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Voltammetric performance of nanofiber structured over-oxidized poly(3,4-ethylenedioxythiophene) modified pencil graphite electrodes for dobutamine sensing

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Supplementary Materials

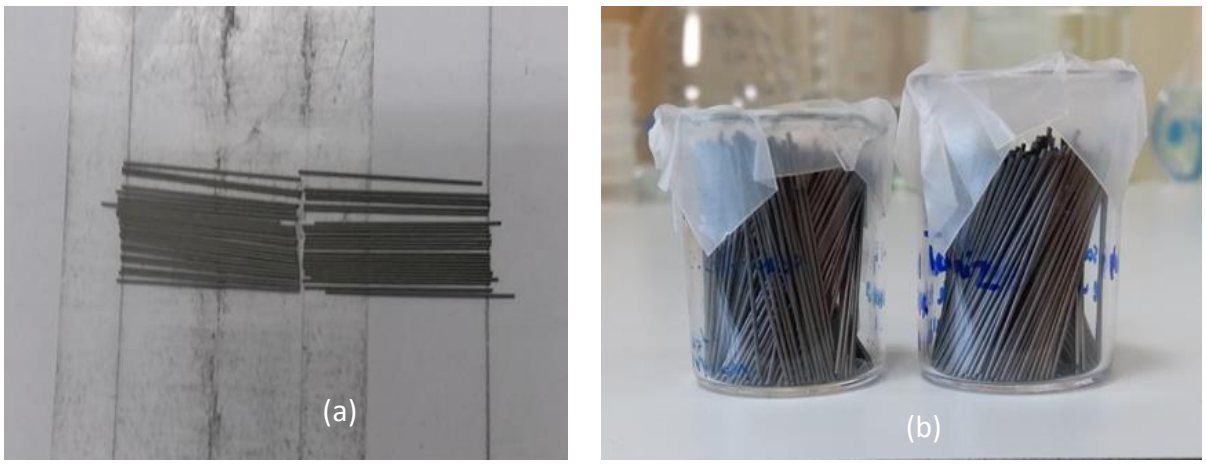


Figure S1: Pictures of (a) pencil tips cut in half and (b) pencil tips ready for electrochemical measurements.

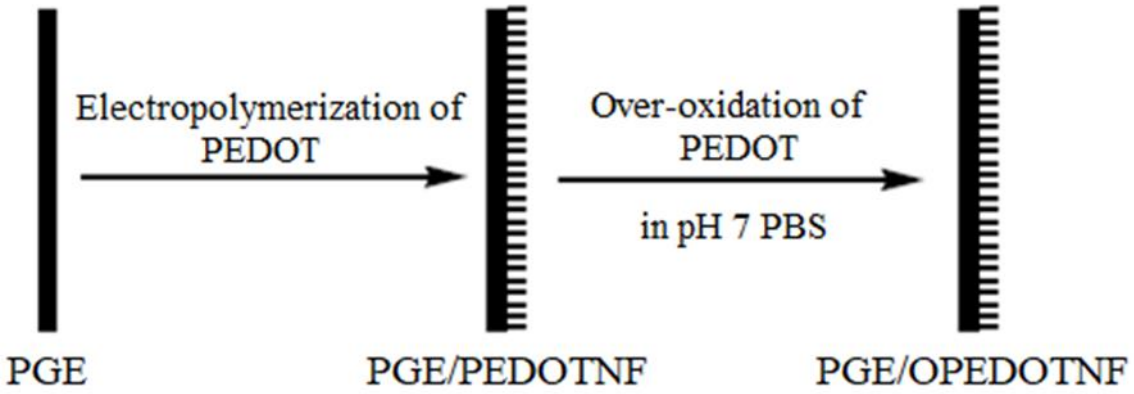


Figure S2: Schematic representation of the preparation of PGE/OPEDOTNF electrodes.

