

**SUPPLEMENTARY MATERIAL FOR THE PAPER**

**Electrochemical sensing platform based on carbon black and chitosan-stabilized  
platinum nanoparticles**

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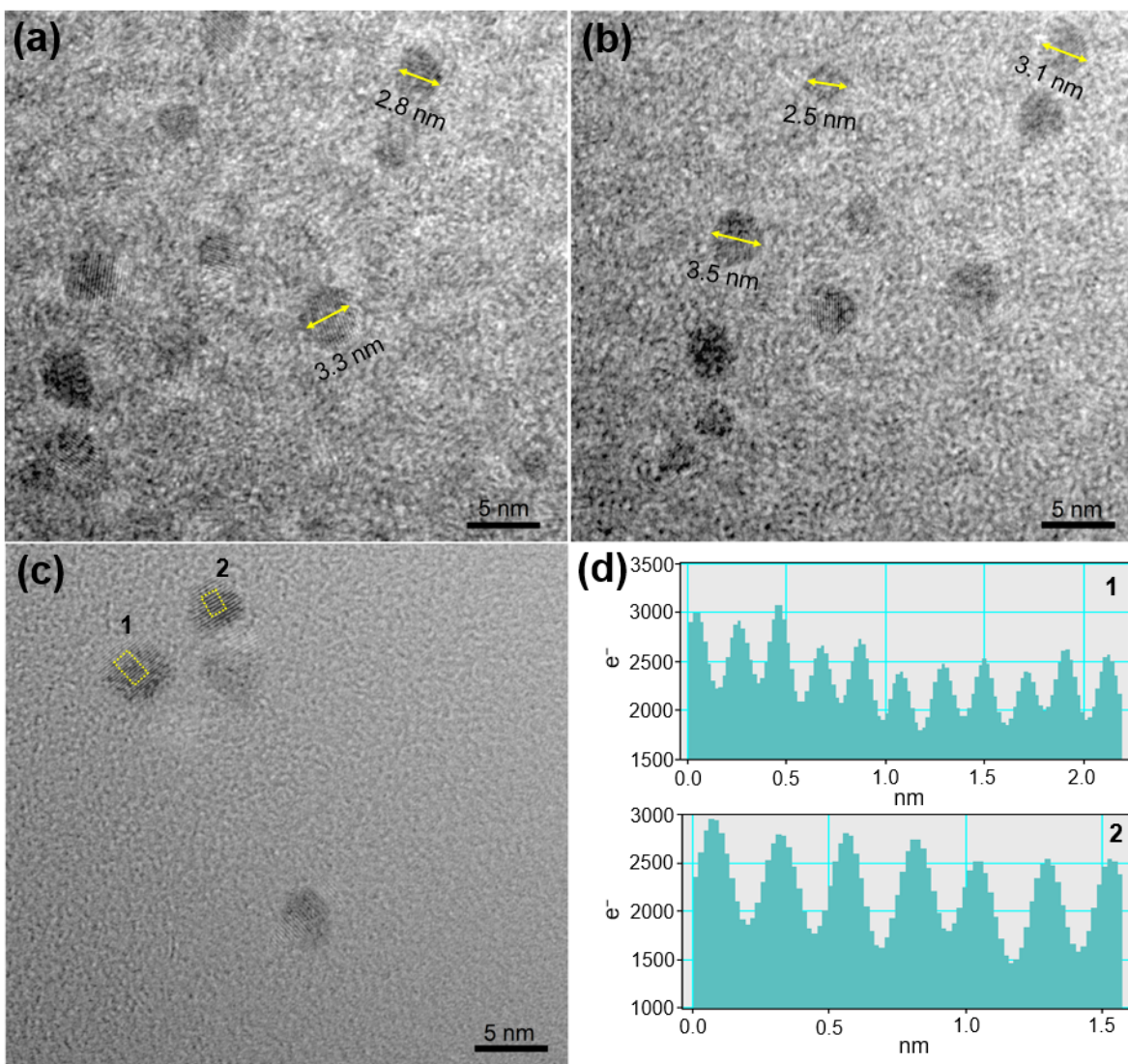
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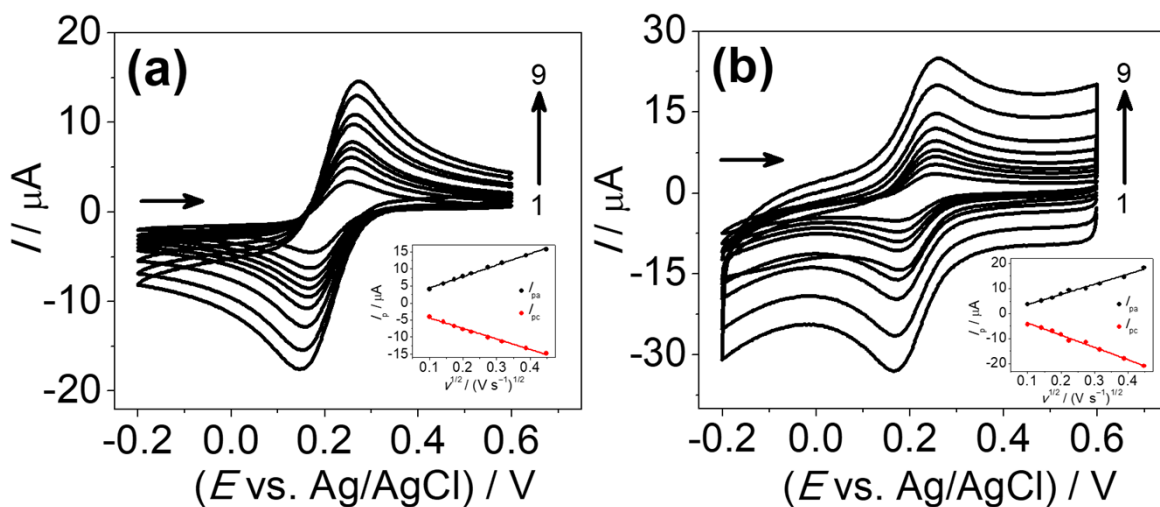
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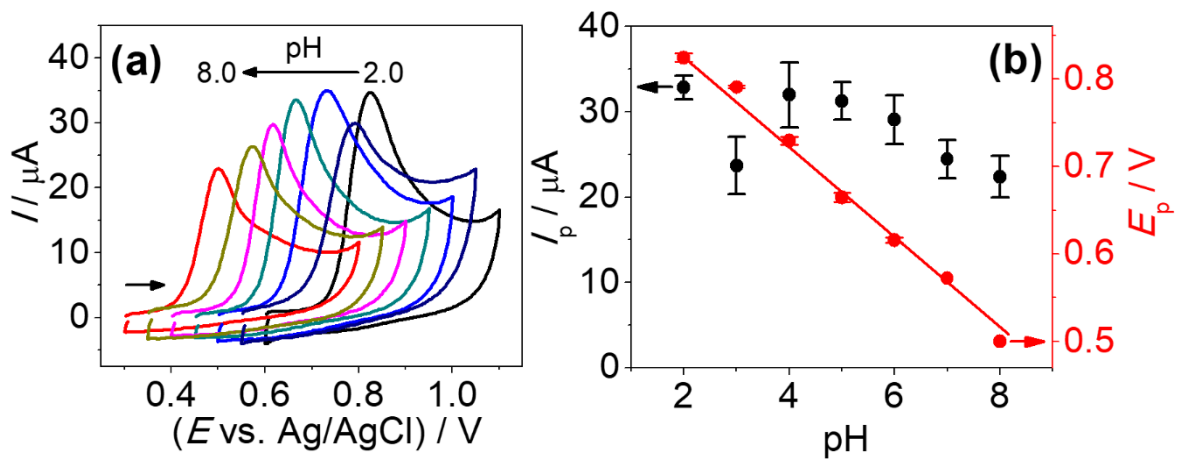
E-mail address: [tiago.a.silva@ufv.br](mailto:tiago.a.silva@ufv.br)



