

# ***Electronic Supplementary Material for:***

## **3D printing of compact electrochemical cell for sequential analysis of steroid hormones**

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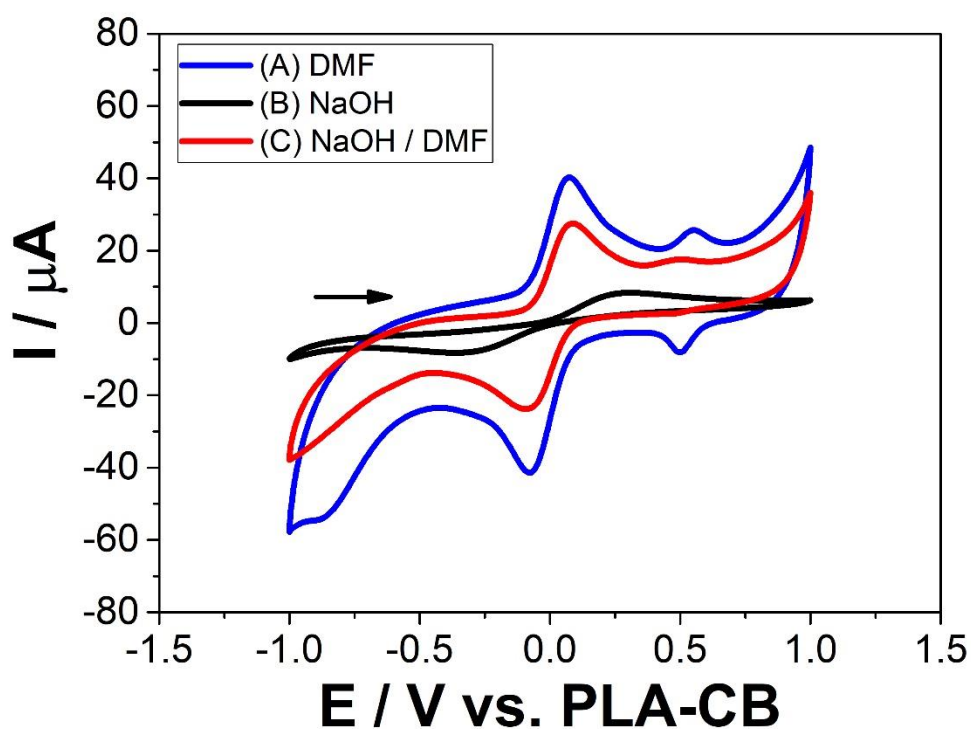
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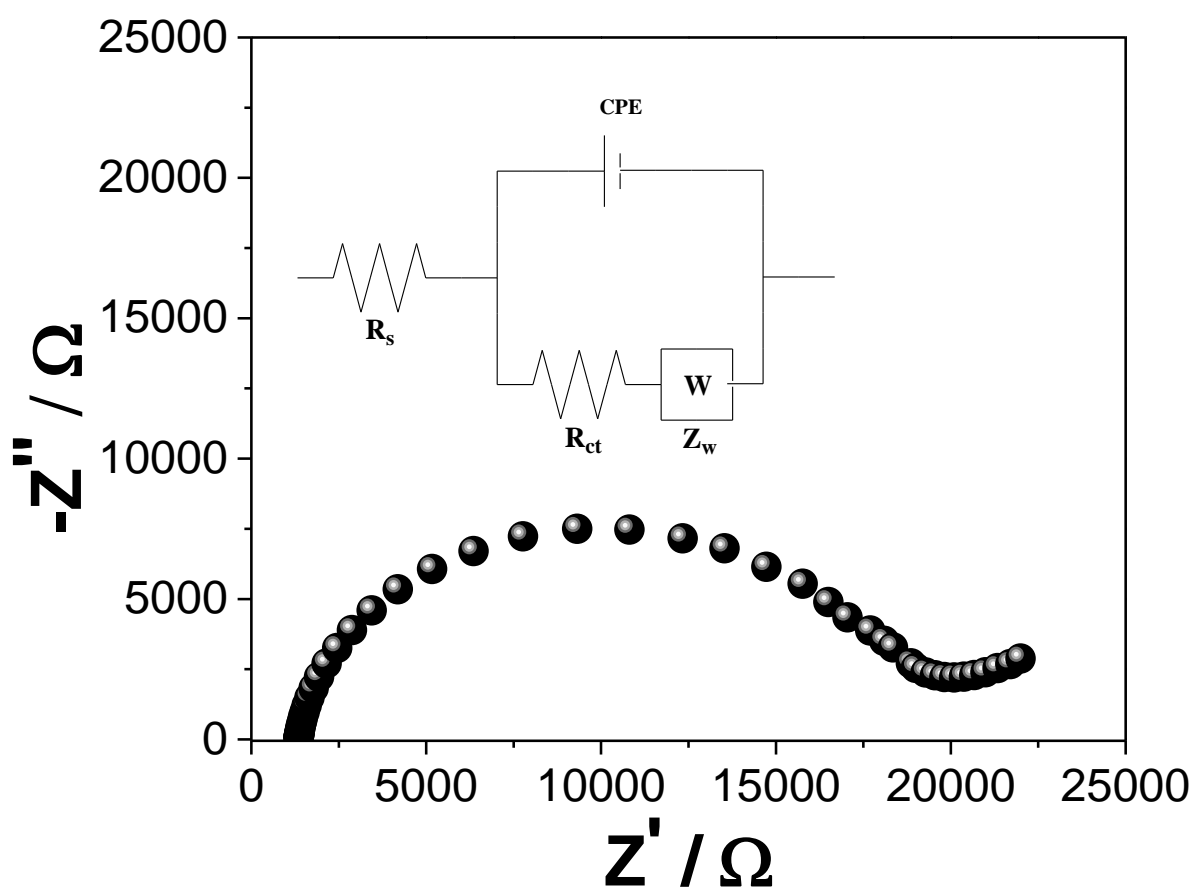
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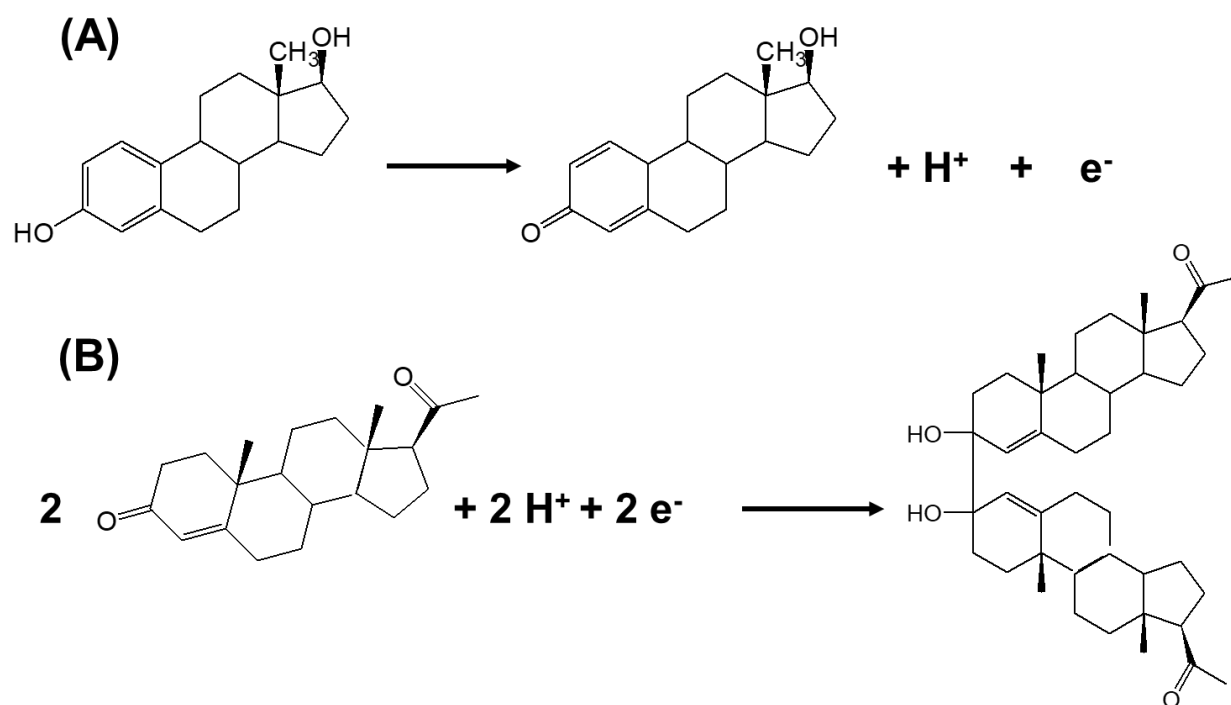
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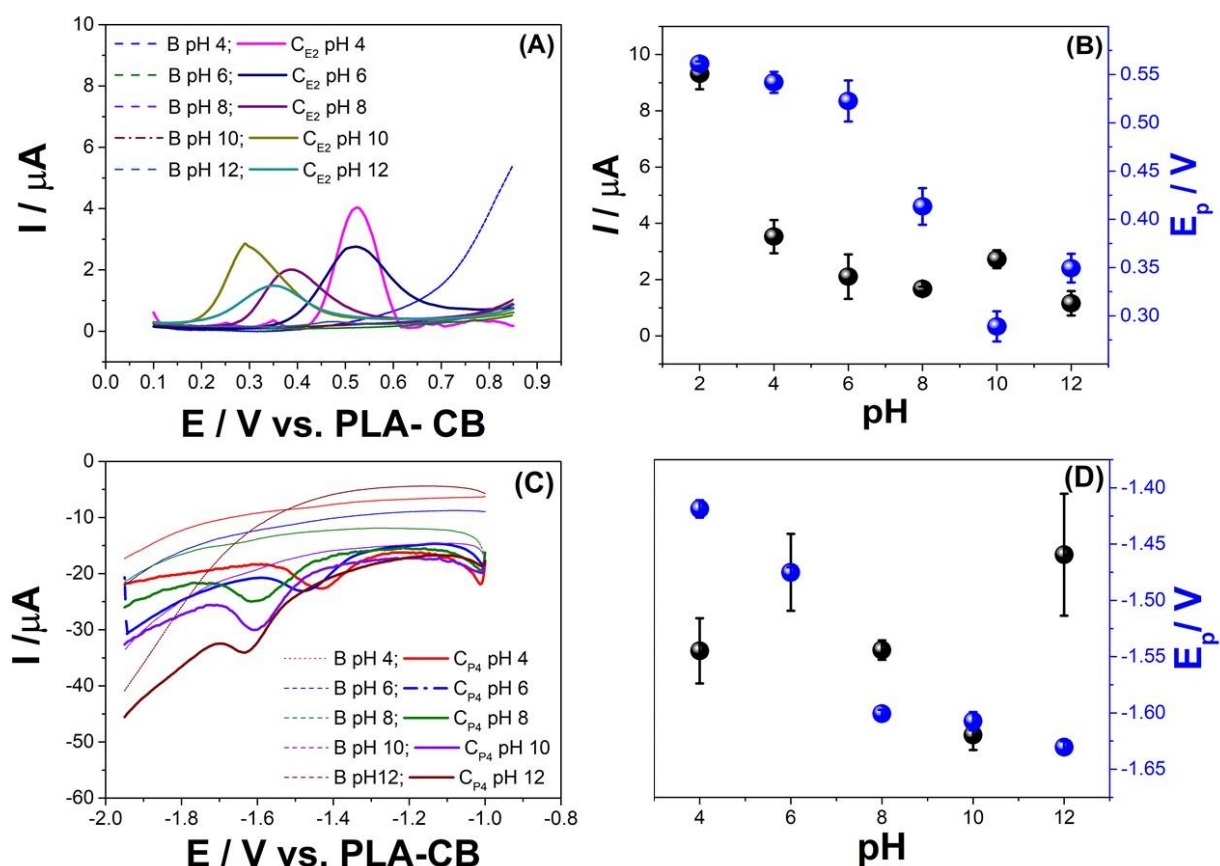
**Figure S1.** Cyclic voltammograms for different types of electrochemical cell activation. (A) Chemical treatment in DMF for 170 s (blue curve); (B) Applying 1.4 V for 200 s and -1.0 V for 200 s in 0.5 mol L<sup>-1</sup> NaOH using amperometry (black curve); (C) Chemical treatment in DMF for 170 s and applying 1.4 V for 200 s and -1.0 V for 200 s in 0.5 mol L<sup>-1</sup> NaOH using amperometry (red curve); Technique parameters: scan speed: 50 mVs<sup>-1</sup>; Step 2mV; potential window -1.0 to 1.0V.