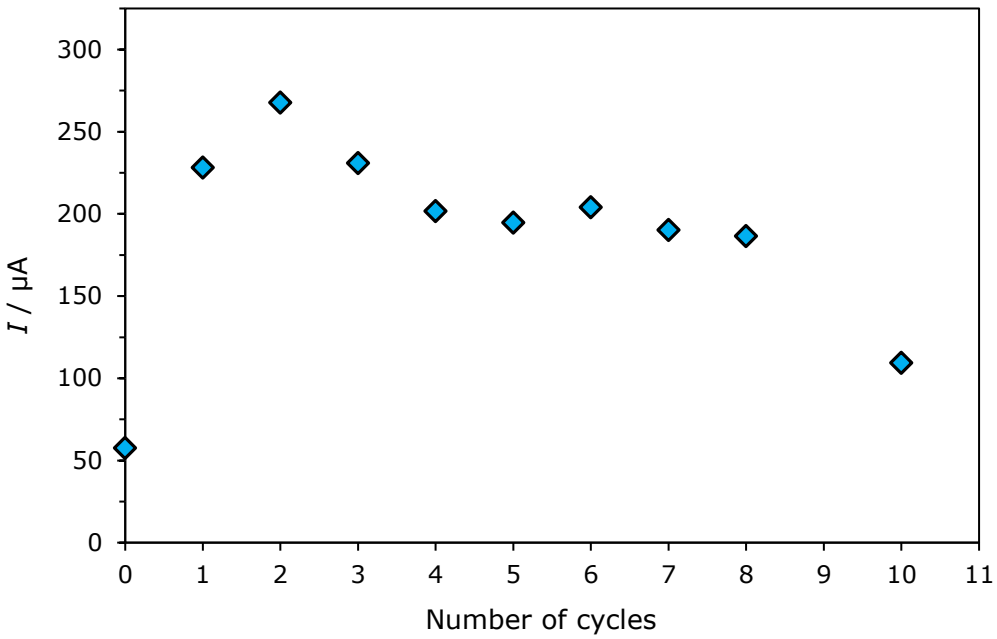


Figure S3: The effect of the number of cycles applied for the electropolymerization of PGE/OPEDOTNF on the oxidation peak current obtained in BRB solution at pH 2.0 containing 400 µM DBT (Electrode overoxidation conditions: voltage is 2.0 V and time is 60 s, DPV conditioning number is 2).

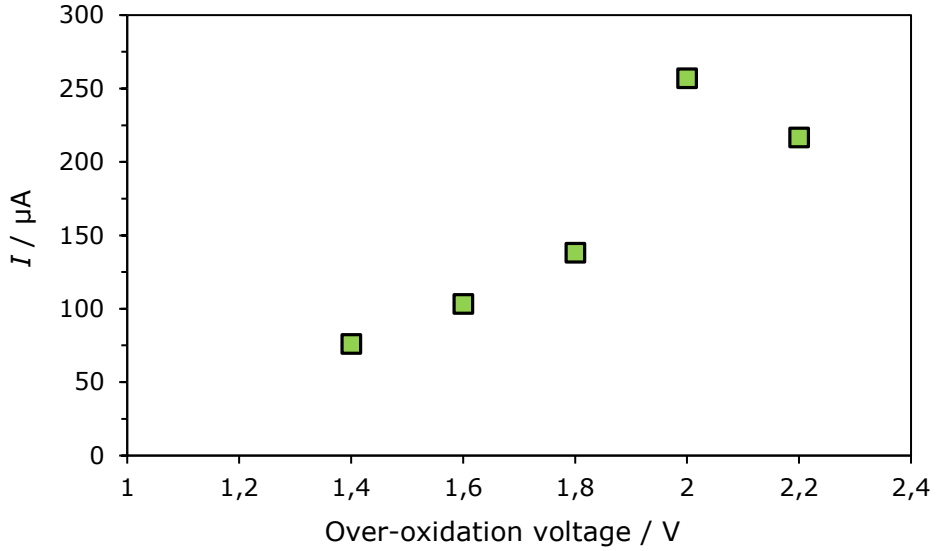


Figure S4: The effect of different voltage values applied for 60 seconds during the over-oxidation of PGE/PEDOTNF-2cyc on the oxidation peak current obtained in BRB solution at pH 2.0 containing 400 µM DBT.

