Supporting Information

Electrochemical Biosensor Employing Bi_2S_3 Nanocrystals-Modified Electrode for Bladder Cancer Biomarker Detection

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The CV characterization of the bare and modified sensors was performed in the potential range from -0.6 to +0.8 V within the scan rates range of 25-200 mV s^{-1}. The calculation of the effective surface areas (A_{eff}) of bare and modified sensors was performed based on Randles-Sevcik equation:

$$I_p = 0.4463 \left(\frac{F^3}{RT}\right)^{1/2} A_{eff} n^{3/2} D^{1/2} c_0 v^{1/2}$$

where: I_p represents peak current (A), F represents Faraday constant (F = 96485 C mol^{-1}), R represents the gas constant (R = 8.314 J mol^{-1} K^{-1}), A_{eff} represents the electrode surface area (cm^2), n represents the number of electrons involved in the redox process (n = 1 for $[Fe(CN)_6]^{3-/4-}$), T represents the temperature (T = 298.15 K), D represents diffusion coefficient (D = 7.2× 10^{-6} cm^2 s^{-1}), c_o represents the concentration of $[Fe(CN)_6]^{3-/4-}$ (c_o = 5 mmol L^{-1}), and $v^{1/2}$ represents the square root of the scan rate ($(V\ s^{-1})^{1/2}$).

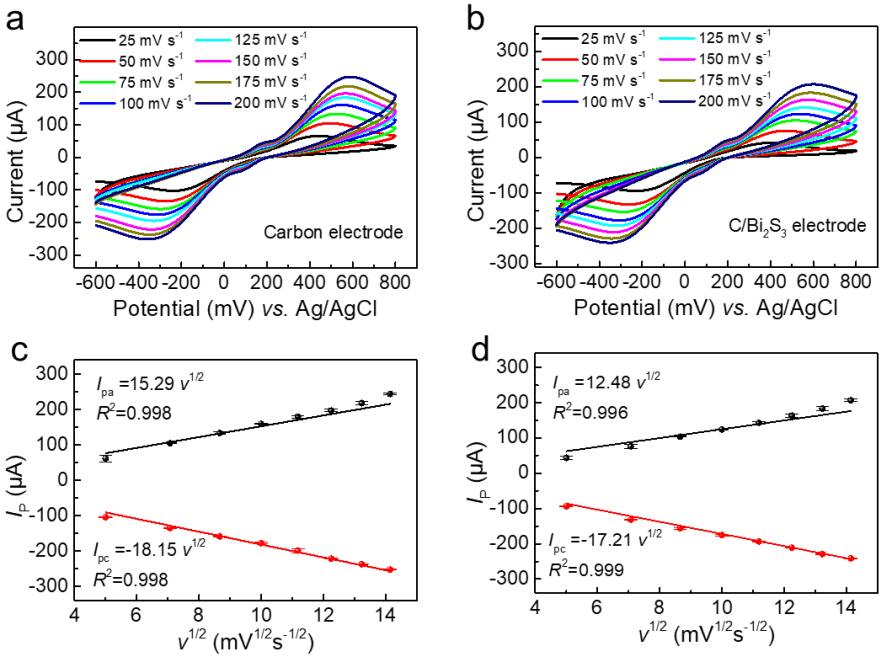

Figure S1. CV characterizations obtained for $[Fe(CN)_6]^{3-/4-}$ on the bare (a) and modified sensors (b) at the different scan rates within the range 25-200 mV s^{-1}. the corresponding I_p *vs.* $v^{1/2}$ plot for bare (c) and modified sensors (d).

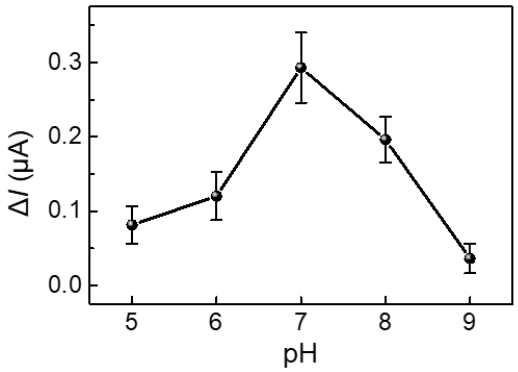

Figure S2. The effect of the pH on the recorded current signal.