Electronic Supplementary Material (ESI) for RSC Advances.

A nanostructured label-free platform based on an ultrathin film for ultrasensitive detection of a secosteroid hormone

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Supplementary information

Scheme S1 – Schematic representation of the detailed synthesis procedure.

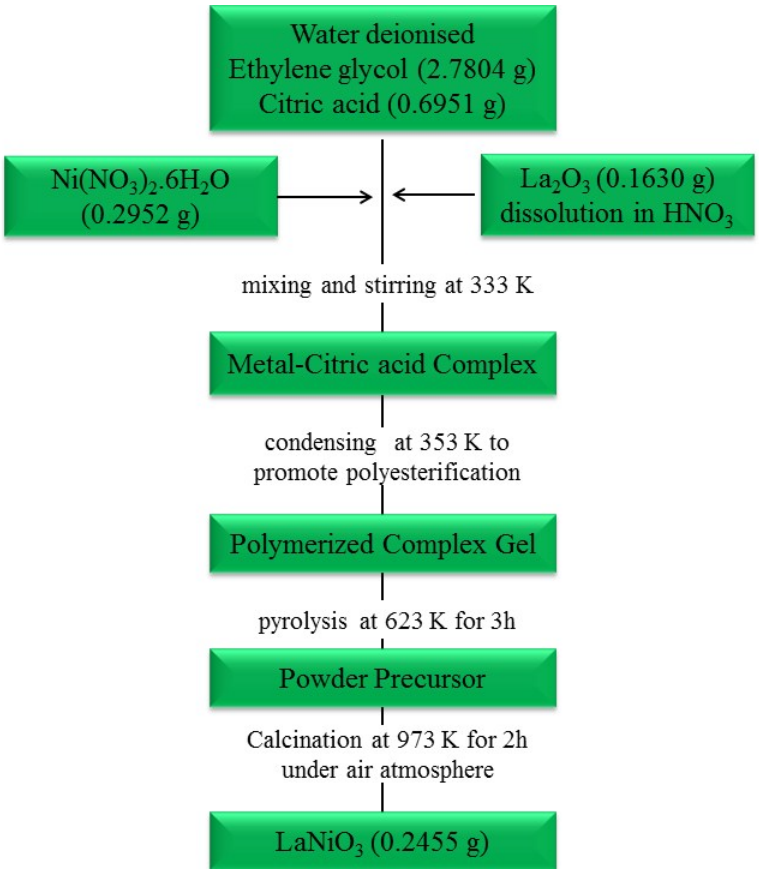


Table S1 – *R* factors and *G.O.F* obtained by mean of Rietveld refinement for the LN sample.

R_p (%)	R_{wp} (%)	R_{exp} (%)	R_{bragg} (%)	*G.O.F*[a]
9.14	12.10	7.15	5.68	1.69

[a]*G.O.F* is the goodness of fit.

Table S2 – Summary of the XPS binding energy values (eV) obtained for LN-NO.

La3d$_{5/2}$	**Ni3p**	**O1s**	**C1s**
833.2	71.6	532.8	284.6
835.1	68.5	531.1	286.6
837.1	66.4	528.7	
838.6			

