

Electrochemical DNA Sensor Based on Poly(proflavine) Deposited from Natural Deep Eutectic Solvents for DNA Damage Detection and Antioxidant Influence Assessment

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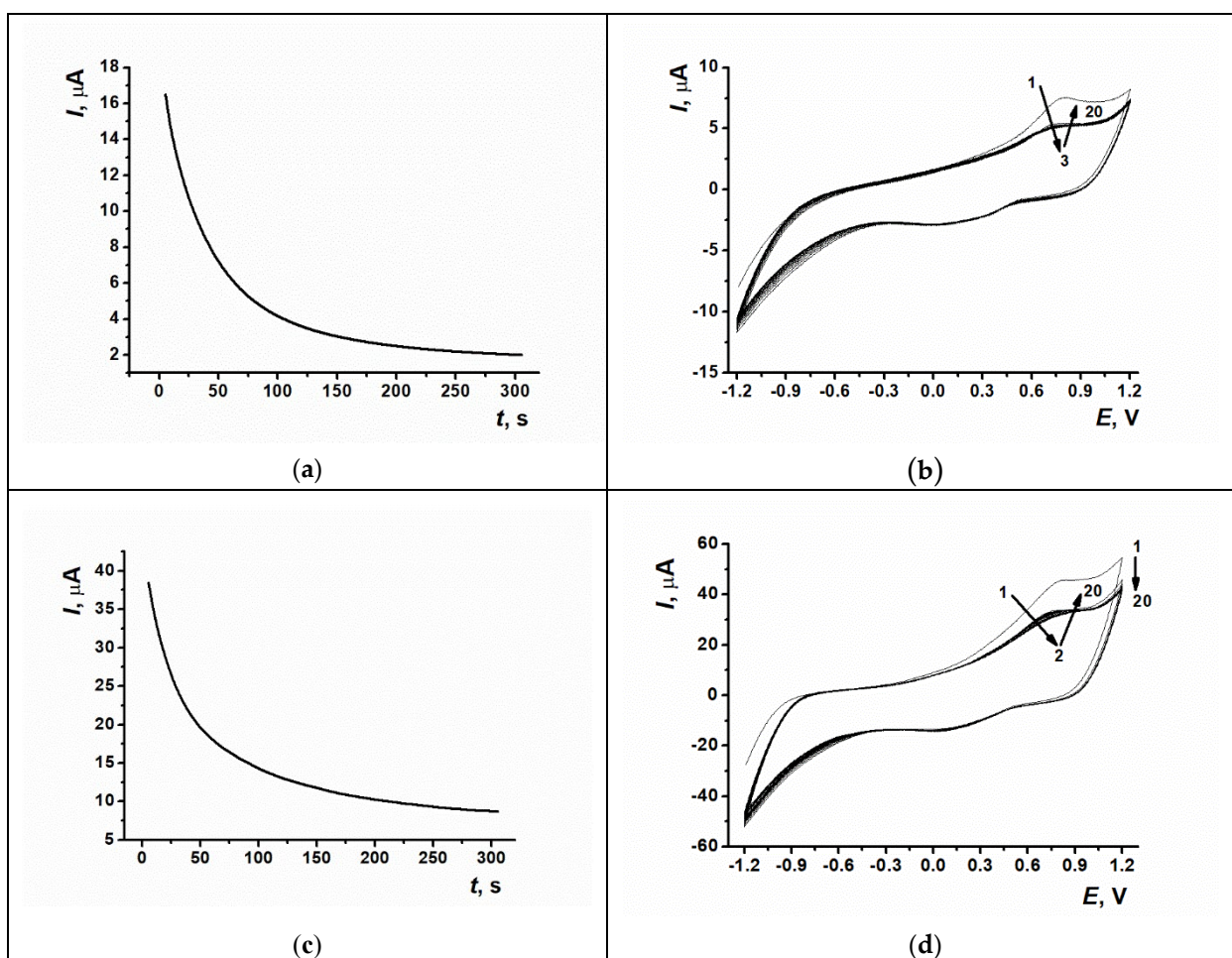


Figure S1. Chronoamperograms of potentiostatic electropolymerization of 0.085 M proflavine in (a) NADES1 and (c) NADES2, 1.2 V, 300 s; multiple cyclic voltammograms (20 cycles, from -1.2 to 1.2 V, 0.1 V/s) recorded after the potentiostatic step in 0.085 M proflavine in (b) NADES1 and (d) NADES2. Arrows indicate changes with increased number of cycles.