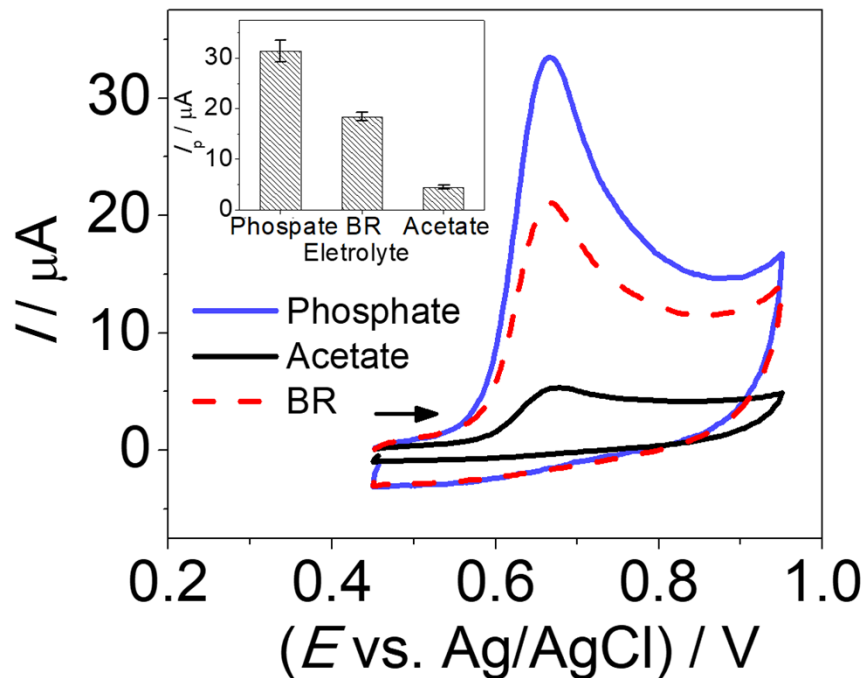
**Figure S1.** (a-c) HR-TEM images obtained for Ch-PtNPs. (d) Profile of planes spacing of Ch-PtNPs 1 and 2 marked in (c).



