Analytical Methods

ARTICLE

Square wave voltammetry enables fast quantification and evaluation of Bi^{3+} extraction from eye shadow samples

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Electronic Supplementary Information

Table S1. Description of eye shadow samples used in this work.

Brand	Code	Color name	Tone	Origin country
A	1	Lead gray	Dark	Brazil
	2	Plum	Dark	
B	3	Carmine	Dark	China
	4	Light green	Light	
C	5	Purple	Dark	China
	6	Lilac	Dark	
D	7	Violet	Dark	Brazil
	8	Salmon	Light	
E	9	Red	Dark	Brazil
	10	Beige	Light	
F	11	Dark red	Dark	Brazil
	12	Pale green	Light	

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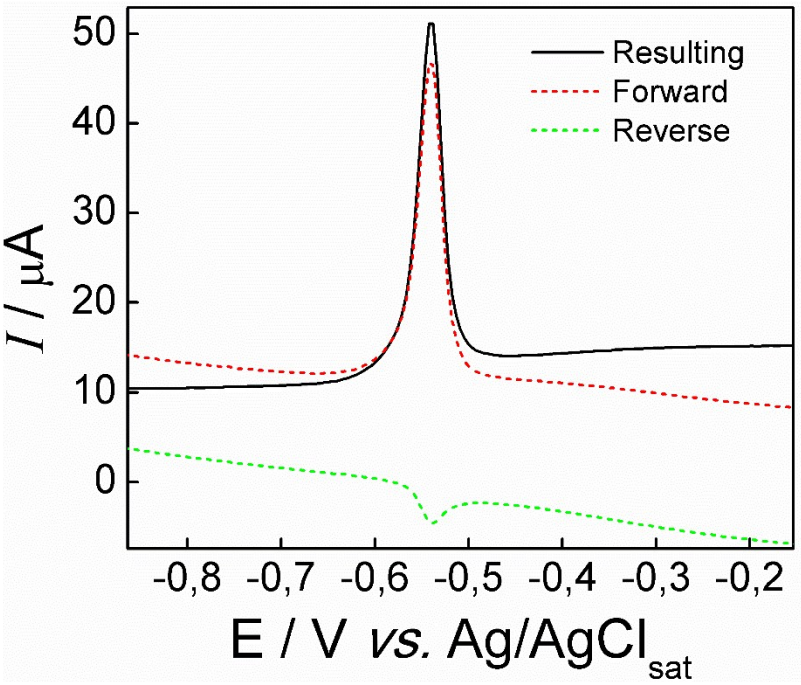

Figure S1. SW-ASV voltammograms recorded with GCE in NaOH 1.0 mol L^{-1} in presence of 500 nmol L^{-1} Bi^{3+}. Voltammetric conditions: E_{dep} = -1.3 V; t_{eq} = 5 s; f = 50 Hz; ΔE = 25 mV and ΔE_s = 4 mV. Electrochemical cleaning at +0.5 V for 30 s.