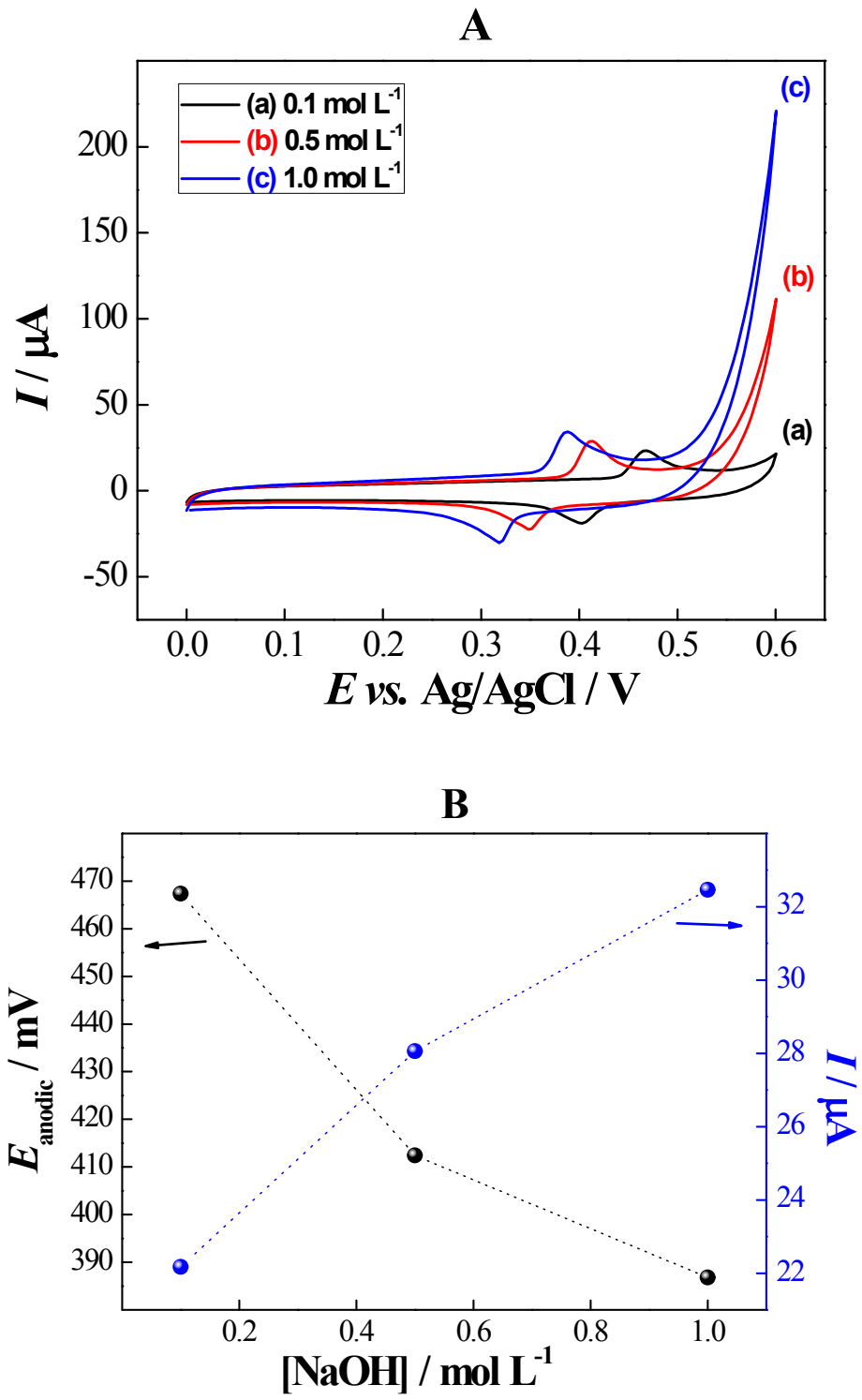


Figure S1 (A) – Cyclic voltammograms of modified electrodes with nanoxide in 0.1 **(a)**, 0.5 **(b)** and 1.0 mol L^{-1} **(c)** NaOH solution. The 150º cyclic voltammograms obtained at 50 mV s^{-1} are shown. **(B)** – Dependence of the anodic peak currents and potentials vs NaOH concentration.

