**Electronic supplementary information (ESI)**

Bismuth-Coated Screen-Printed Electrode for the simple Voltammetric Determination of

Formaldehyde

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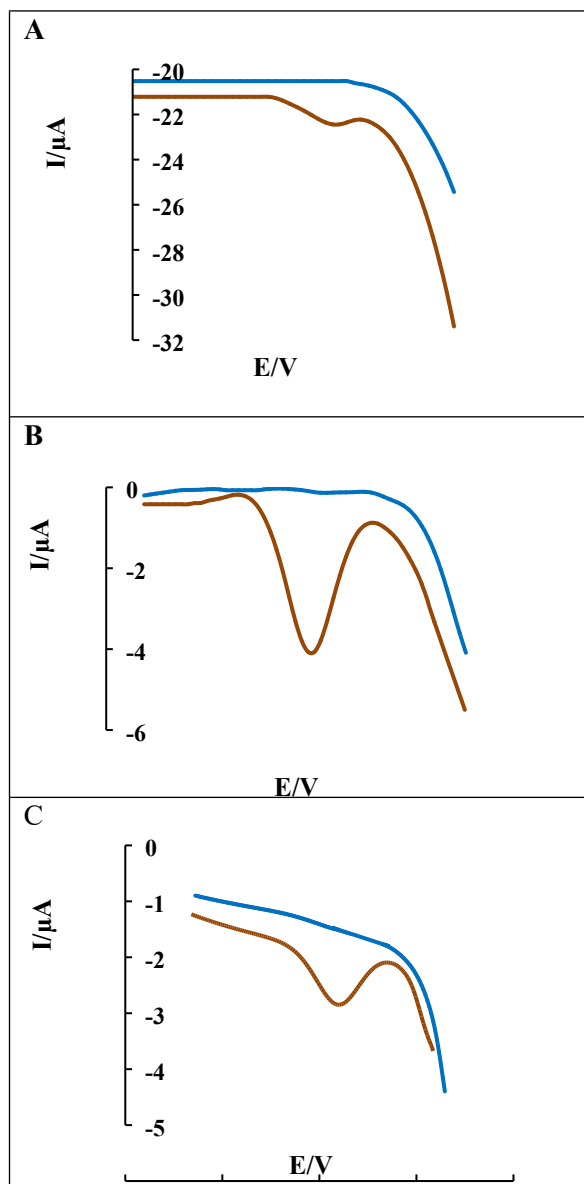
Fig. S1. Voltammograms of FM registered on BiSPCE in 0.04 M PBS + 0.09 M HRZ (pH 5.2 ± 0.1) without adding (blue line) and after adding (red line) 0.2 mg L^{-1} FM at a scanning rate of 0.02 Vs^{-1} by different techniques: DC (A), DP (B), SqW (C). The deposition time of the bismuth film 8 min.

S2: Calculation the bismuth particles size and coverage areas of BiSPCE with the software ImageJ Wiki (https://imagej.net/software/imagej/)