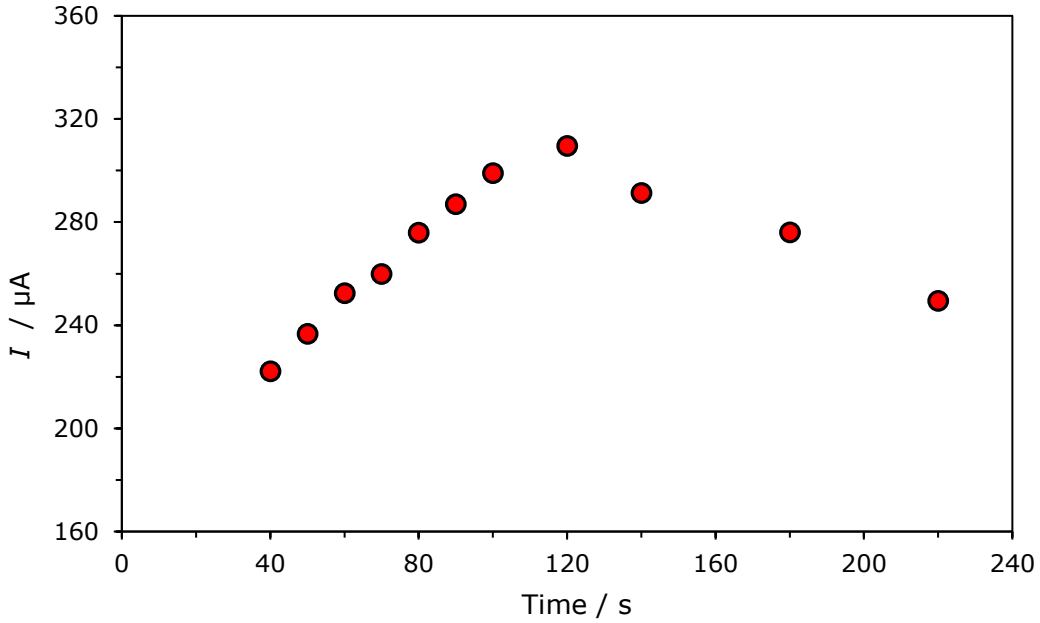


Figure S5: Effect of the time applied to over-oxidize the PGE/PEDOTNF-2dng-2V at 2.0 V on the oxidation peak current obtained in BRT solution at pH 2.0 containing 400 µM DBT.

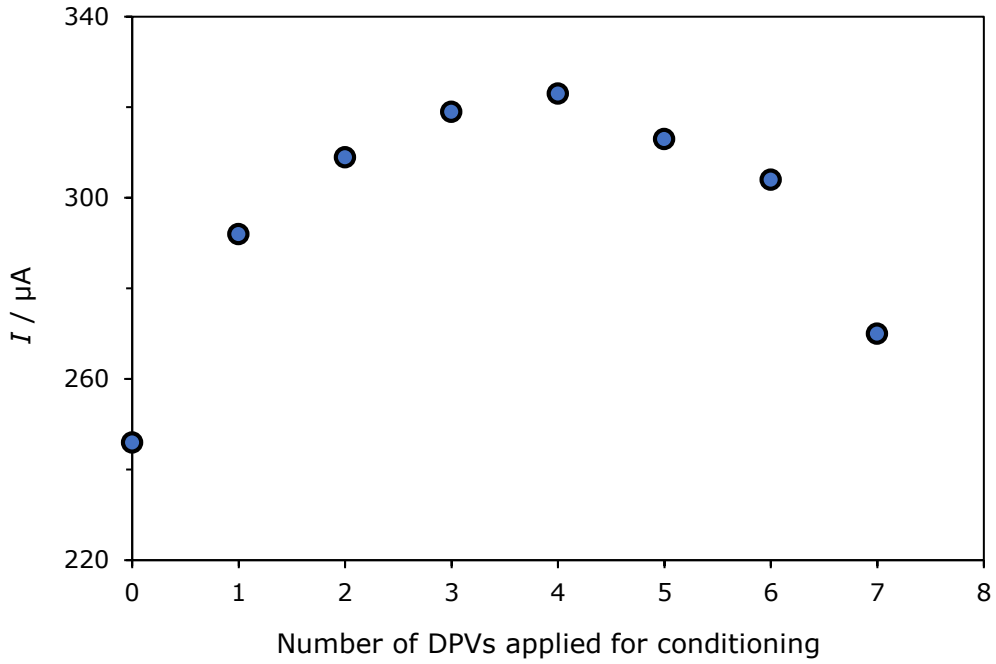


Figure S6: The effect of the DPV number applied for conditioning in the over-oxidation of PGE/OPEDOTNF-2cyc-2V-120s on the cyclic voltammetric current obtained in BRT solution at pH 2.0 containing 400 µM DBT.