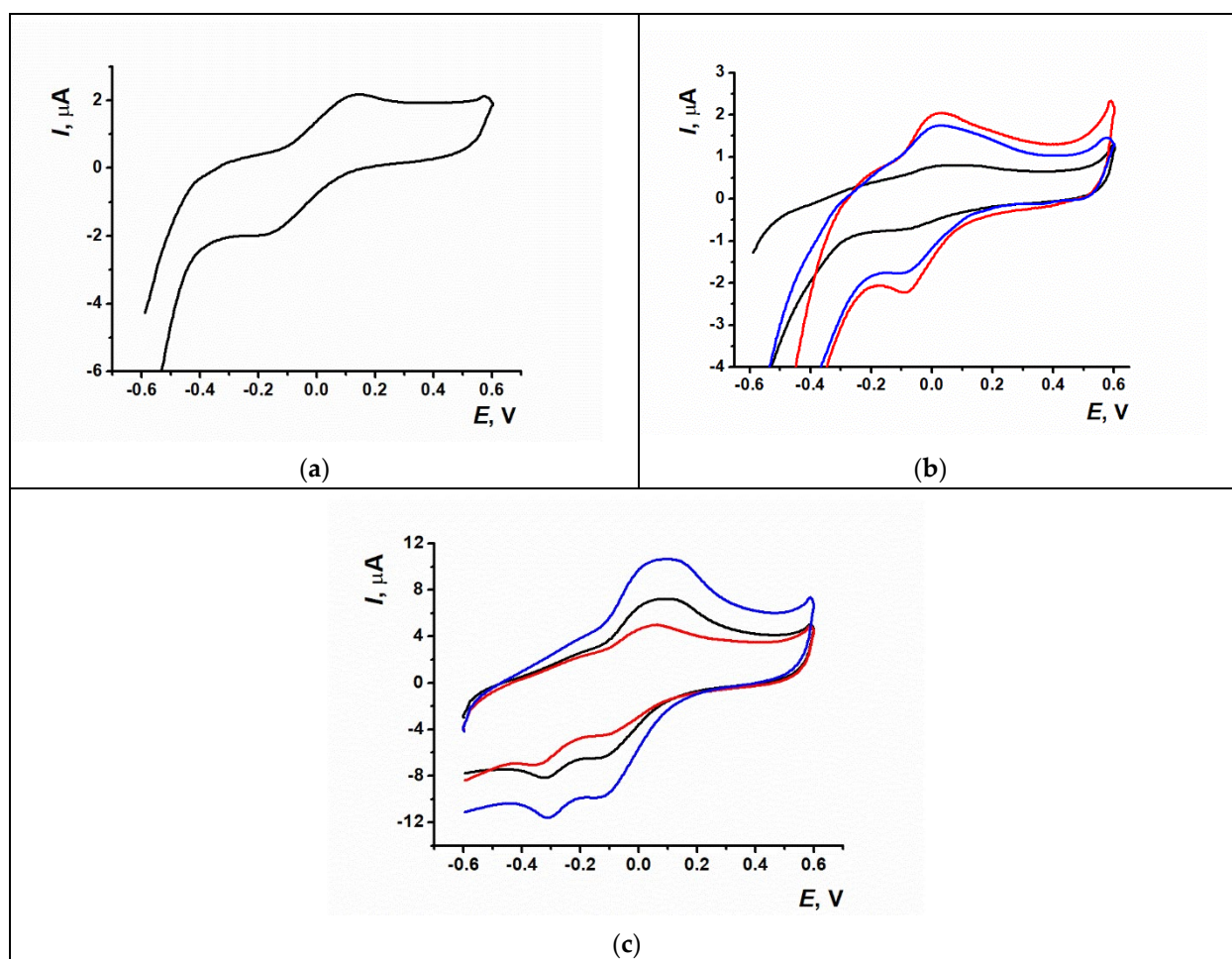


Figure S2. Cyclic voltammograms recorded in 0.025 M PB, pH 7.0, scan rate 0.1 V/s, on the SPCE covered with (a) PPFL_{PB}, (b) PPFL_{NADES1}, and (c) PPFL_{NADES2} after the stabilization step; black—potentiodynamic electropolymerization, red—potentiostatic electropolymerization, and blue—mixed mode of electropolymerization.