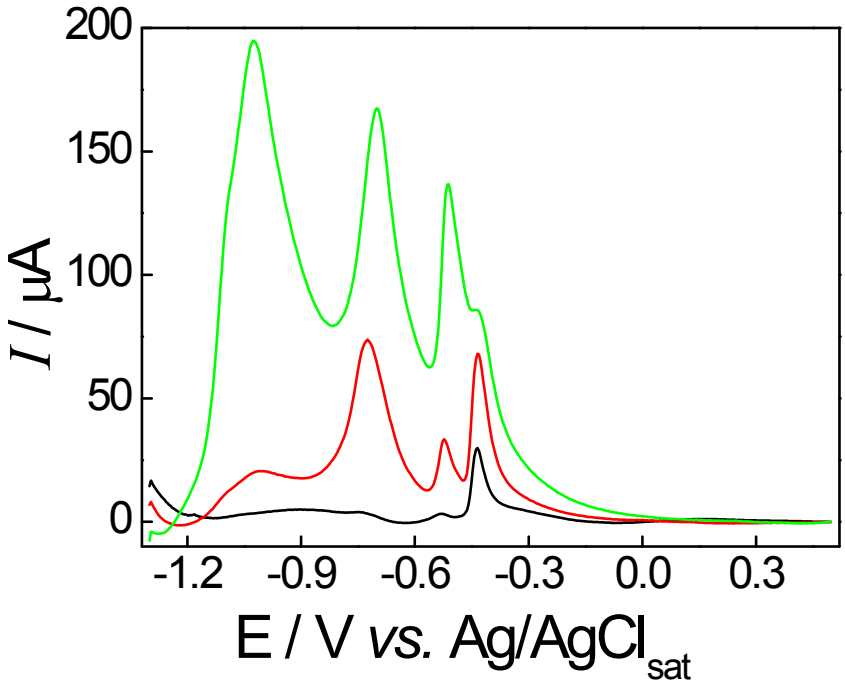

Figure S2. SW-ASV voltammograms recorded in NaOH 1.0 mol L^{-1} with CPE containing the immobilized particles of sample 2 with different deposition times. (—) 0; (—) 5 and (—) 180 s. Voltammetric conditions:

E_{dep} = -1.3 V; t_{eq} = 5 s; f = 50 Hz; ΔE = 25 mV and ΔE_s = 4 mV. Electrochemical cleaning at +0.5 V for 30 s.

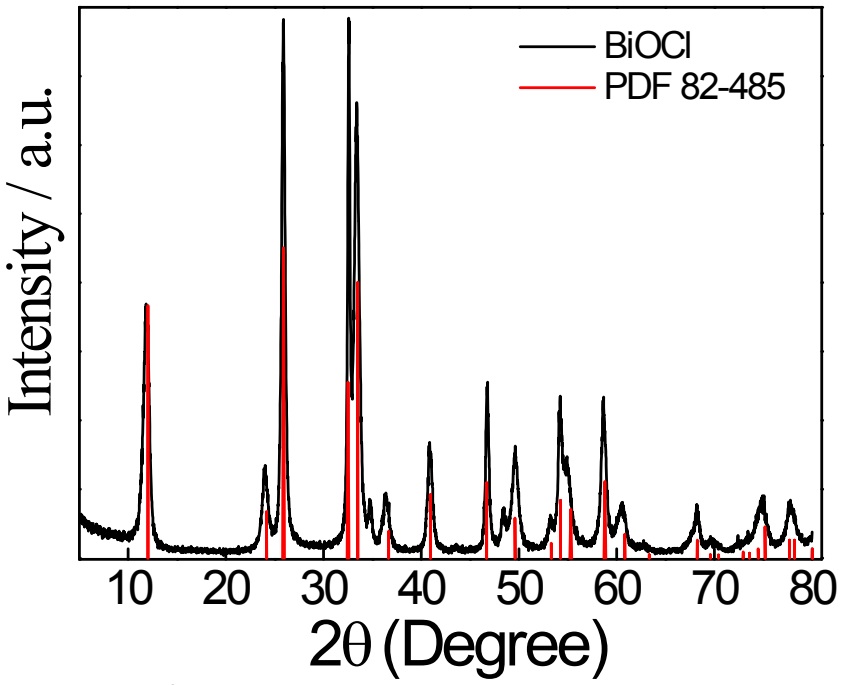

Figure S3. XRD pattern obtained for the synthesized BiOCl.