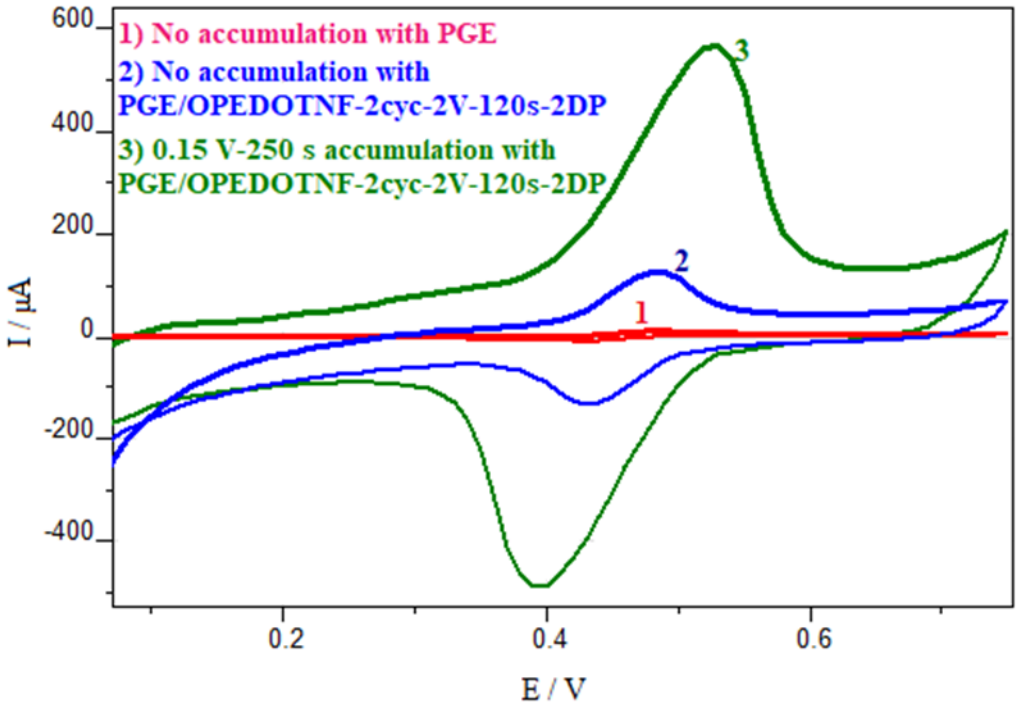


Figure S7: Cyclic voltammograms obtained in BRT solution at pH 2.0 containing 100 µM DBT without accumulation with PGE (1) and PGE/OPEDOTNF-2cyc-2V-120s-2DP (2) and by accumulation with PGE/OPEDOTNF-2cyc-2V-120s-2DP (3). (Accumulation voltage: 0.15 V and accumulation time: 250 s).

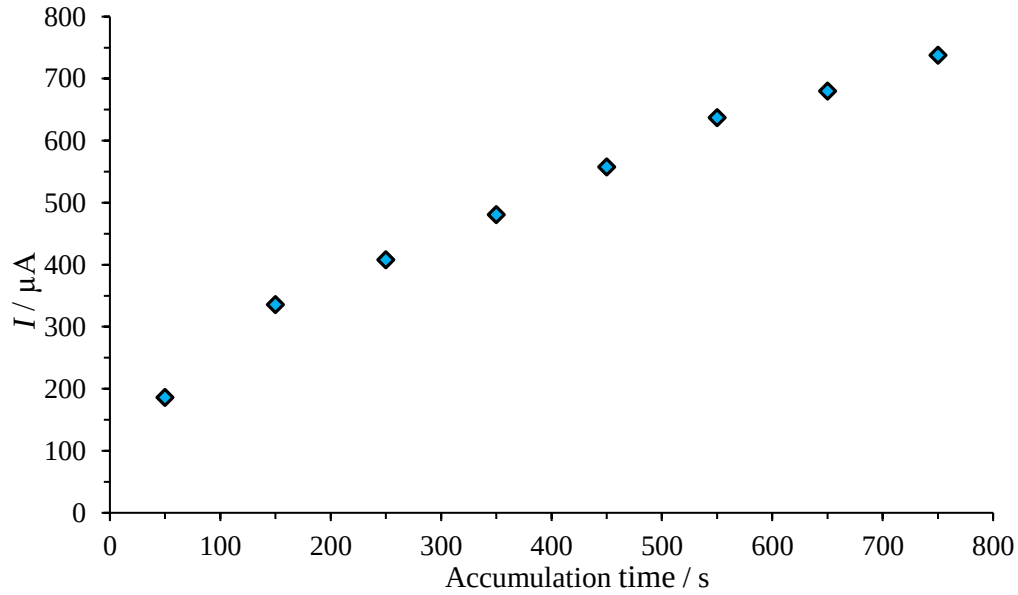


Figure S8: The effect of the accumulation time on the current obtained by CV for 100 µM DBT in BRB solution at pH 2.0 using PGE/OPEDOTNF-2cyc-2V-120s-2DP (Accumulation voltage: 0.20 V).