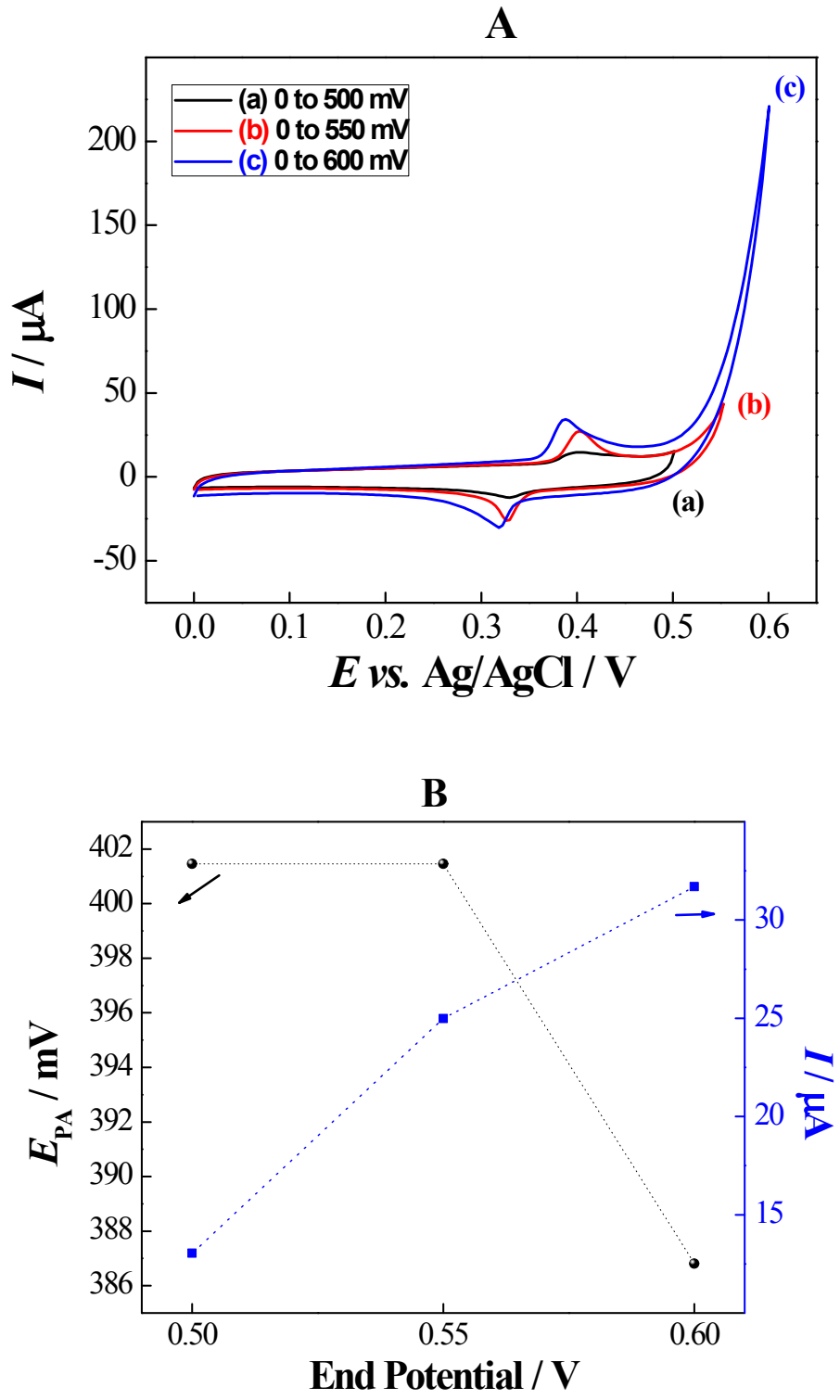


Figure S2 A – Cyclic voltammograms of modified electrodes with nanoxide in 1.0 mol L^{-1} NaOH solution. The 150º cyclic voltammograms obtained at 50 mV s^{-1} and in the

potential range between 0 and 500 **(a)**, 550 **(b)** and 600 **(c)** mV are shown, respectively.

(B) – Dependence of the anodic peak currents and potentials vs potential range.

