NEW DESIGN MATERIALS USING ELECTRODEPOSITION OF NICKEL PHTALOCYANINES MACROCYCLIC COMPLEX-BASED BIOCOMPATIBLE MEMBRANES FOR THE ELECTROCATALYTIC DETECTION OF VARIOUS ANALYTES IN BIOLOGICAL MEDIA

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The use of polymer coatings to produce modified electrode surfaces has been claimed by several authors as a means of obtaining important analytical advantages [1]. Recent research into developing new electrode materials are now directed towards the use of transition metal macrocyclic complexes in the form of conductive polymers. A special attention has been focused on the electrochemical and electroanalytical properties of the metalloporphyrins and metallophtalocyanines-based films [2]. The preparation and deposition of polymeric metallophtalocyanines onto solid electrodes allows the formation of films which exhibit a variety of interesting and useful properties. The resulting chemically modified electrodes show enhanced electrochemical response to numerous important analytes, and, moreover appeared to possess good mechanical and chemical stability and a high degree of compatibility with both aqueous and non-aqueous solvents which allows their use as indicating electrodes in few systems.

Progress in this area is strongly connected to the design of new electroactive polymeric systems and to the success informing thin, insoluble, stable and adherent films on electrodes. Electropolymerization can be carried out in these different ways : by galvanostatic methods, potentiostatic methods or cyclic voltammetry where the electrode potential is scanned over the range at which the polymerization process takes place. It should be noted that this matter method is a very convenient one because it opens the possibility of continuous monitoring of the electropolymerization process and guarantees a high degree of control of the film thickness. Moreover the electrochemical polymerization approach offers a real flexibility in designing new structured layers and can be readily controlled. It is also very simple to carry out and the polymer deposit can be done on any conductive support [1,3].

Electrodeposition of Ni-based phtalocyanine monomers was recently [4,5] used to prepare *new materials* combining both electrocatalytic and ion-exchange properties of Ni-tetrasulfonated phtalocyanine films, in order to develop new design electrochemical microsensors for sensitive, selective and biocompatible detection of nitric oxide (NO) and dopamine in biologicals media.

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