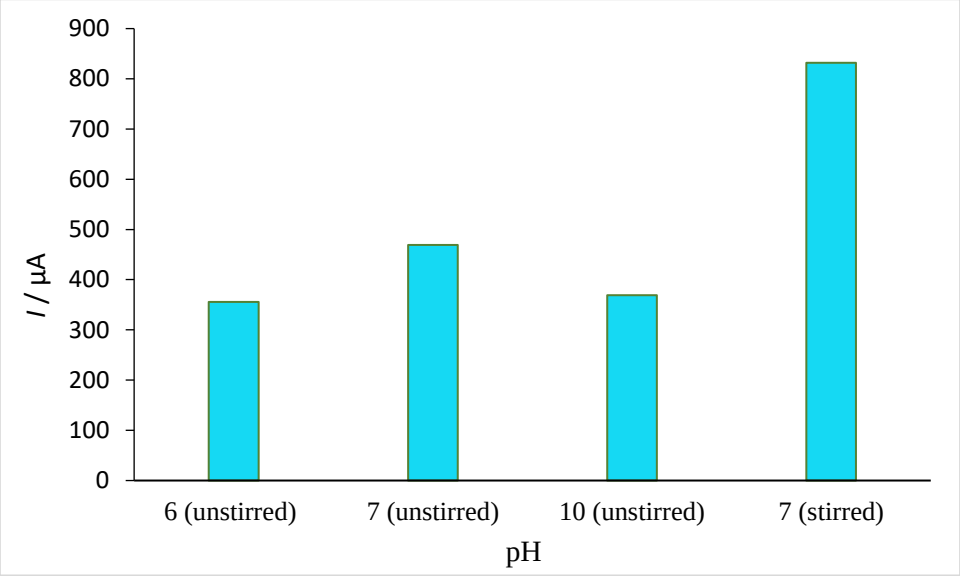
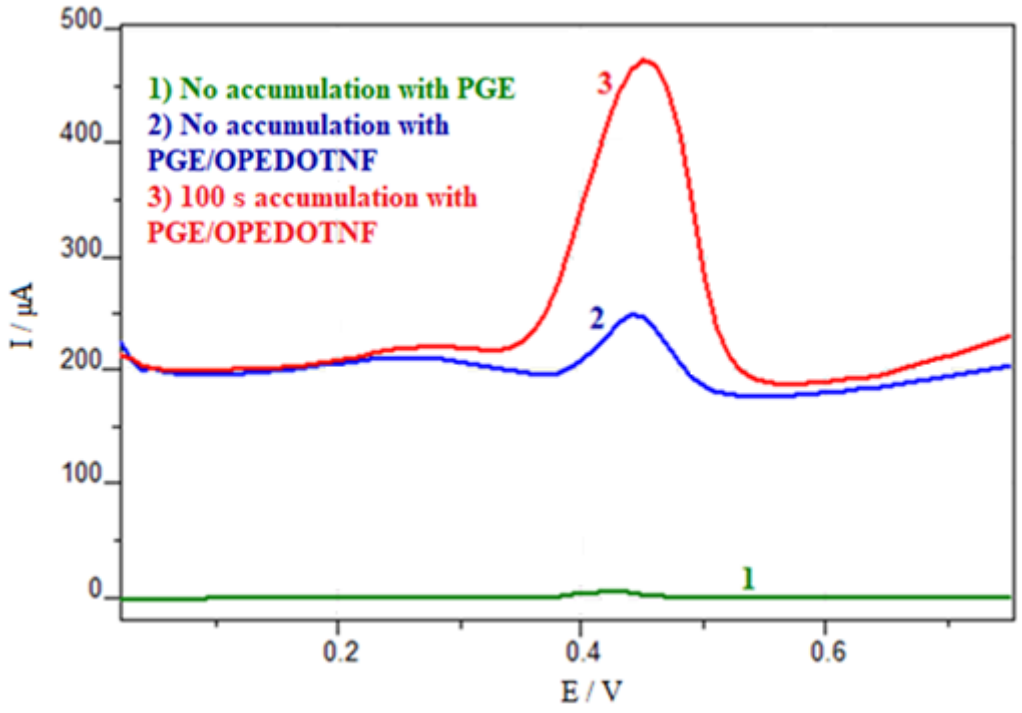
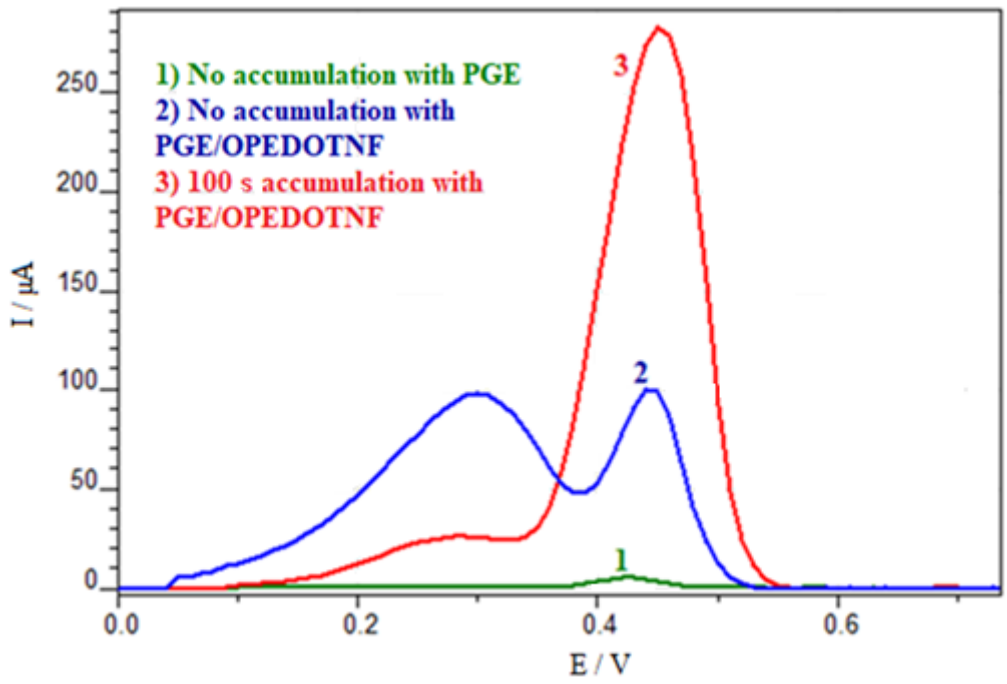


Figure S9: The effect of the solution pH in which the PGE/OPEDOTNF-2cyc-2V-120s-2DP electrodes are over-oxidized on the oxidation peak current (Method used: CV, measurement solution: BRT solution at pH 2.0 containing 100 µM DBT, accumulation voltage: 2.0 V, accumulation time: 350 seconds).



