



Strategies for the development of electrochemical sensors aiming bioanalytical applications

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Abstract: For many years, great efforts have been done in the electrochemical (bio)sensors area, in order to develop better analytical tools for practical applications and to attend the world needs [1]. In this context, different types of materials and modifications have been studied to improve the properties of the conventional electrodes and obtain best selectivity, sensitivity and stability aiming (bio)sensors application [2]. Recently, the search for new materials and modification of electrodes have shared space in the analytical field with the development of disposable point-of-care testing (POCT) devices, which provide new configurations of electrochemical cells, reducing its cost and making it easier for large-scale production [3,4]. Moreover, POCT devices are simple, fast and have friendly platform, allowing non-professional people to operate the device without needing for special training. In this field of miniaturized systems, the development of field effect transistors (FET) biosensors based on nanomaterials have shown differentiated properties such as high sensitivity, that has been attracting great interest from biosensors community. Herein, we are going to present some examples of how the electrochemical sensors area, for bioanalytical applications, evolved in our group; starting with the modification of conventional electrodes with different type of materials, followed by development of disposable and miniaturized systems, focusing on paper-based analytical devices (μ PADs) and FETs. New approaches to improve stability in enzymatic biosensors will be also discussed in this presentation, highlighting the use of biomimetic catalysts, without losing the issue of selectivity, and the introduction of molecularly imprinted polymers (MIPs) for electrochemical (bio)sensing.

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