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Editorial

Special Issue "Feature Papers in Biosensors Section 2022"

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Biosensors are devices composed of a biorecognition part and of a transduction part. Natural biomolecules such as enzymes [1], antibodies [2], DNA strains [3], bacteria and yeast [4,5], cells and even plant/animal tissues can constitute the recognition part. Synthesized polymers such as MIP (molecularly imprinted polymers) [1], aptamers and peptides can also be used as recognition part. In this special issue, molecularly imprinted overoxidized polypyrrole doped with copper nanoparticles was used for the electrochemical detection of sulfadiazine [6]. When natural biomolecules are used, one of the key points is the maintenance of the activity of the biomolecule after their immobilization on the transducer surface. Achitosan matrix was demonstrated to maintain enzyme activity for a longer period of time [1]. The stability of non-covalent avidin-biotin binding is widely utilized for anchoring biomolecules, and neutravidin and streptavidin are two commonly used avidin analogues. It was demonstrated that streptavidin is preferable to neutravidin for constructing lipid bilayers based sensing platforms [7]. Nanostructures based on framework DNA hold excellent promise for molecular biology studies and versatile tools for biosensor applications as reviewed in [3]. Dynamic mode decomposition of fluorescence loss was also used for monitoring protein diffusion, protein assemblies and protein aggregates in living cells [8]. Biosensors based on immobilized bacteria or yeast can be used for toxicological monitoring in natural waters [4] or for determining biochemical oxygen demand [5]. 3D-printing leads to low-cost biosensors, such as an immunosensor for the rapid detection of *Escherichia coli* bacteria [2]. A multiplexed bioluminescent assay based on 3D microtissues was performed for monitoring inflammatory, antioxidant bioactivities, presence of heavy metals and toxicity [9]. After an overview of the important biomarkers for several common children cancers, the developed biosensors for early detection of pediatric cancer are enumerated [10]. A review is conducted on the progress of the use of low-cost sensors in healthcare monitoring, the algorithms used to process sensor data and the wireless communication techniques [11].

Non-contact and non-invasive techniques are used for monitoring some behaviors or some health problems. They are also classified in biosensing techniques. A non-invasive measurement of the arterial blood based on a diffused light model has been presented [12]. Infra-red thermal imaging with heart rate variability was used to obtain features related to the psychophysiology of drivers, and data were analyzed by machine learning analyzers [13,14]. Wearable inertial measurement units associated with machine learning algorithm were used to predict Minimum Foot Clearance (MFC) timing [15]. These non-invasive techniques can also be used for monitoring the quality of agrifood products. The digital assessment and classification of wine fault were obtained using a low-cost electronic nose based on near-infrared spectroscopy and machine learning modelling [16].

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