(a)



(b)

Figure S10: DP voltammograms without baseline corrected (a) and with baseline corrected (b) (Accumulation voltage: 2.0 V; unstirred solution).

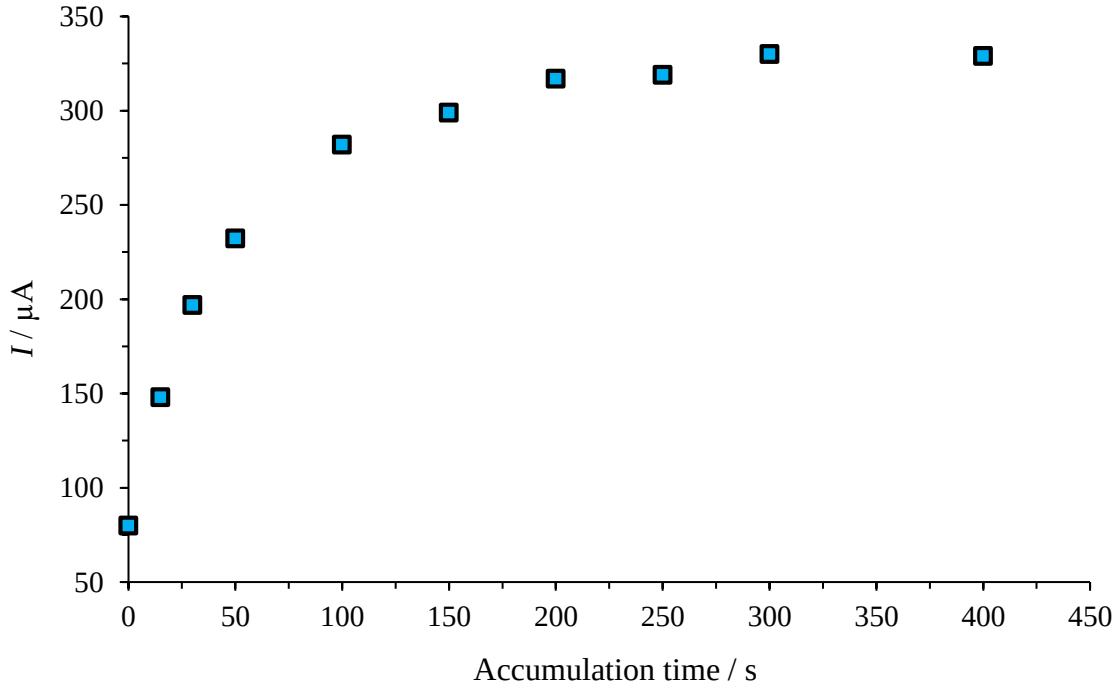


Figure S11: Effect of accumulation time on current obtained by DPV for 20 µM DBT in pH 2.0 BRB using PGE/OPEDOTNF-2cyc-2V-120s-2DP electrode (Accumulation voltage: 0.20 V, solution stirring rate: 250 rpm).

