

Supplementary information

Carbon inks based screen-printed electrodes for qualitative analysis of amino acids

Teodor Adrian Enache ¹, Monica Enculescu ^{1,*}, Mihaela-Cristina Bunea ¹,
Estibaliz Armendariz Zubillaga ², Edurne Tellechea ², Maite Aresti ², María Lasheras ²,
Aaron C. Asensio ³ and Victor C. Diculescu ^{1,*}

¹ Laboratory of Functional Nanostructures, National Institute of Materials Physics, Atomistilor
405A, 077125, Magurele, Romania

² NAITEC, C/ Tajonar 20 -31006, Pamplona, Navarra, Spain

³ MATEPRINCS, Paseo Zarapuz, 1, 31200, Navarra, Spain

* Correspondence: mdatcu@infim.ro (M.E.); victor.diculescu@infim.ro (V.C.D.)

Sample electrodes with different PANI:ZnO ratios, **Table S1**, were analyzed before selecting the one presented in the manuscript (2% PANI: 0.4% ZnO).

Table S1. mSPE electrodes with different PANI:ZnO proportions.

sample #	PANI (%)	ZnO (%)
1	0	0.0
2	1	0.1
3	1	0.2
4	2	0.2
5	2	0.4
6	10	2.0

The analysis/screening of their response was performed by cyclic voltammetry in different electrolytes such as 0.1 M H₂SO₄, 0.1 M HCl, pH = 7.0 0.1 M phosphate buffer, in the absence and in the presence of 1 mM K₄[Fe(CN)₆], **Figure S1**.

