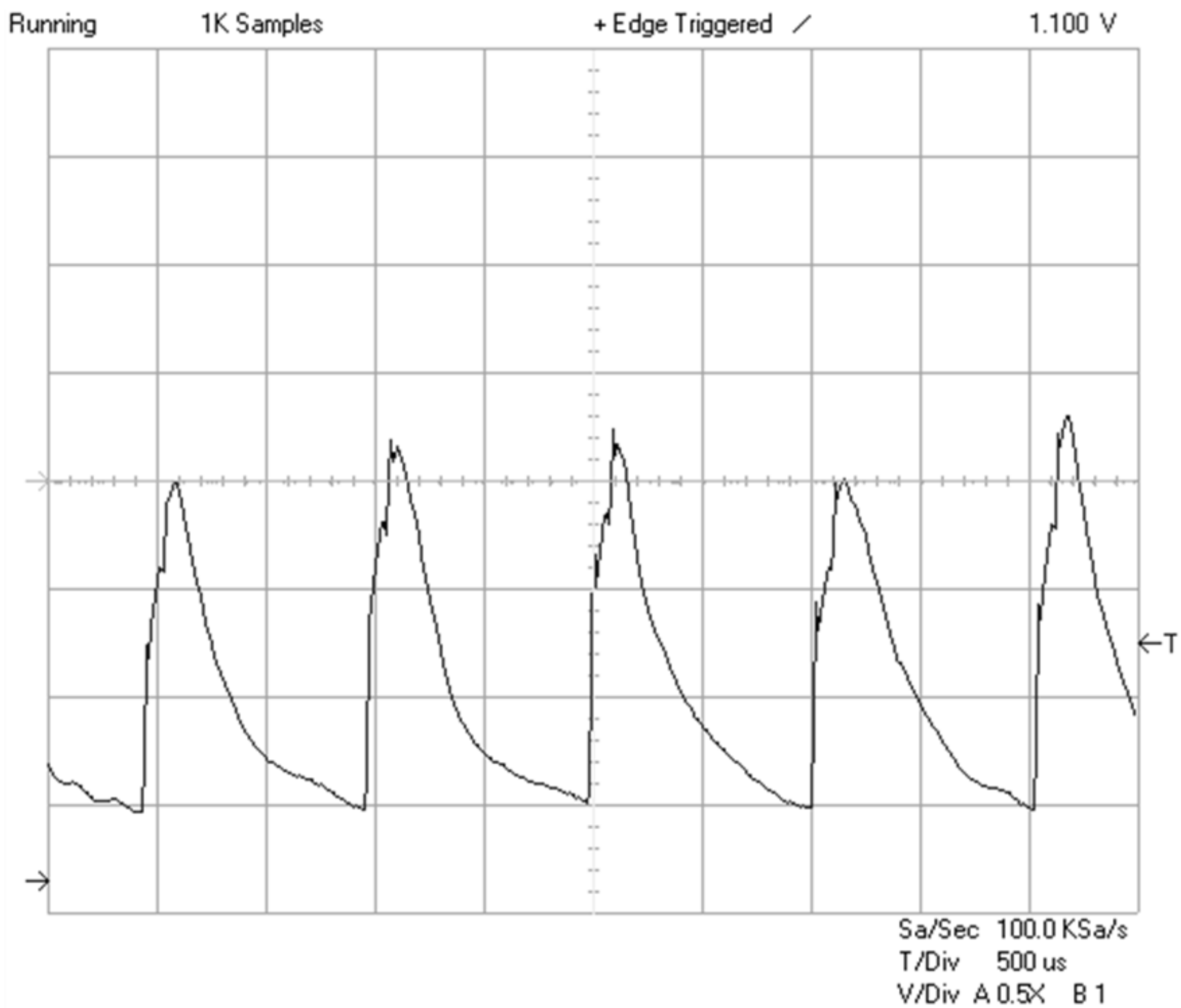

Figure S1. An optical power of the 405nm 0.5W CW laser modulated at 1kHz. The trace was recorded with a silicon photodetector and oscilloscope.