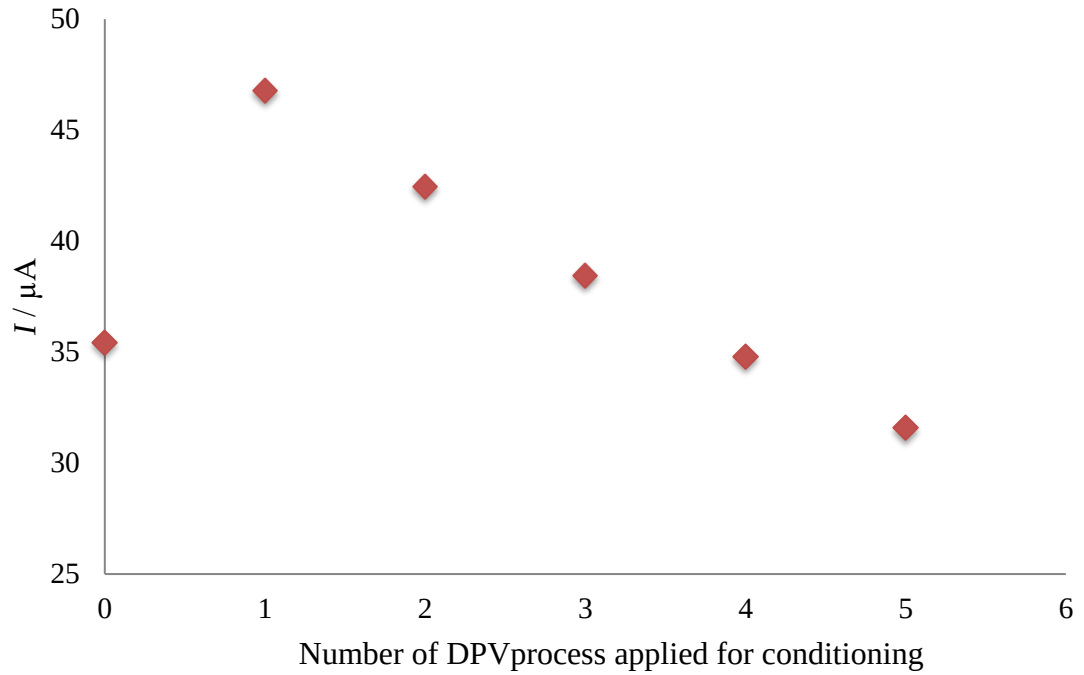


Figure S12: The effect of DPV conditioning numbers in over-oxidation for PGE/OPEDOTNF-2cyc-2V-120s on the DBT current obtained for 1 µM DBT in BRB solution at pH 2.0 by DPV (Accumulation voltage: 0.20 V; Accumulation time 100s).

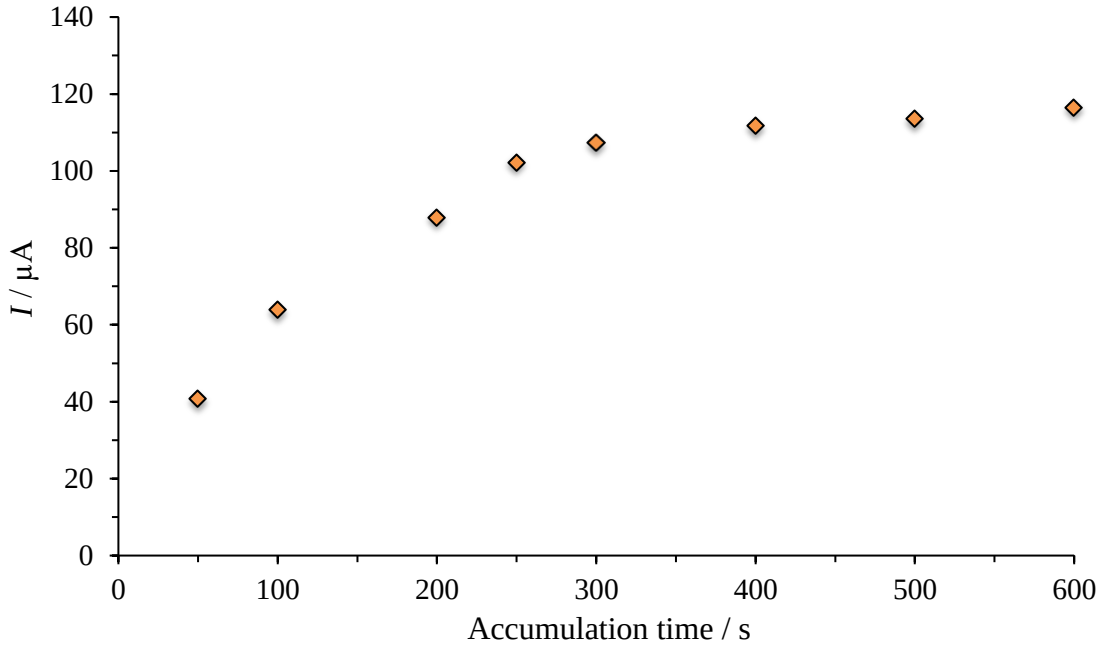


Figure S13: Effect of accumulation time on current obtained by DPV for 2.0 µM DBT in BRB solution at pH 2.0 using PGE/OPEDOTNF-2cyc-2V-120s-1DP (Accumulation voltage: 0.20 V, solution stirring rate: 250 rpm).