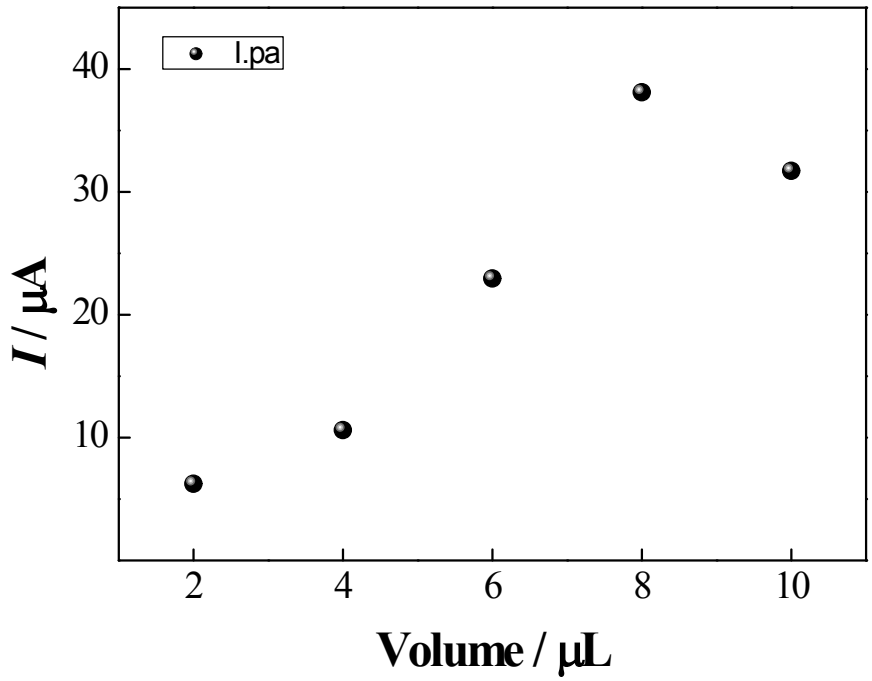
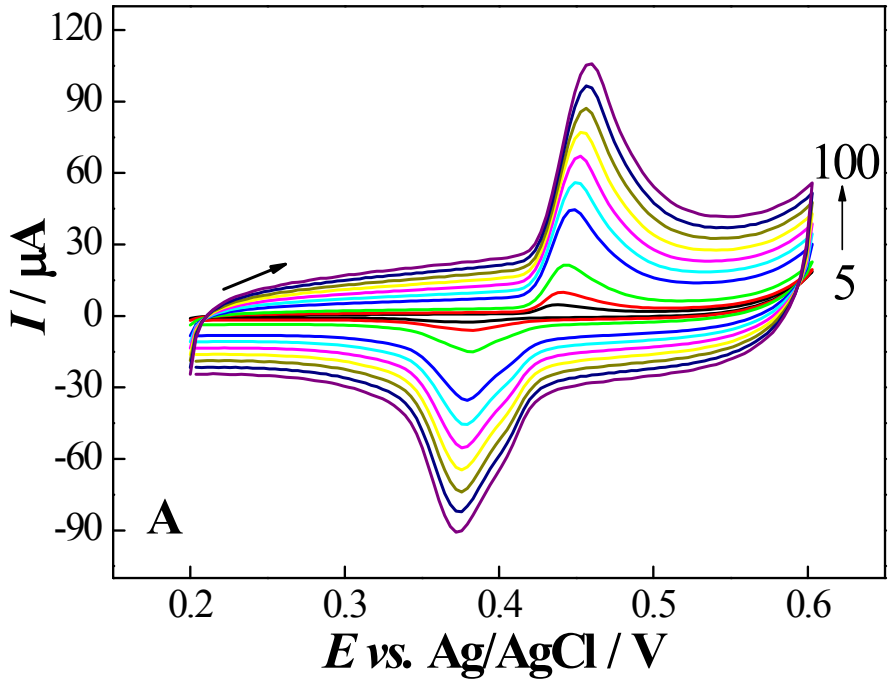