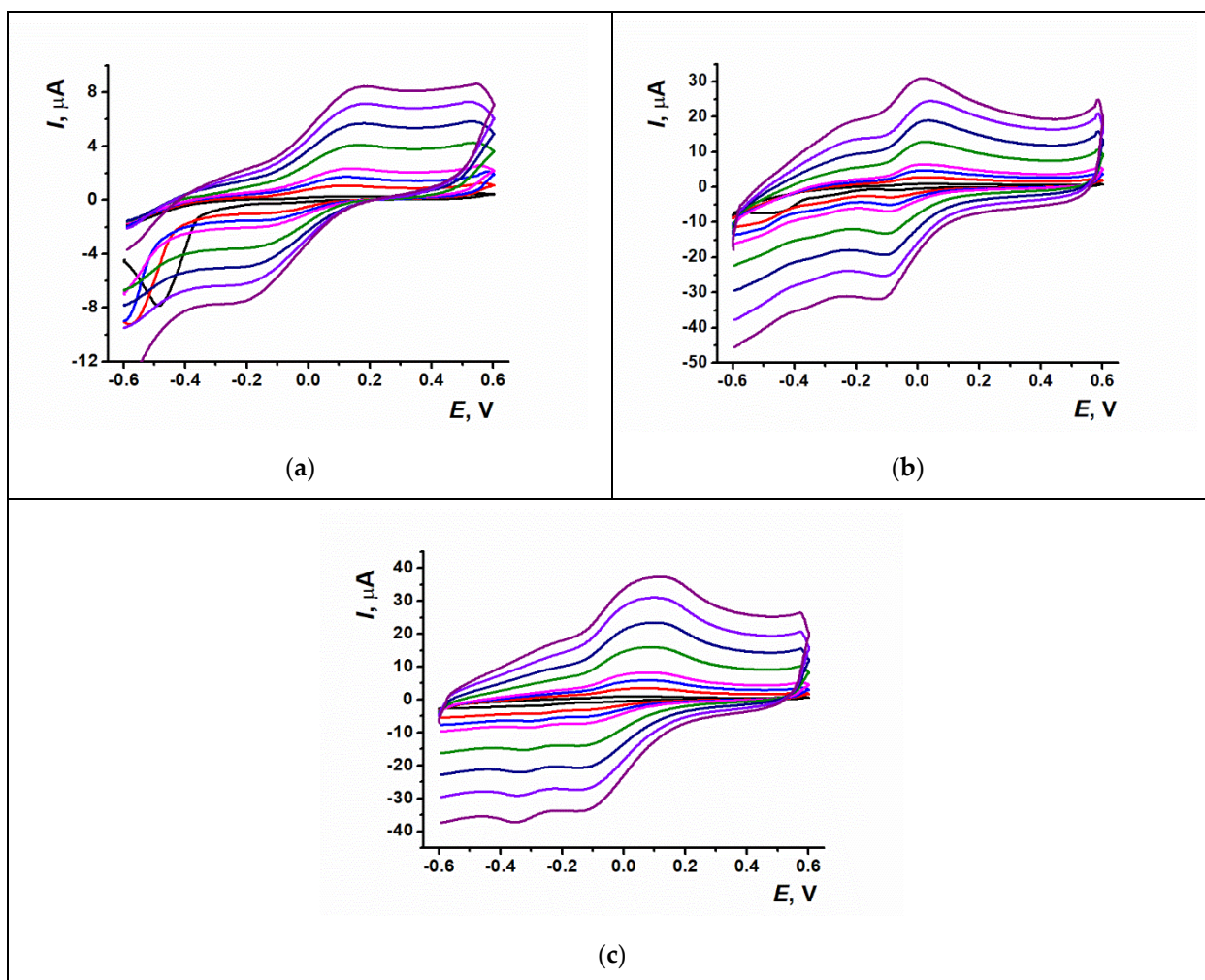


Figure S3. Cyclic voltammograms recorded in 0.025 M PB, pH 7.0, on SPCE covered with (a) PPFLPB, (b) PPFLNADES1, and (c) PPFLNADES2 at the scan rates of 0.01, 0.04, 0.07, 0.1, 0.2, 0.3, 0.4, and 0.5 V/s.