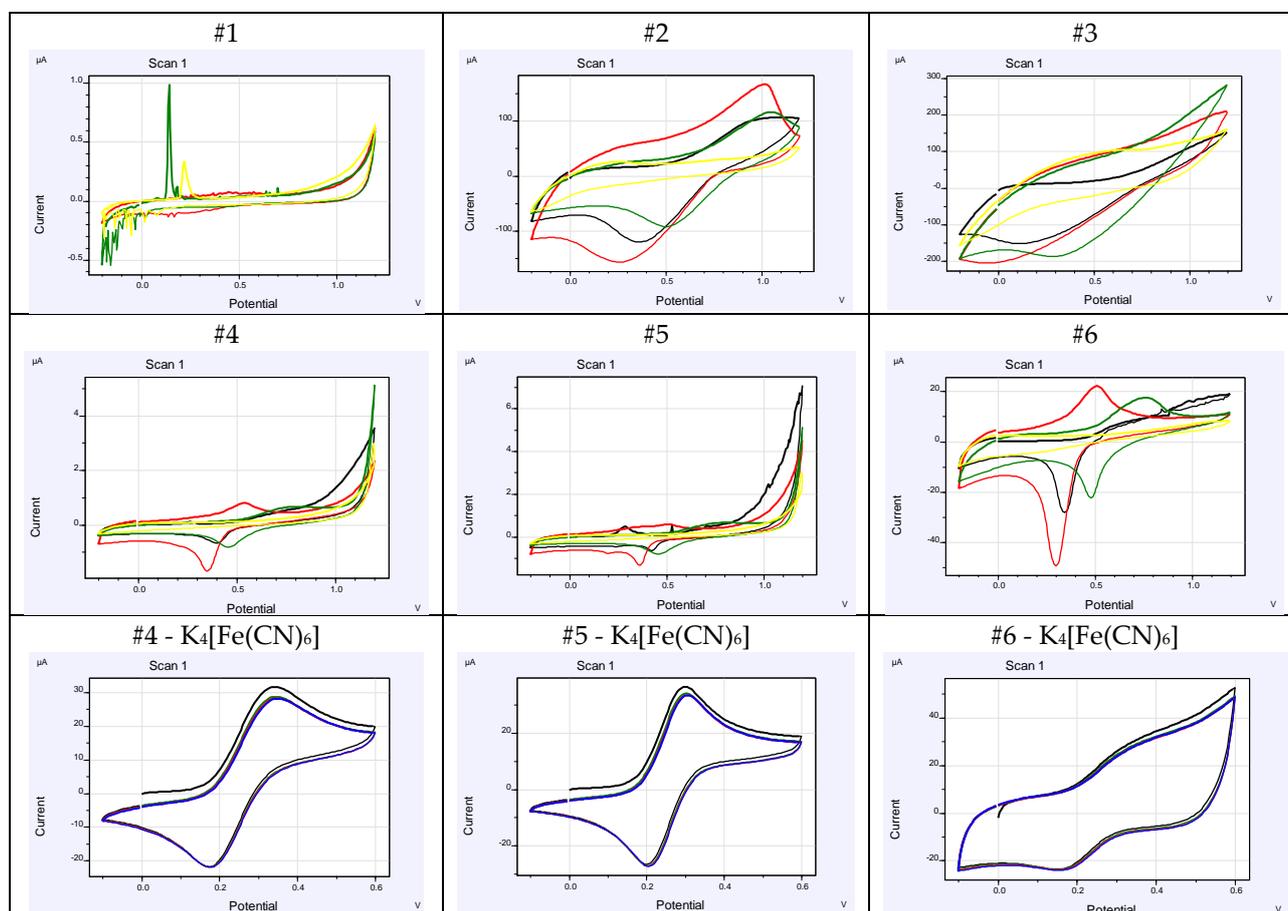


Figure S1. Cyclic voltammograms at $v = 100 \text{ mV s}^{-1}$ of different samples (Table S1) in 0.1 M H₂SO₄ (red curve- first scan and black curve-the second scan), 0.1 M HCl (green curve) and pH = 7.0 0.1 M phosphate buffer (yellow curve) in the absence and presence of 1 mM K₄[Fe(CN)₆].

Of all these samples, the electrode with the 2% PANI : 0.4% ZnO composition has shown the most appropriate electrochemical response and chosen for further investigations.

The electrochemical behavior of SPEs and mSPE (2% PANI : 0.4% ZnO) was investigated in 0.1 M H₂SO₄ (without any redox probe) in order to assess the intrinsic electroactivity of the electrodes, **Figure S2**.

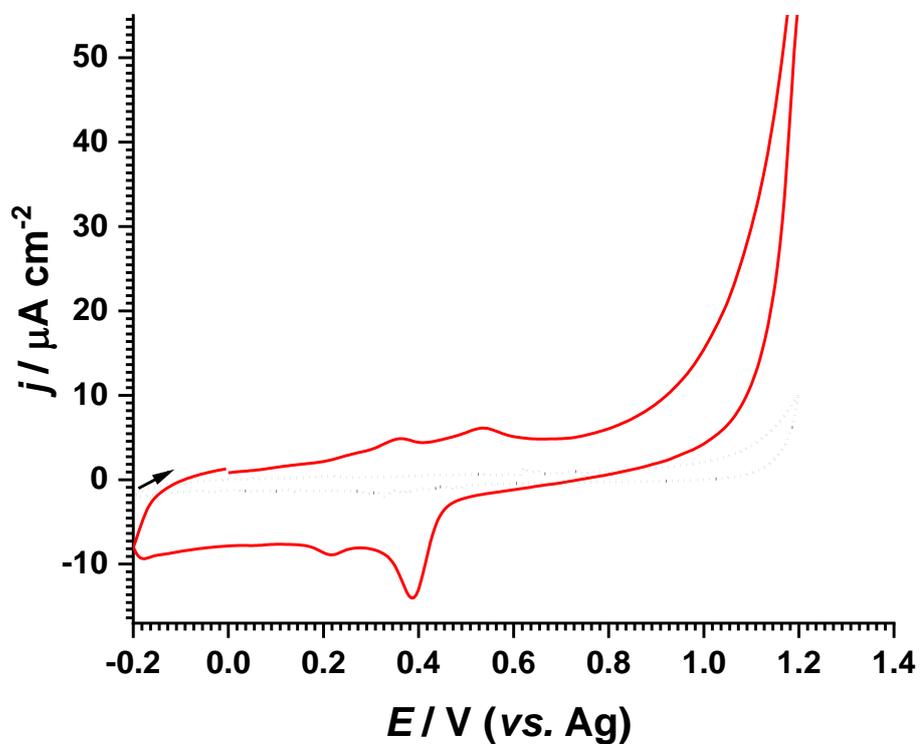


Figure S2. Cyclic voltammograms of SPE (dotted curve) and mSPE (red curve) in 0.1 M H₂SO₄ at $v = 100 \text{ mV s}^{-1}$.