SCREEN-PRINTED ELECTRODES FUNCTIONALIZATION USING POLIMERIC MATRICES

Reference	Presenter	Authors (Institution)	Abstract
03-064	Ana Flávia Oliveira Notário	Notário, A.O. (Universidade Federal de Uberlândia); Riello, F.N. (Instituto de pesquisas energéticas e nucleares); Ferreira, K.d. (Universidade Federal da Paraíba); Medeiros, E.S. (UFPB); Filho, L.G. (Universidade Federal de Uberlandia);	Biosensors are analytical devices able of converting a biological response into a signal of another nature. In electrochemical biosensors electrode functionalization is a fundamental step. The surface of the electrode, where the interaction with the biological sample occur, must be properly treated so that the signal can be captured in the best way possible, without noise interference and for reproducibility. We aim in this work to use polymeric structures, called blanket, to stabilize the surface of screen-printed electrodes. The blankets are composed of hydrophilic and hydrophobic polymers blend enriched with nanomaterials and were manufactured using the solution blow spinning (SBS) technique. The blankets were placed in contact with the electrode surface and the functionalization by polymer deposition was induced through the current flow. Subsequently, the modification was validated from voltammetry readings and impedance spectroscopy. Scanning electron microscopy showed that there was no change in the microscopic surface of the treated electrodes. However, the blankets were able to improve the reading signal, increasing the active area and current flow and homogenizing the readings between the electrodes. These observed effects may be related to a chemical change in the electrodes and not a physical one. The strategy presented here has the advantage that the polymeric matrices are easy to obtain and inexpensive and can be enriched with various materials. Ensuring that the electrode functionalization step is efficient is essential for the construction of a biosensor, as it also ensures that the capture molecules deposit in a similar manner in each repetition. Finally, this standardization step enables new platforms to be built for disease diagnosis and detection of specific targets.

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