

# Poly(Thiophene)/Graphene Oxide-Modified Electrodes for Amperometric Glucose Biosensing

Maria I. Pilo <sup>1,\*</sup>, Sylwia Baluta <sup>2</sup>, Anna C. Loria <sup>1</sup>, Gavino Sanna <sup>1</sup> and Nadia Spano <sup>1</sup>

<sup>1</sup> Dipartimento di Scienze Chimiche, Fisiche, Matematiche e Naturali, Università di Sassari, Via Vienna 2, 07100 Sassari, Italy

<sup>2</sup> Faculty of Chemistry, Wrocław University of Science and Technology, Wybrzeże Wyspiańskiego 27, 50-370 Wrocław, Poland

\* Correspondence: mpilo@uniss.it

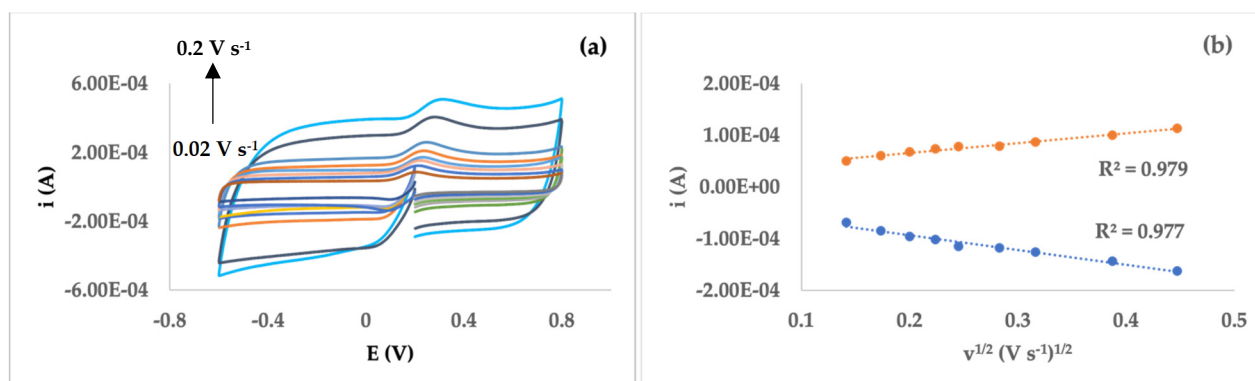
## Electrochemically-active surface area

The electrochemically-active surface area can be estimated by the slope of the curve  $I_p$  vs  $v^{1/2}$  in a 0.1 M KCl solution containing 5 mM  $[\text{Fe}(\text{CN})_6]^{3-/4-}$  using the Randles-Sevcik Equation (S1):

$$I_p = 2.69 \cdot 10^5 \cdot n^{3/2} A D^{1/2} C v^{1/2} \quad (\text{S1})$$

where  $I_p$  is the redox peak current in ampere,  $n$  is the number of exchanged electrons,  $A$  is surface area in  $\text{cm}^2$ ,  $D$  is the diffusion coefficient in  $\text{cm}^2 \text{s}^{-1}$ ,  $C$  is the concentration of electroactive species in  $\text{mol cm}^{-3}$ ,  $v$  is the potential scan rate in  $\text{V s}^{-1}$ .

Assuming  $n = 1$  and  $D = 6.5 \times 10^{-6} \text{ cm}^2 \text{s}^{-1}$ , the value of the active surface area for GC/poly(dTT-bT)/GrO/GOx has been estimated equal to  $0.083 \text{ cm}^2$ , that is about twice than the value estimated for an unmodified GC electrode in the same conditions ( $0.035 \text{ cm}^2$ ).



**Figure S1.** (a) Cyclic voltammetric curves of GC/poly(dTT-bT)/GrO/GOx in a 0.1 M KCl solution containing 5 mM  $\text{K}_3[\text{Fe}(\text{CN})_6]$  at scan rates from  $0.02 \text{ V s}^{-1}$  to  $0.2 \text{ V s}^{-1}$ . (b) Relationship between the peak current and the square root of the potential scan rate.