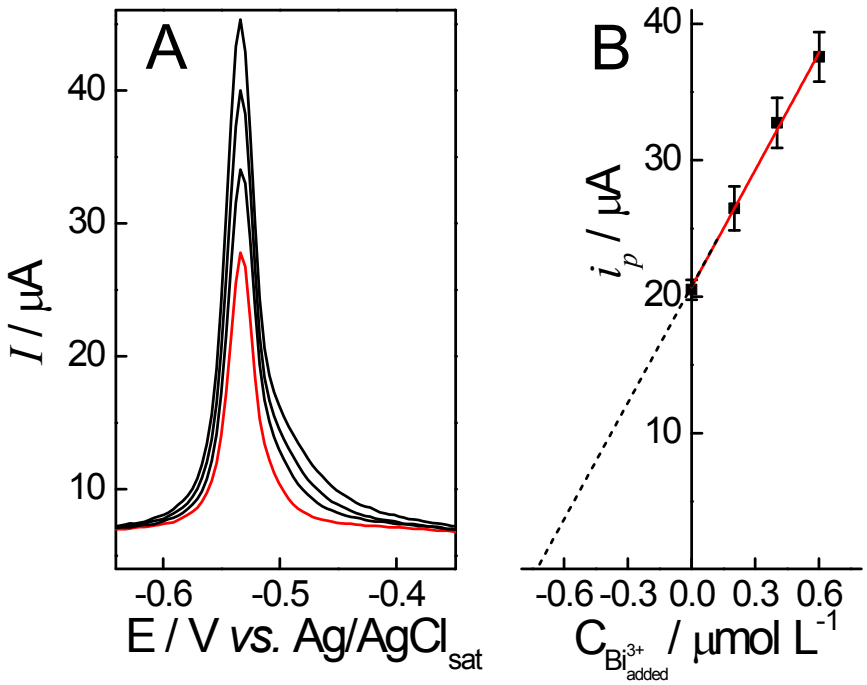

Figure S4. A) SW-ASV recorded with GCE in 1.0 mol L^{-1} NaOH. (—) Aliquot of 10 µL of the BiOCl solution. (—) Successive standard additions of 0.2 µmol L^{-1} Bi^{3+}. Voltammetric conditions: E_{dep} = -1.3 V; t_{dep} = 180 s, t_{eq} = 5 s; f = 50 Hz; ΔE = 25 mV and ΔE_s = 4 mV. Electrochemical cleaning at +0.5 V for 30 s. B) Bi^{3+} standard addition curve.

