

Supporting Information

Boron enhanced growth of micron-length carbon based nanowalls: A route towards high rates electrochemical biosensing

Katarzyna Siuzdak¹, Mateusz Ficek², Michał Sobaszek², Jacek Ryl³, Marcin Gnyba², Paweł Niedziałkowski⁴, Natalia Malinowska⁴, Jakub Karczewski⁵ and Robert Bogdanowicz^{2}*

¹ Centre for Plasma and Laser Engineering, The Szewalski Institute of Fluid-Flow Machinery, Polish Academy of Sciences, 14 Fiszera St., 80-231 Gdańsk, Poland

² Department of Metrology and Optoelectronics, Faculty of Electronics, Telecommunications and Informatics, Gdańsk University of Technology, 11/12 G. Narutowicza St., 80-233 Gdańsk, Poland

³ Department of Electrochemistry, Corrosion and Materials Engineering, Faculty of Chemistry, Gdańsk University of Technology, 11/12 Narutowicza St., 80-233 Gdańsk, Poland

⁴ Department of Analytical Chemistry, Faculty of Chemistry, University of Gdańsk, 63 Wita Stwosza St., 80-952 Gdańsk, Poland

⁵ Faculty of Applied Physics and Mathematics, Gdańsk University of Technology, 11/12 G. Narutowicza St., 80-233 Gdańsk, Poland

***Corresponding author:** E-mail: rbogdan@eti.pg.gda.pl (Robert Bogdanowicz); Tel.: +48-58-347-15-03; Fax: +48 58-347-18-48

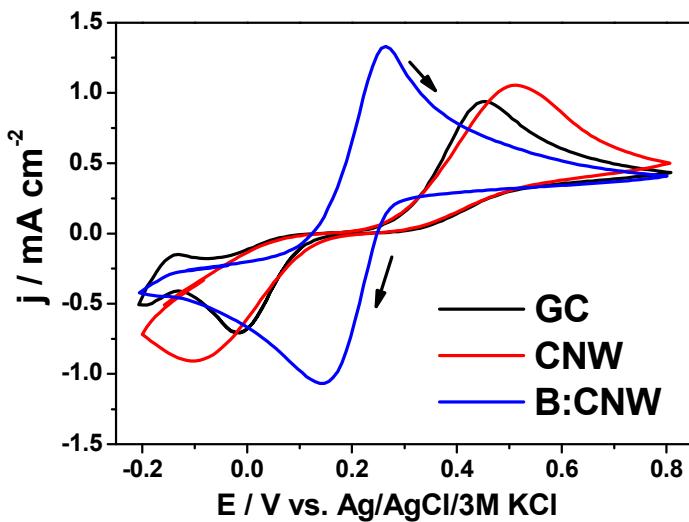


Fig. S1. The cyclic voltammetry curves registered for GC, CNW and B:CNW electrodes immersed in 5 mM HQ + 0.5 M K_2SO_4 .

Table S1. The values of oxidation (E_{ox}) and reduction potentials (E_{red}) together with the separation peak value (ΔE) obtained from CV curves shown in **Fig. S1**.

sample	$E_{\text{ox}} / \text{mV}$	$E_{\text{red}} / \text{mV}$	$\Delta E / \text{mV}$
B:CNW	265	142	123
CNW	514	-103	617
GC	451	-16	467

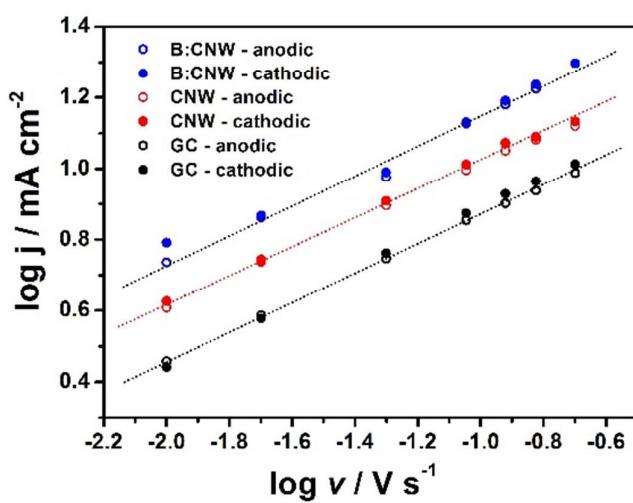


Fig. S2. The relation of logarithm of current density versus the logarithm of the scan rate obtained on the basis of Fig. 5.