Particle size. Once the image was opened by the program, the dimensional scale of the image was calibrated or set (conversion of distance from pixel to known distance) based on the scale (scale bar) of the SEM-image. As bismuth particles have irregular shape their length only was calculated. To measure the particle length of a particular particle, applying a line ( ) from the software's task bar, a straight line was drawn manually from one end of the particle to another end (*measurements are given in pixels*).
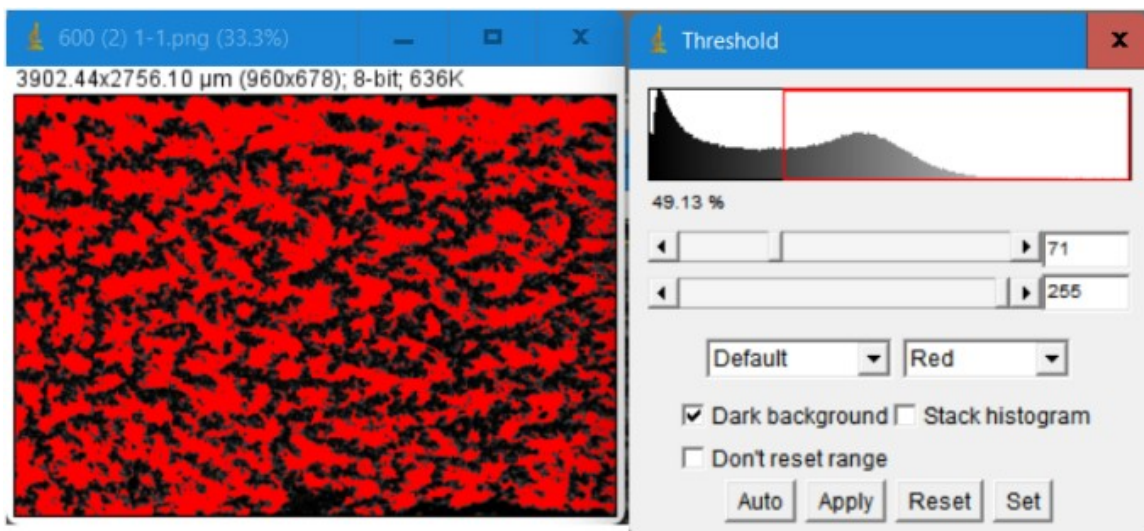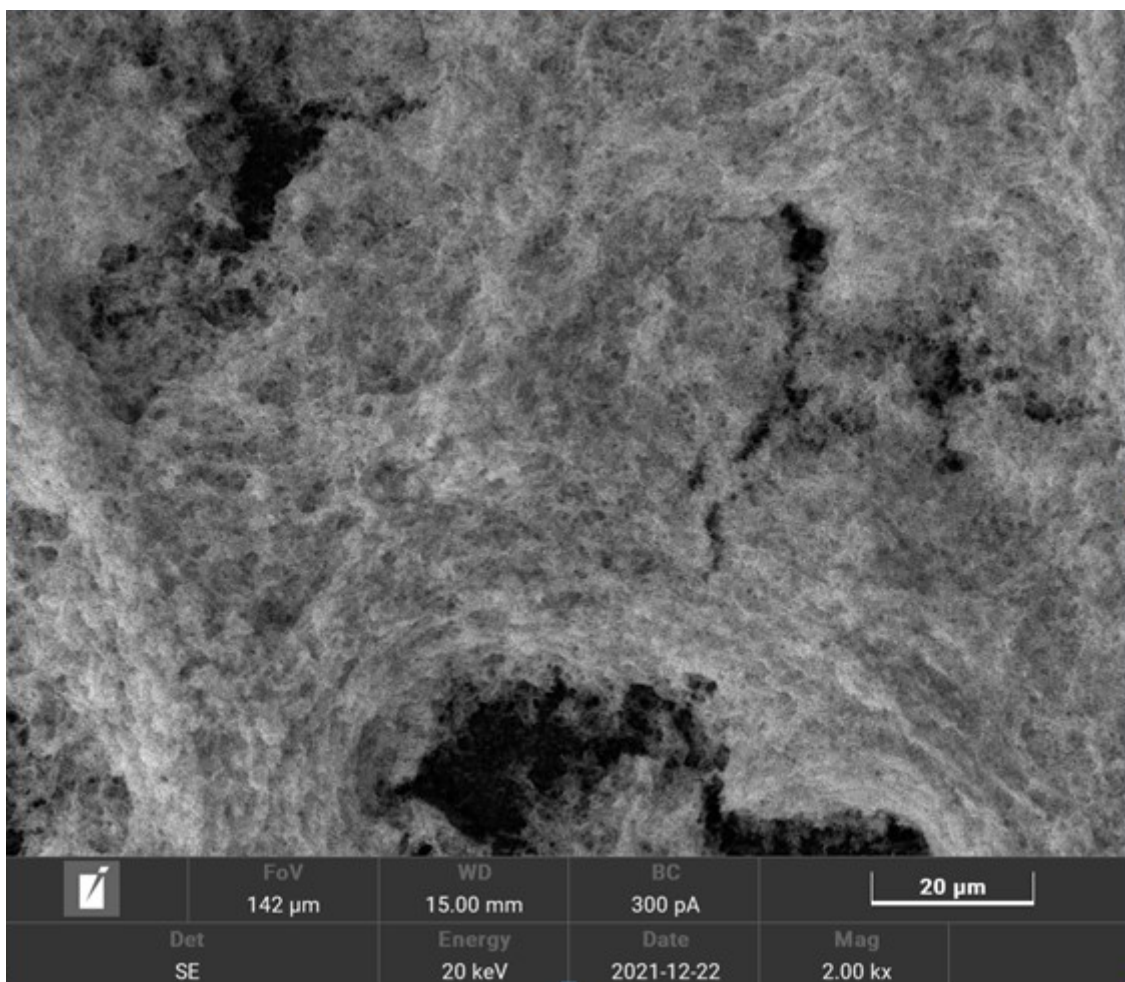
o
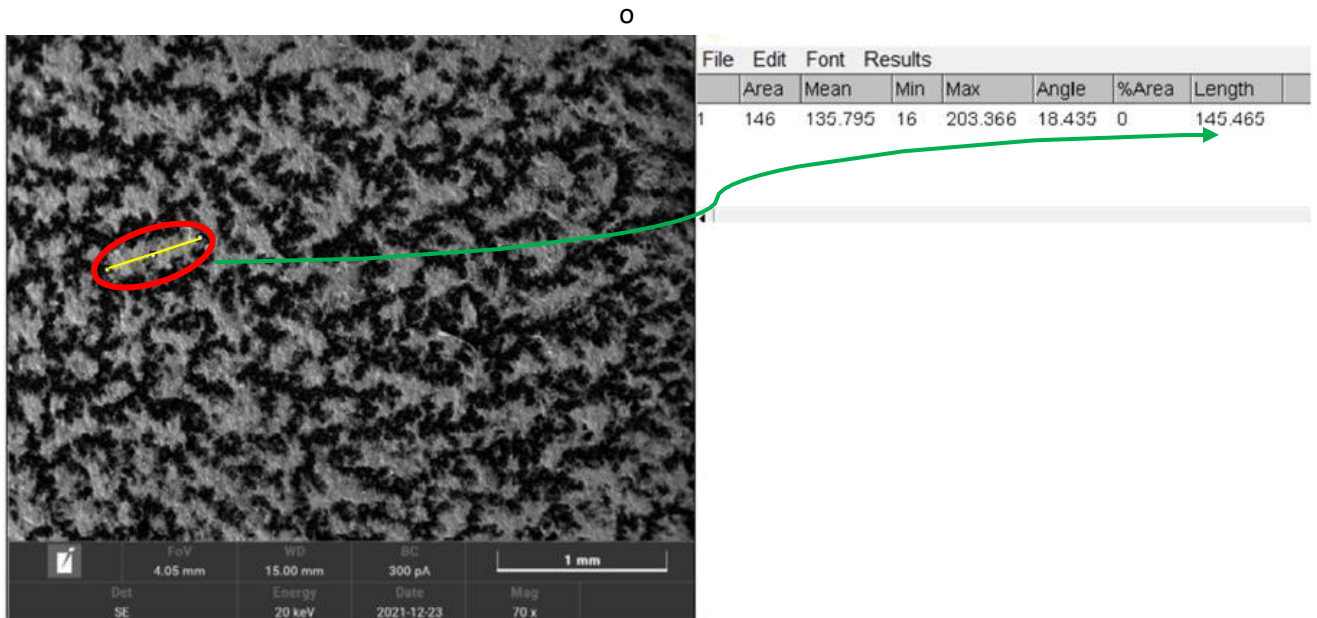
In this process, at least 30 -40 particles should be included so as to get a valid average size of the particles