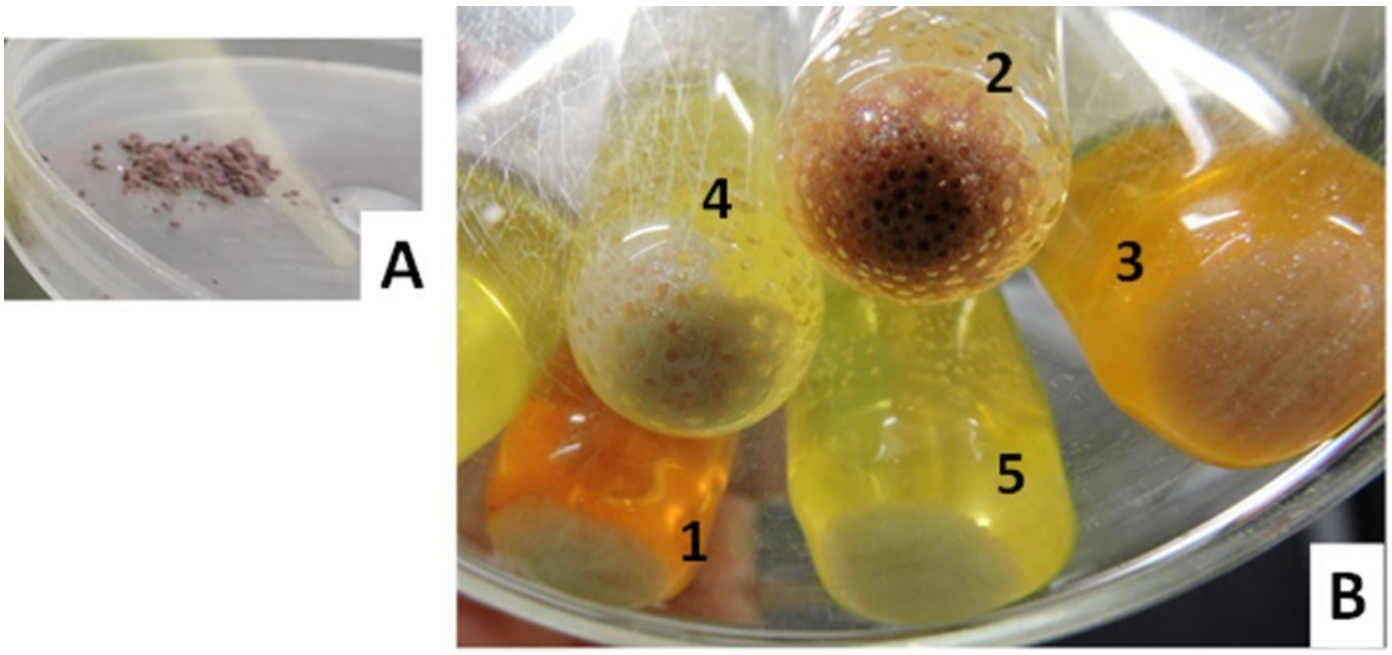

Figure S5. A) Image of the original sample 9. B) Images of the residues of sample 9 after the different sample pretreatment procedures.