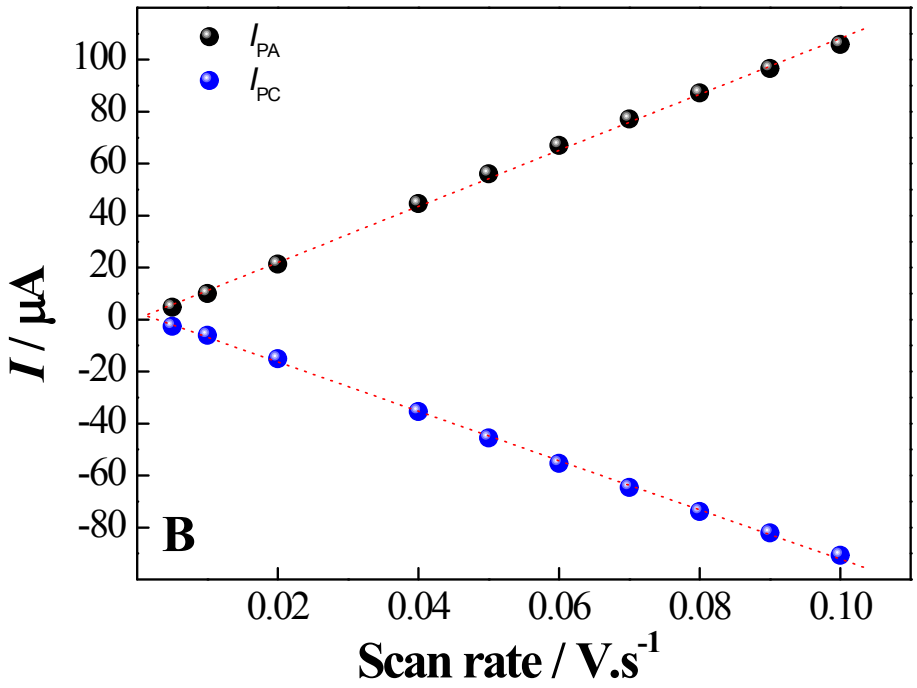