*Coverage area.*

A particular part of the image may be cropped.

Following certain steps: Image>Adjust>Type (8-bt) and Image>Adjust>Threshold, the top slider was adjusted (threshold image) until the particles become red against a dark background.

Fig. S3. SEM images of the SPCE surface after bismuth film deposition by electrolysis of 0.1 M acetate buffer (pH 4.5) + 100 mg L^{-1} Bi(III) at a potential of (-1.0) V during 20 min
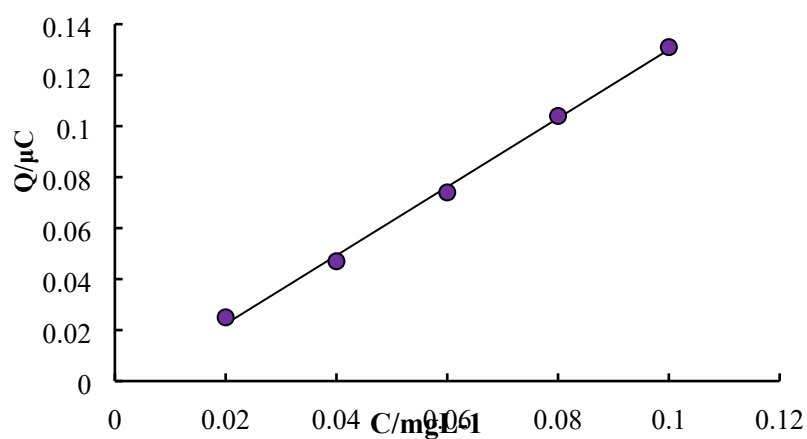
Fig. S4 Plot area Q (μC) of FM reduction peak versus its concentration in the range of 0.00-0.10 mgL^{-1}.

Table S1 Effect of ACAL on FM Response

C_{ACAL} in the cell (μM)	C_{ACAL}/C_{FM}	Response for 6.7 μM FM (μC)*	ΔQ, %**	Response for ACAL (μC)*
0	-	0.220	-	
20.4	3 :1	0.219	0	-
27.2	4 :1	0.153	30	-
34	5 :1	0.099	55	0,025
68	10 : 1	0.071	68	0,105
136	20 :1	0,021	90	0,362

* - mean value from 3 measurements
** -ΔQ, % - degradation of FM response

Table S2 Effect of methanol on FM Response

$C_{methanol}$ in the cell (μM)	$C_{methanol}/C_{FM}$	Response for 6.7 μM FM (μC)*	ΔQ, %**
0	-	0.202	-
335	50	0.209	0
670	100	0.198	2
1005	150	0.196	3
1340	200	0.186	8

* - mean value from 3 measurements

** -ΔQ, % - degradation of FM response

Table S3 Effect of ethanol on FM Response

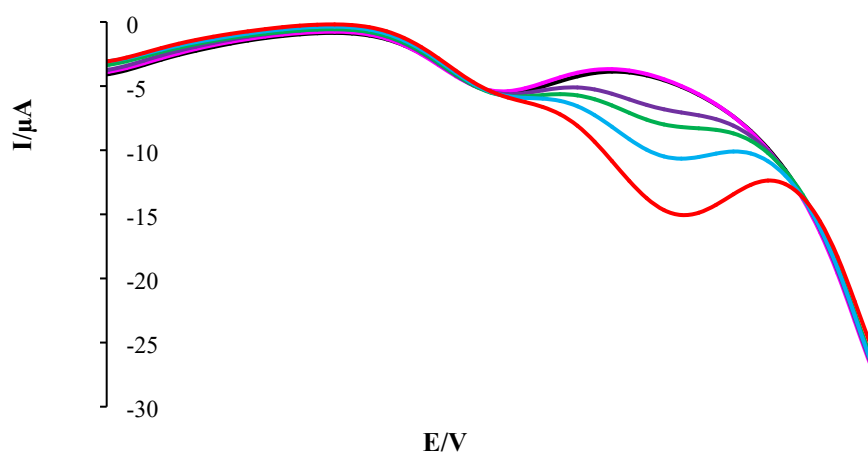| $C_{ethanol}$ in the cell (μM)	$C_{ethanol}/C_{FM}$	Response for 6.7 μM FM (μC)*	ΔQ, %**
0	-	0.217	-
335	50	0.217	0
670	100	0.210	3
1005	150	0.202	7
1340	200	0.191	12

* - mean value from 3 measurements
** -ΔQ, % - degradation of FM response

Fig. S5. DP voltammograms for 6.7 μM FM registered in 0.04 M PBS + 0.09 M HRZ (pH 5.2 ± 0.1) without (black line) and after addition of 20.4 (pink line), 27.2 (violet line), 34 (green line), 68 (blue line), 136 (red line) μM acetaldehyde.