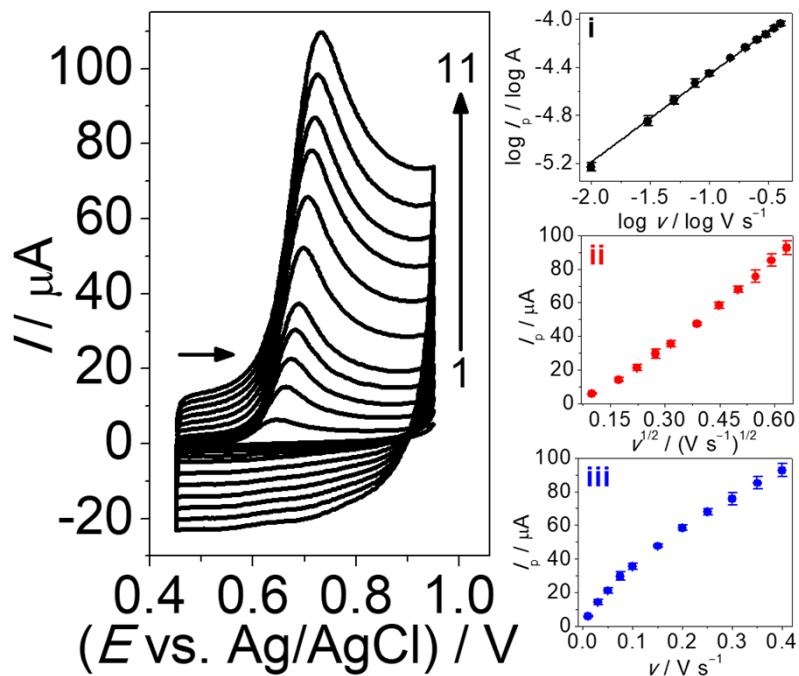
**Figure S2.** Cyclic voltammograms recorded using (a) GCE and (b) CB-Ch-PtNPs/GCE for  $1.0 \times 10^{-3} \text{ mol L}^{-1} \text{ K}_3\text{Fe}(\text{CN})_6$  in  $0.1 \text{ mol L}^{-1} \text{ KCl}$  solution at different potential scan rates ( $\nu$ ): (1) 10, (2) 20, (3) 30, (4) 40, (5) 50, (6) 75, (7) 100, (8) 150 and (9) 200  $\text{mV s}^{-1}$ . Insets: Graphics of  $I_{pa}$  vs.  $\nu^{1/2}$  and  $I_{pc}$  vs.  $\nu^{1/2}$ .