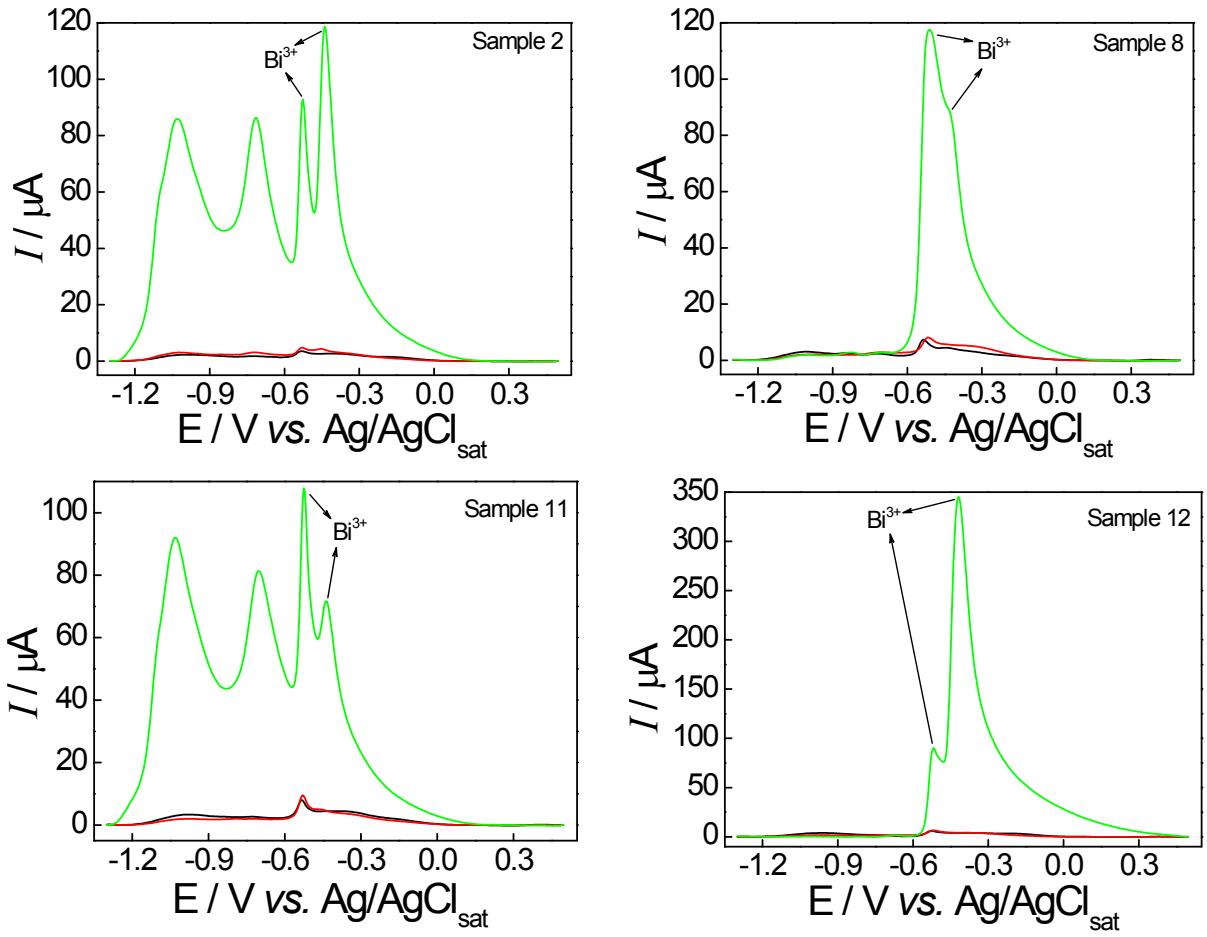

Figure S6. Baseline-corrected SW-ASV voltammograms recorded with CPE in NaOH 1.0 mol L^{-1}. (—) Without the immobilized particles. (—) After the immobilization of the particles of untreated samples. (—) After the immobilization of the particles of the samples treated with procedure 5*. Voltammetric conditions: E_{dep} = -1.3 V; t_{eq} = 5 s; f = 50 Hz; ΔE = 25 mV and ΔE_s = 4 mV. Electrochemical cleaning at +0.5 V for 30 s. Samples originally containing Bi^{3+}.