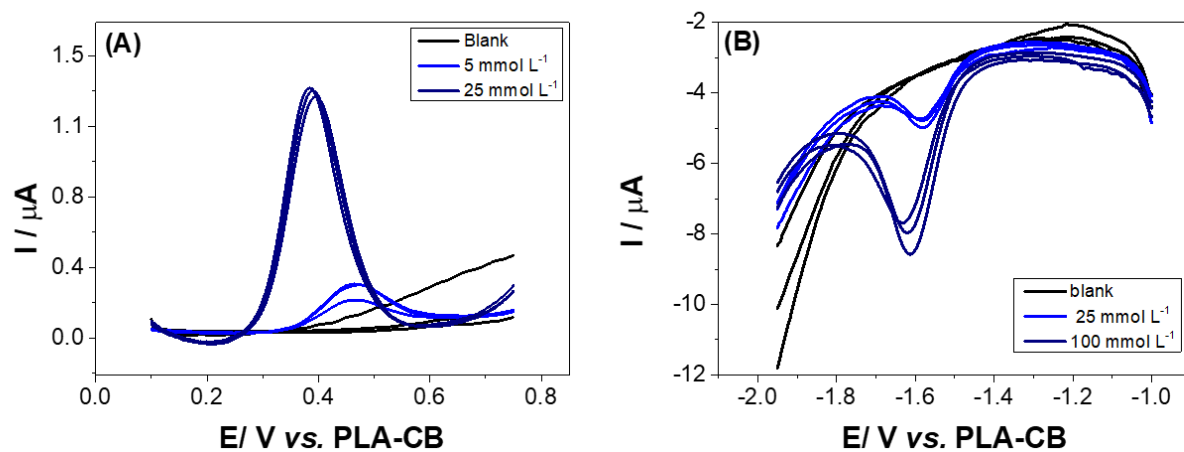
**Figure S2.** Diagrams of Nyquist recorded using an activated 3D-printed electrode with DMF (2.5 minutes) and NaOH (electrochemistry treatment) and the respective equivalent circuit.



