

# Electrooxidation of DNA at glassy carbon electrodes modified with multiwall carbon nanotubes dispersed in polyethylenimine

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This work reports the electrochemical response of the complex between dsDNA and PEI formed in solution and at the surface of glassy carbon electrodes (GCE) modified with a dispersion of multi-walled carbon nanotubes in polyethylenimine (CNT-PEI). Scanning Electron Microscopy and Scanning Electrochemical Microscopy demonstrate that the dispersion covers the whole surface of the electrode although there are areas with higher density of CNT and, consequently, with higher electrochemical reactivity. The adsorption of DNA at GCE/CNT-PEI is fast and it is mainly driven by electrostatic forces. A clear oxidation signal is obtained either for dsDNA or a heterooligonucleotide of 21 bases (oligoY) at potentials smaller than those for the oxidation at bare GCE. The comparison of the behavior of DNA before and after thermal treatment demonstrated that the electrochemical response highly depends on the 3D structure of the nucleic acid. © 2011 Elsevier Ltd. All rights reserved.