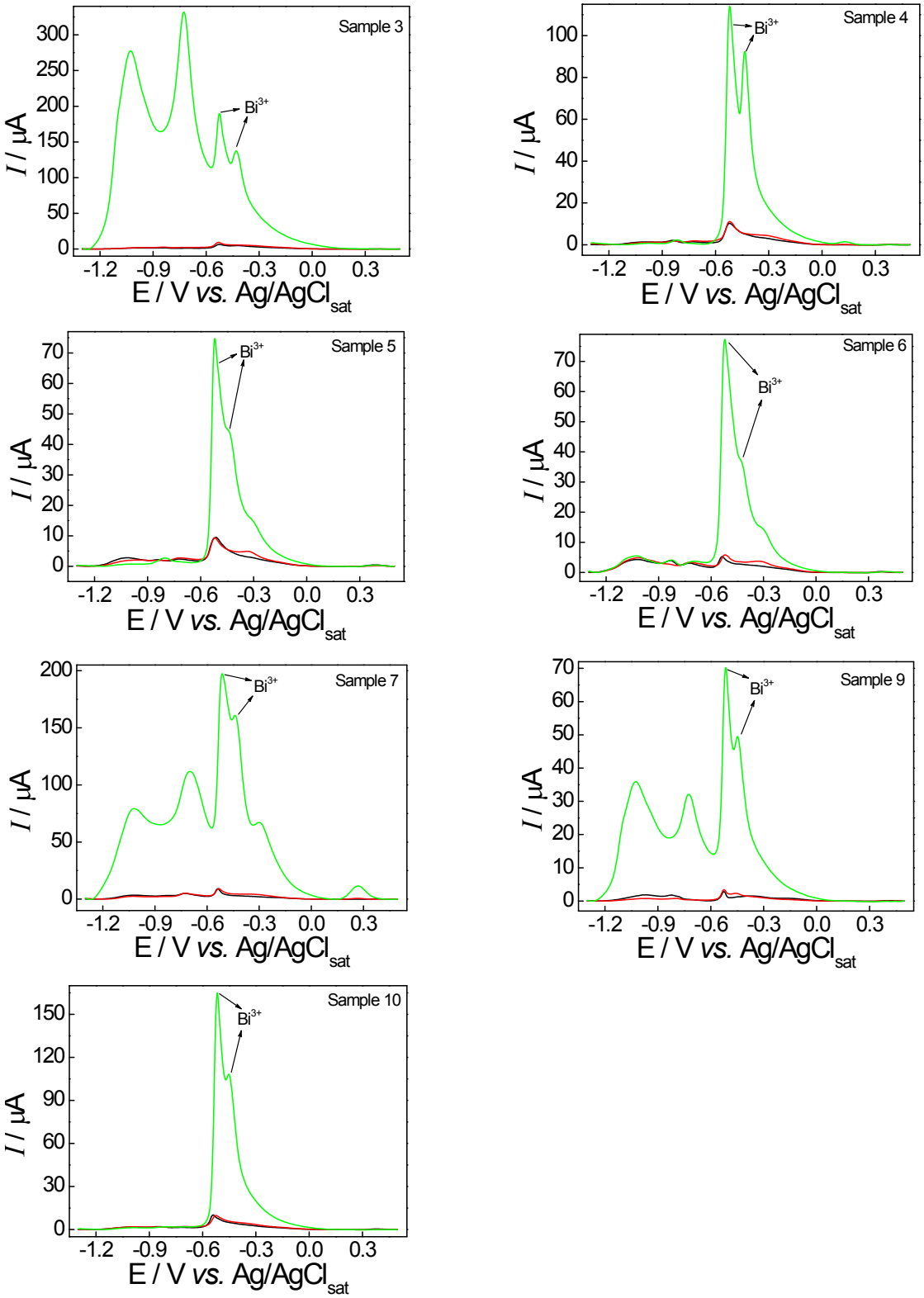

Figure S7. Baseline-corrected SW-ASV voltammograms recorded with CPE in NaOH 1.0 mol L^{-1}. (—) Without the immobilized particles. (—) After the immobilization of the particles of the untreated samples. (—) After the immobilization of the particles of the samples treated with procedure 5*. Voltammetric conditions: E_{dep} = -1.3 V; t_{eq} = 5 s; f = 50 Hz; ΔE = 25 mV and ΔE_s = 4 mV. Electrochemical cleaning at +0.5 V for 30 s. Samples spiked with known amounts of Bi^{3+}.

Figure S8. Images of the original solid eye shadow samples and the respective residues from sample pretreatment with procedure 5*.

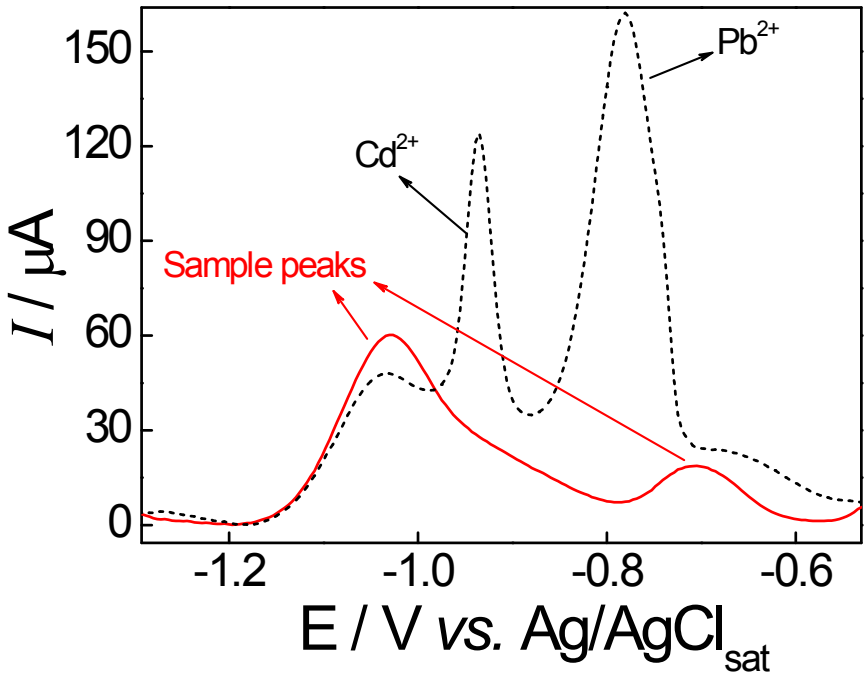

Figure S9. SW-ASV voltammograms recorded with GCE in NaOH 1.0 mol L^{-1}. (—) 40 µL of the supernatant from procedure 5* (sample 3). (---) 40 µL of the supernatant from procedure 5* (sample 3) + 36 µmol L^{-1} Cd^{2+} and 10 µmol L^{-1} Pb^{2+}. Voltammetric conditions: E_{dep} = -1.3 V; t_{dep} = 180 s, t_{eq} = 5 s; f = 50 Hz; ΔE = 25 mV and ΔE_s = 4 mV. Electrochemical cleaning at +0.5 V for 30 s.

*Procedure 5 consisted in treat the eye shadow samples with 1.5 mL of concentrated HCl + 10 min in an ultrasound bath followed by addition of 0.5 mL of H_2O_2 (30 % v:v) + 5 min in an ultrasound bath.