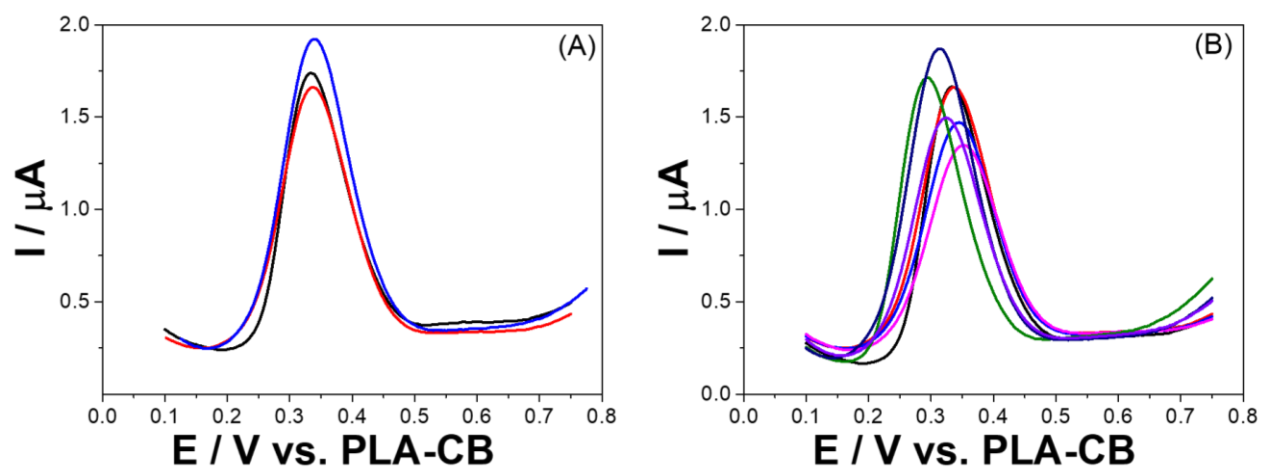
**Figure S3.** Electrochemical mechanism of (A) E2 oxidation and (B) P4 reduction.



**Figure S4.** DPV voltammograms for 3D printed electrodes activated in  $0.1 \text{ mol L}^{-1}$  Britton-Robinson buffer solution containing  $50 \text{ } \mu\text{mol L}^{-1}$  E2 (A) and P4 (C) at  $10 \text{ mV s}^{-1}$  and different pH values.  $E_p$  vs pH and  $I_p$  vs pH plots for all anodic processes of E2 (B) and all cathodic processes of P4 (D). Dotted and continuous lines represent measurements in the absence of the hormones and presence of  $50 \text{ } \mu\text{mol L}^{-1}$  E2 and P4.



**Figure S5.** DPV voltammograms for (A) E2 and (B) P4 in simulated urine samples.



**Figure S6.** Repeatability (A) and Reproducibility (B) for 3D printed electrodes activated.