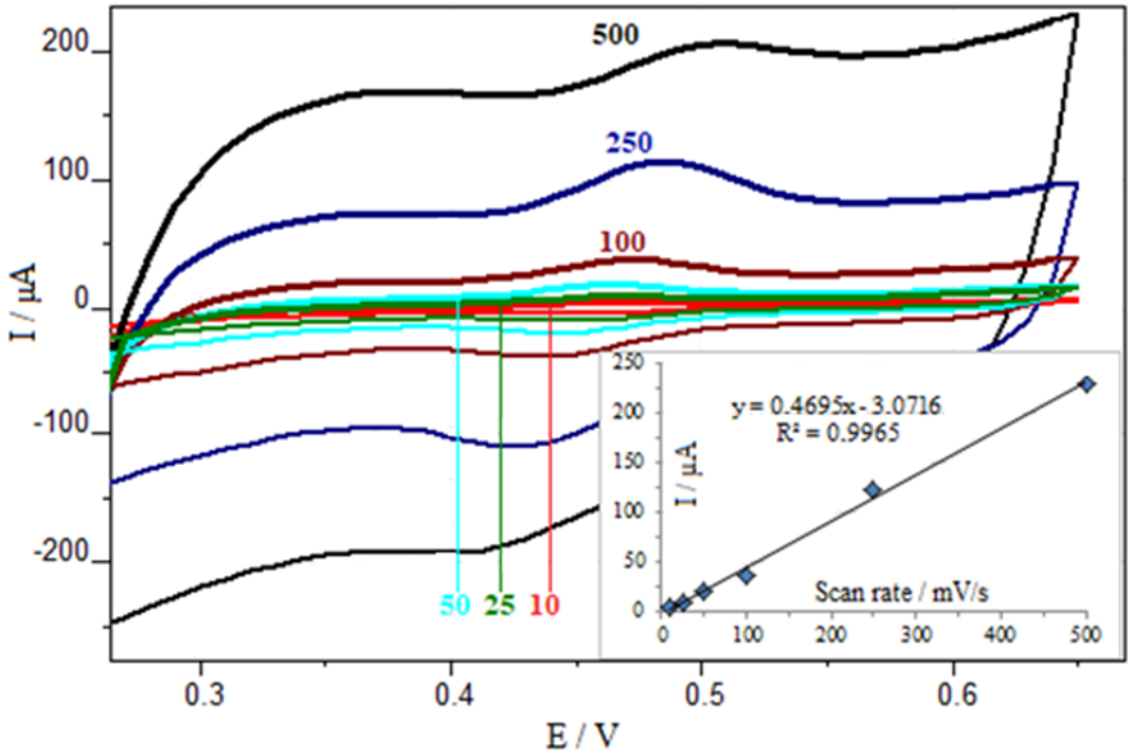
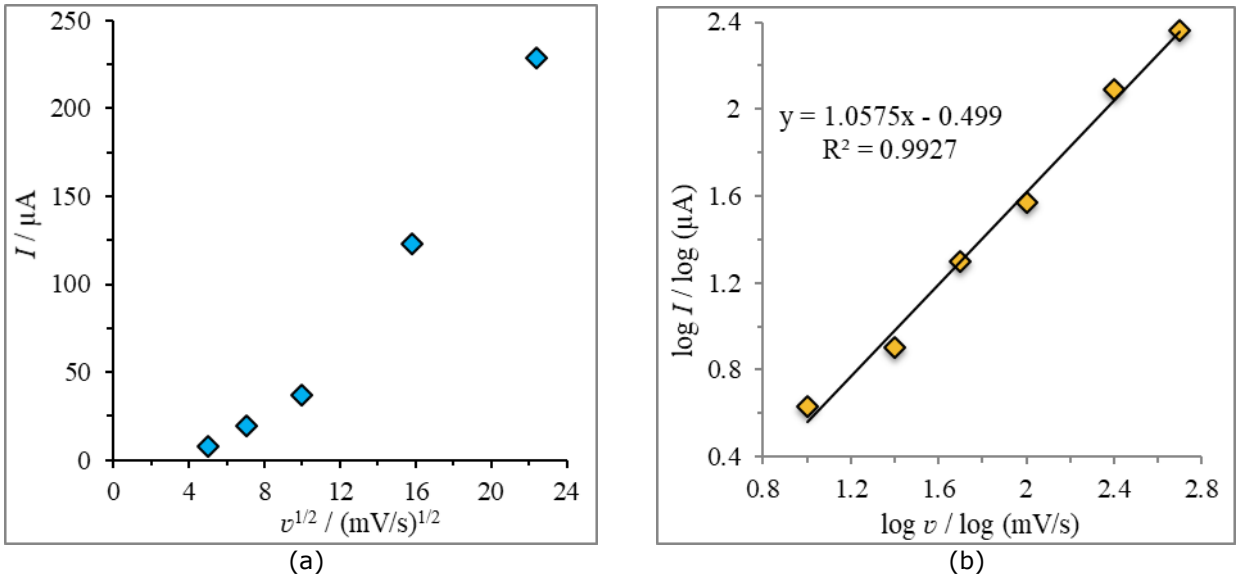


Figure S14: Cyclic voltammograms and peak current-scan rate values obtained at different scan rates in BRB solution at pH 2.0 containing 25 µM DBT using PGE/OPEDOTNF-2cyc-2V-120s-1DP electrodes.



(a) (b)

Figure S15: (a) The graph of peak current-square root of scan rate, (b) the graph of the logarithm of scan rate-the logarithm of peak current (in BRB solution at pH 2.0 in the presence of 25 µM DBT using the PGE/OPEDOTNF-2cyc-2V-120s-1DP, without accumulation).