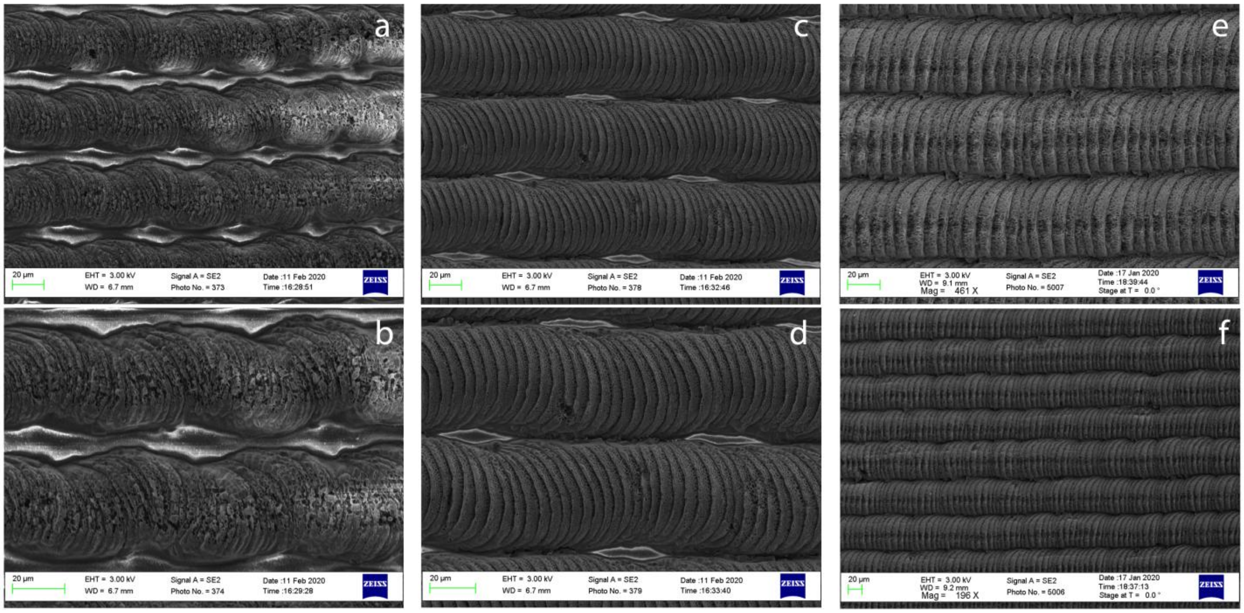

Figure S2. LSE fabrication optimization. (a,b), (c,d) and (e,f) were fabricated at a different duty cycle (i.e. intensity) of the laser: 0.4%, 0.8% and 3%. At the lowest exposure intensity the tracks are not merged, resulting in poor performance of the electrodes. 3% duty cycle was found to be optimal as the tracks were merged and the graphitic carbon layer preserved good quality. Further increase in power resulted in the overexposure and thus degradation of the scribed layer.

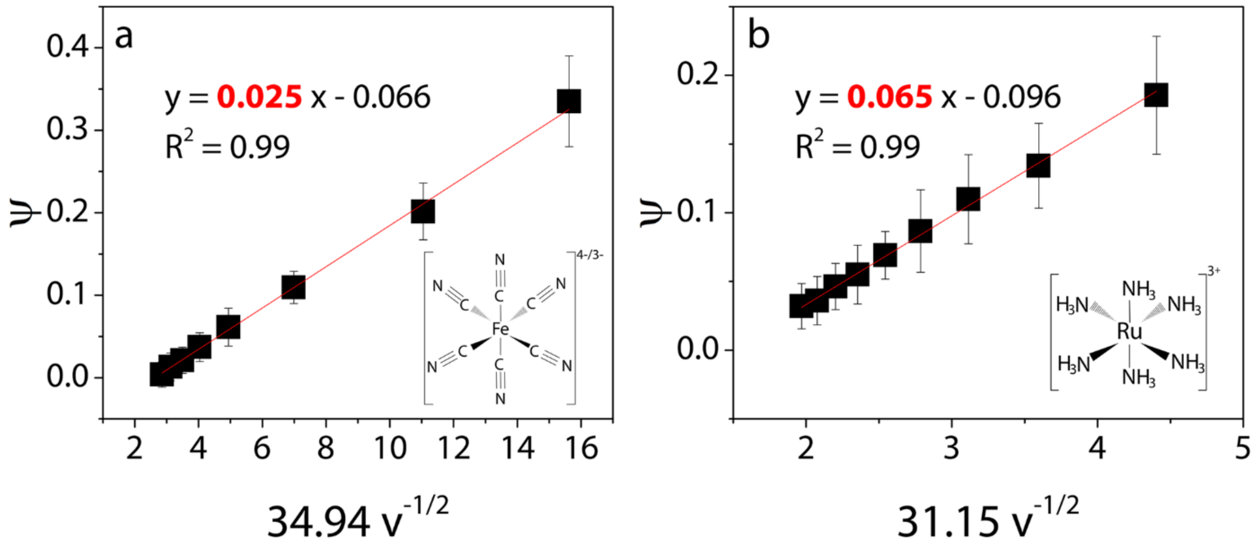

Figure S3. Plots of (a) Ψ vs. 34.94 $v^{-1/2}$ for 5 mM $[Fe(CN)_6]^{4-/3-}$ and (b) Ψ vs. 31.15 $v^{-1/2}$ for 5 mM $[Ru(NH3)_6]^{3+}$ solutions containing 0.1M KCl, 0.01M PBS (pH 7.4). The factors of 34.94 and 31.15 were calculated from the equation $[\pi DnF/(RT)]^{-1/2}$.