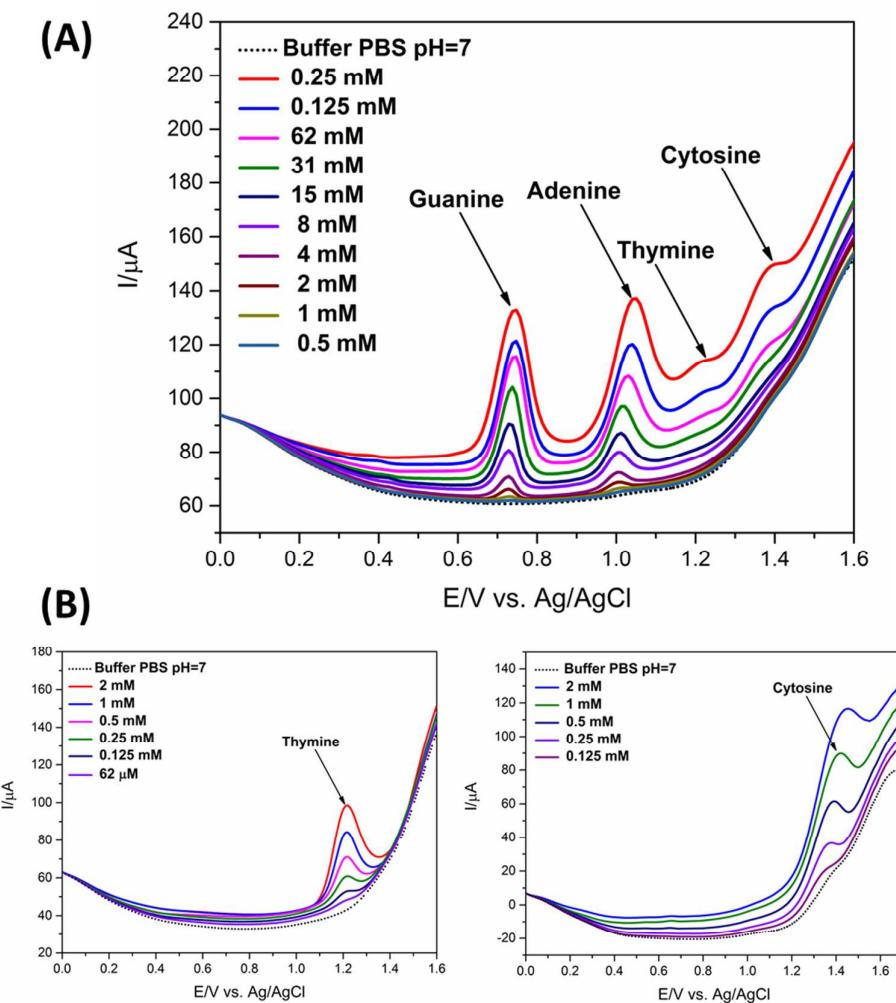


Figure S3. The differential pulse voltammograms of the simultaneous (A) determination of adenine, guanine, thymine and cytosine and separated (B) studies of thymine and cytosine, both in 0.1 M phosphate buffer solutions (pH 7.0) containing various concentrations of purine bases.

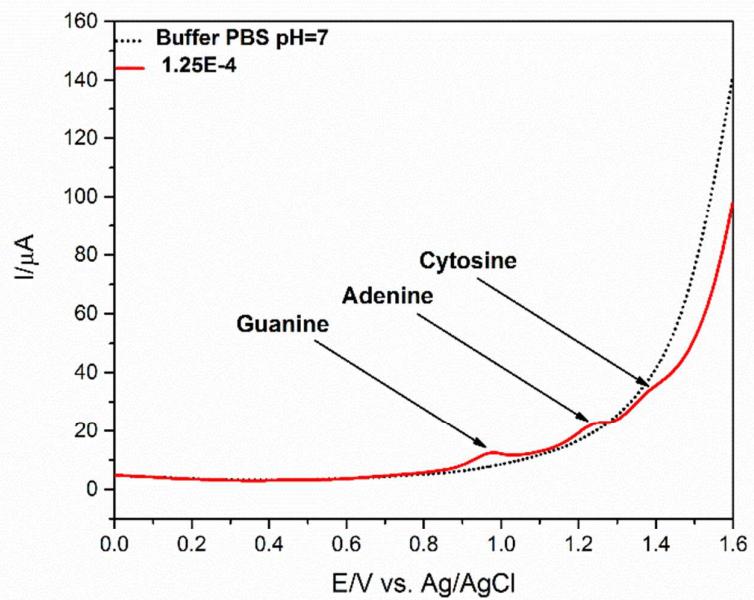


Figure S4. The detection of calf thymus DNA (CT-DNA) using DPV method in concentration 0.125 mM of DNA.