CHARACTERIZATION AND ELECTROANALYTICAL APPLICATIONS OF DIFFERENT ELECTRODE ARCHITECTURES BASED ON PEDOT, POLY(BRILLIANT GREEN) AND CARBON NANOTUBES

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In recent years, in the field of electrochemical sensors the use of conducting electroactive polymers[1], on one hand and, on the other hand the application of carbon nanotubes[2] seem to be very promising, since these new materials allow the enhancement of speed, sensitivity and versatility of the sensors.

Moreover, the combination of these materials can considerably improve sensor performances, but in this context, the knowledge of the contribute of each species is a key point for the development of the new device.

For this purpose, electrodes with conducting polymers and carbon nanotubes have been prepared and characterized by cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS) in order to establish the position importance and the individual role of each component. In particular, Brilliant Green (BG), which belongs to the triphenylmethane family, has been electrochemically polymerized by cyclic voltammetry on bare carbon film electrodes (CFE) and for the first time on carbon nanotubes (CNTs) and poly(3,4-ethylenedioxythiophene)[3] (PEDOT) modified carbon film electrodes.

The analytical performances of different electrode architectures towards hydrogen peroxide detection[4] allowed the choice of the best electrode configuration for further application in sensor and biosensor construction[5].

References

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