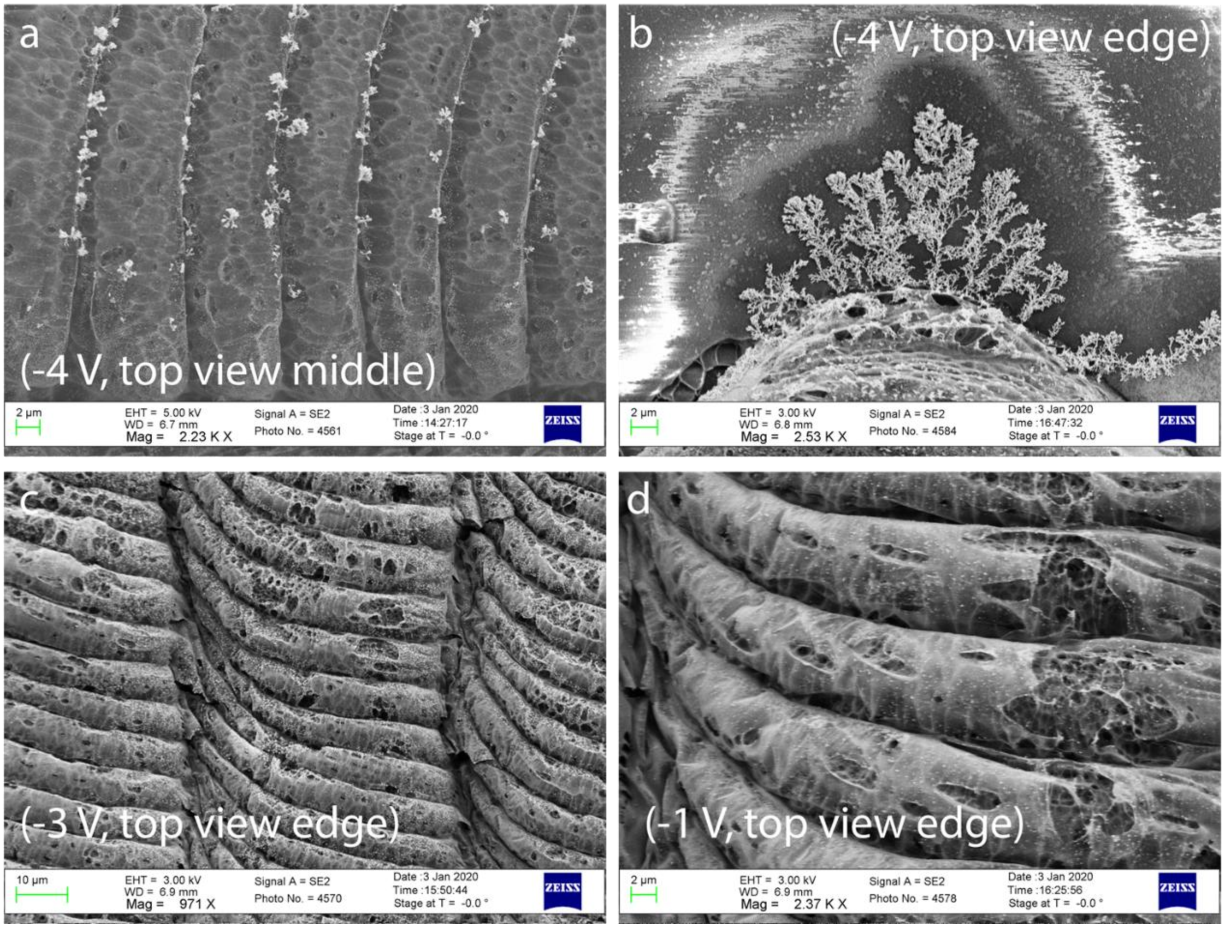

Figure S4. SEM images of LSE-Cu electrodes prepared at -4 V (a and b), - 3 V (c) and -1 V (d)