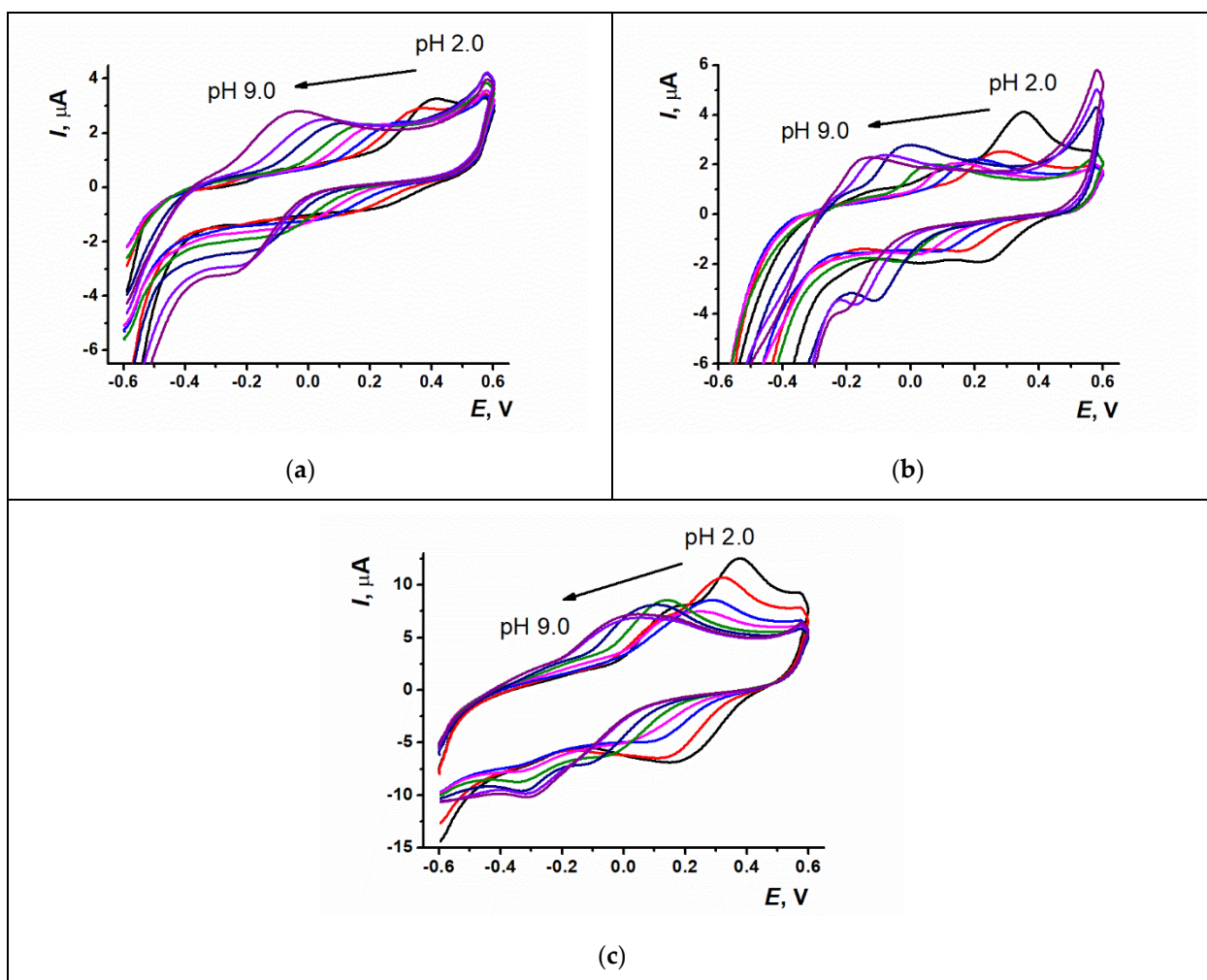
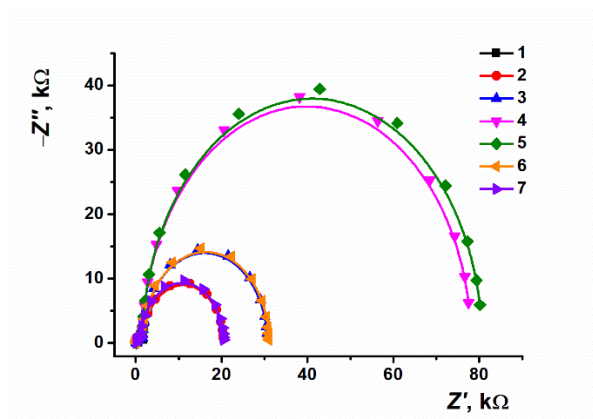
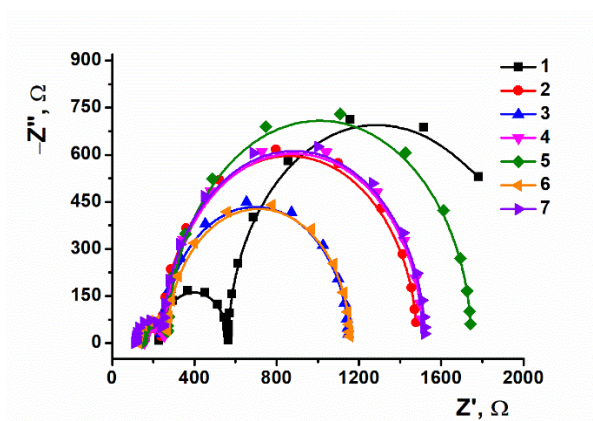