Figure S3 – Dependence of the anodic peak currents I_{PA} at modified electrodes with $LaNiO_3$-nanoxide versus suspension volume.


120
90
60
30
0
-30
-60
-90
I / μA
100
5
A
0.2
0.3
0.4
0.5
0.6
E vs. Ag/AgCl / V


100
80
60
40
20
0
-20
-40
-60
-80
I / μA
I_PA
I_PC
B
0.02
0.04
0.06
0.08
0.10
Scan rate / V.s-1

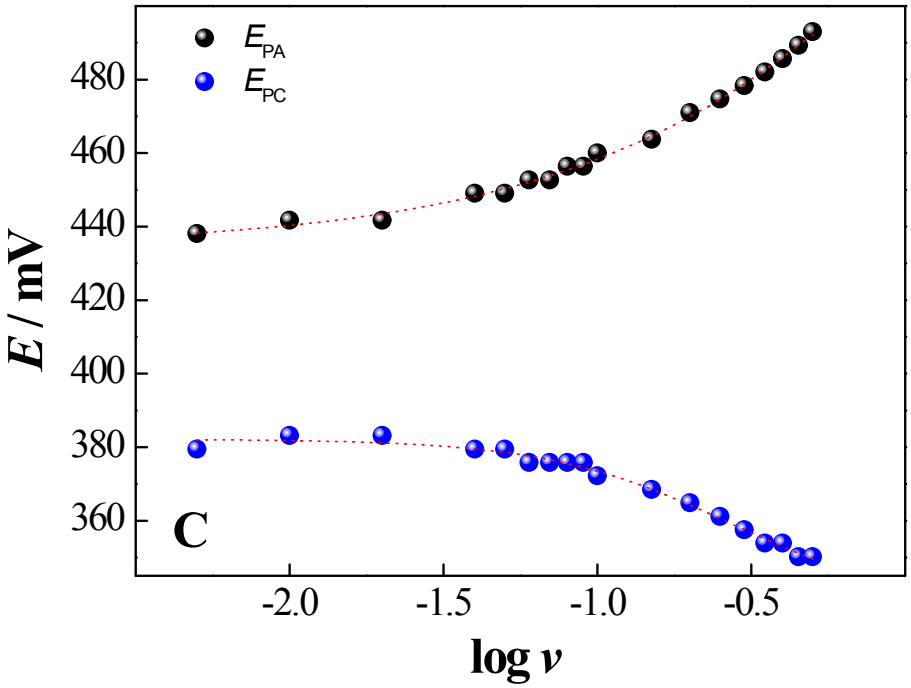


Figure S4 (A) – Cyclic voltammograms of $LaNiO_3NO$/GCE in 1.0 M NaOH solution. Scan rates: 5, 10, 20, 40, 50, 60, 70, 80, 90 and 100 mV s^{-1}. **(B) –** Dependence of the anodic and cathodic peak currents on the scan rate. **(C) –** Dependence of peak potential with logarithm of the scan rate for the modified electrode with nanoxide in 1.0 mol L^{-1} NaOH solution.

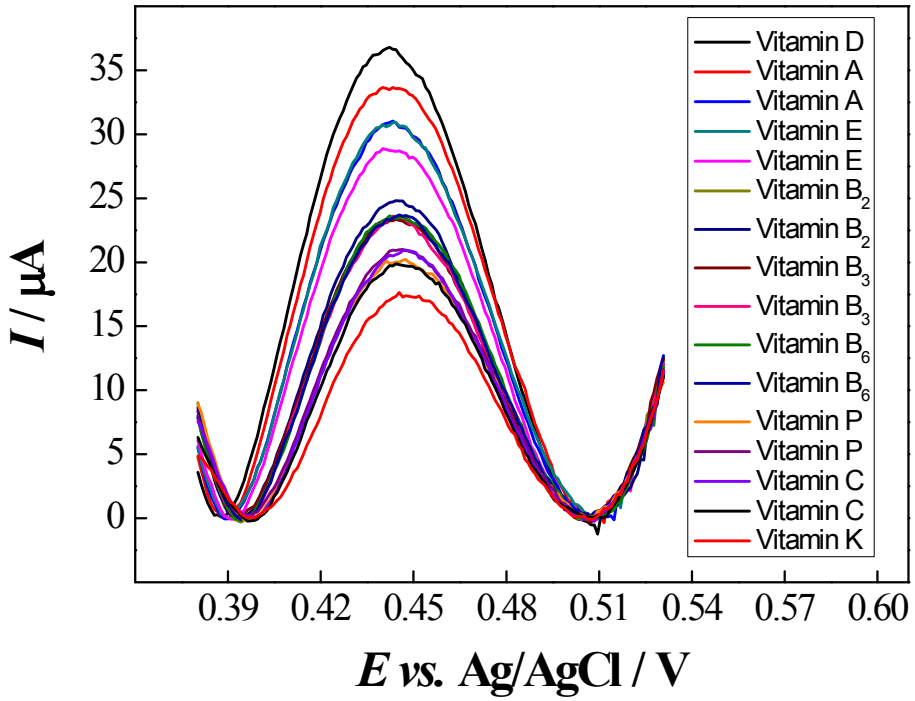


Figure S5 – Square wave voltammograms of the interference from Vitamins A, E, B_2, B_3, B_6, C, P and K at 3.2 and 6.4 × 10^{-6}, 4.9 and 9.8 × 10^{-7}, 0.92 and 1.8 × 10^{-6}, 5.2 and 10.0 × 10^{-6}, 1.3 and 2.6 × 10^{-6}, 1.1 and 2.2 × 10^{-6}, 2.3 and 4.7 × 10^{-6}, 8.6 × 10^{-5} mol L^{-1} of Vitamins A, E, B_2, B_3, B_6, C, P and K, respectively, in the presence of vitamin D at a concentration of 1.5 × 10^{-5} mol L^{-1}.