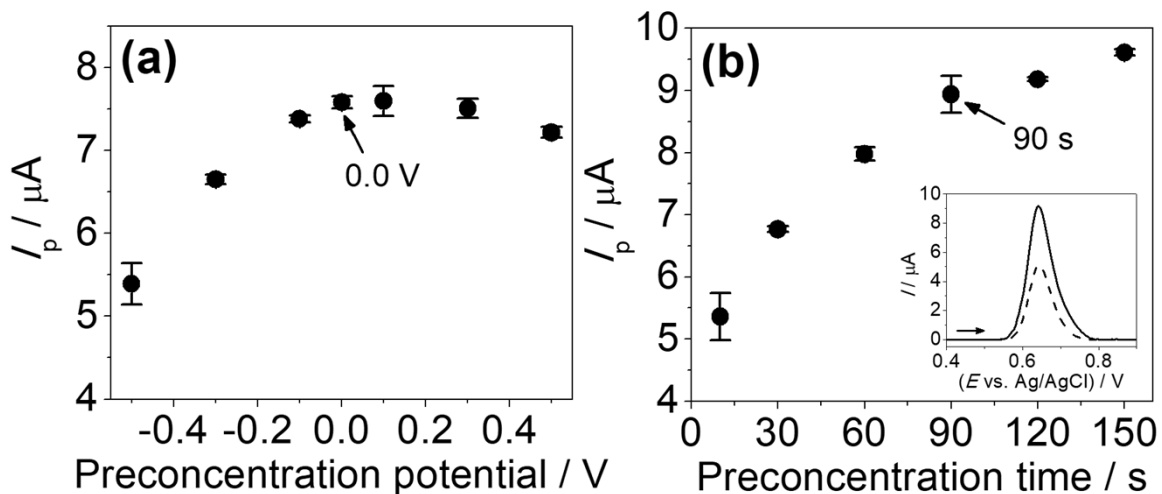
**Figure S3. (a)** CV recorded using CB-Ch-PtNPs/GCE for  $1.0 \times 10^{-4} \text{ mol L}^{-1}$  BPA in  $0.2 \text{ mol L}^{-1}$  phosphate buffer solutions at different pHs (2.0, 3.0, 4.0, 5.0, 6.0, 7.0 and 8.0) (pH 7.0).  $v = 50 \text{ mV s}^{-1}$ . **(b)** Graphics of  $E_p$  vs. pH and  $I_p$  vs. pH obtained for BPA.



**Figure S4.** Cyclic voltammogram recorded using CB-Ch-PtNPs/GCE for  $1.0 \times 10^{-4} \text{ mol L}^{-1}$  BPA at different supporting electrolytes:  $0.2 \text{ mol L}^{-1}$  phosphate buffer solution (pH = 5.0),  $0.2 \text{ mol L}^{-1}$  BR buffer solution (pH = 5.0) and  $0.2 \text{ mol L}^{-1}$  acetate buffer solution (pH = 5.0).  $\nu = 50 \text{ mV s}^{-1}$ . Inset: Graphics of  $I_p$  vs. Electrolyte.



**Figure S5.** Cyclic voltammograms recorded using CB-Ch-PtNPs/GCE for  $1.0 \times 10^{-4}$  mol  $\text{L}^{-1}$  BPA in  $0.2 \text{ mol L}^{-1}$  phosphate buffer solution (pH = 5.0) at different potential scan rates ( $v$ ): (1) 10, (2) 20, (3) 30, (4) 40, (5) 50, (6) 75, (7) 100, (8) 150, (9) 200, (10) 250 and (11) 300  $\text{mV s}^{-1}$ . Graphics of (i)  $\log I_p$  vs.  $\log v$ , (ii)  $I_p$  vs.  $v^{1/2}$  and (iii)  $I_p$  vs.  $v$ .



**Figure S6.** Effect of (a) preconcentration potential (range of  $-0.5$  V to  $+0.5$  V and fixed preconcentration time = 30 s) and (b) preconcentration time (range of 10 to 150 s and fixed preconcentration potential = 0.0 V) applied in the DPAdASV measurements recorded using CB-Ch-PtNPs/GCE for  $1.0 \times 10^{-5}$  mol L $^{-1}$  BPA in 0.2 mol L $^{-1}$  phosphate buffer solution (pH = 5.0).  $\nu = 10$  mV s $^{-1}$ ;  $a = 60$  mV and  $t_m = 50$  ms. Inset: Comparison of BPA response with (—) and (---) without preconcentration.

**Table S1.** Effect of possible interferences on the determination of BPA by DPAdASV using the CB-Ch-PtNPs/GCE sensor

<b>Interfering</b>	<b><i>c</i>(BPA): <i>c</i>(Interferent) ratio</b>	<b>RSD (%)</b>
Cations (Ca <sup>2+</sup> , Mg <sup>2+</sup> and Ba <sup>2+</sup> )	1:10	-1.1
	1:100	+2.8
Anions (CO <sub>3</sub> <sup>2-</sup> , NO <sub>3</sub> <sup>-</sup> and SO <sub>4</sub> <sup>2-</sup> )	1:10	+1.6
	1:100	-3.0
Hydroquinone	1:10	-0.64
	1:100	+5.2
Catechol	1:10	+1.4
	1:100	-0.89
Humic acid	---	-5.0
Vermicompost	---	+2.5