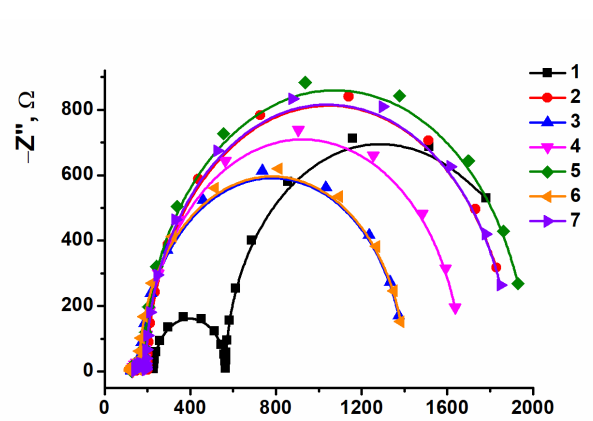
Figure S4. Cyclic voltammograms recorded in 0.025 M PB on the SPCE covered with (a) PPFL_{PB}, (b) PPFL_{NADES1}, and (c) PPFL_{NADES2} at the pH values of 2.0–9.0, and scan rate of 0.1 V/s.



(a)



(b)



(c)

Figure S5. Nyquist diagrams recorded for 1—bare SPCE, 2—SPCE/PPFL, 3—SPCE/PPFL/native DNA, 4—SPCE/PPFL/denatured DNA, 5—SPCE/PPFL/oxidized DNA, 6—SPCE/PPFL/PSS, and 7—SPCE/PPFL/H₂O; (a) PPFL_{PB}, (b) PPFL_{NADES1}, and (c) PPFL_{NADES2}; 0.025 M PB, pH 7.0 in presence of 0.01 M [Fe(CN)₆]^{3-/4-}.

Table S1. EIS potentials vs. Ag/AgCl for PPFL based sensors.

Sensor content	E_m		
	PPFL _{PB}	PPFL _{NADES1}	PPFL _{NADES2}
Bare SPCE	0.094 V	0.094 V	0.094 V
SPCE/PPFL	0.090 V	0.127 V	0.120 V
SPCE/PPFL/native DNA	0.108 V	0.151 V	0.137 V
SPCE/PPFL/denatured DNA	0.107 V	0.140 V	0.124 V
SPCE/PPFL/oxidized DNA	0.114 V	0.133 V	0.121 V
SPCE/PPFL/PSS	0.119 V	0.117 V	0.122 V
SPCE/PPFL/H ₂ O	0.098 V	0.125 V	0.115 V

Table S2. EIS potentials vs Ag/AgCl for PPFL_{NADES1} based sensors in antioxidative effects investigation.

Sensor content	Antioxidant concentration		E_m	
SPCE/PPFL _{NADES1} /native DNA	-		0.151 B	
		Ascorbic acid	Quercetin	Hydroquinone
	-		0.133 V	
	1 mM	0.140 V	0.141 V	0.125 V
	0.1 mM	0.124 V	0.116 V	0.115 V
	10 μ M	0.131 V	0.120 V	0.125 V
	1 μ M	0.132 V	0.120 V	0.114 V
	0.1 μ M	0.109 V	0.122 V	0.118 V
	1 μ M (sachet)	0.113 V		-
	1 μ M (tablets)	0.127 V		-