

The logo consists of the letters 'I3S' in a bold, yellow, sans-serif font, positioned above the year '2019' in a white, sans-serif font. Both are contained within a dark blue square.

I3S
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A stylized silhouette of the Napoli skyline in shades of blue. It features a large mountain in the background, a prominent dome with a cross, and various architectural structures including a tall tower and an archway.

Program and Abstract Book

88. Chimera Protein Based Disposable Biosensor for the Electrochemical Monitoring of Polyphenolic Compounds

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The monitoring of contaminants in the marine environment presents an important task. Polycyclic aromatic hydrocarbons derived from polyphenols are among the most important contaminants present in the environment. These compounds are used in several industrial processes for manufacturing of chemicals such as pesticides, drugs and dyes, or in bleaching process of paper, and finally they are thrown to the sea from the offshore industry and also due to the leaks of fuel or oil from the ships.

In this work, a miniaturized electrochemical biosensor based on chimera proteins is presented for the detection of polycyclic aromatic hydrocarbons derived from polyphenols.

Electrochemical biosensors based on screen printed electrodes technology offers several advantages as robustness, simplicity, low-cost, fast-response time, and capability of miniaturization and "in-situ" detection.

Chimera proteins consist of a self-assembling moiety genetically fused to a specific protein that provide to the chimera, in one hand, adhesive properties of the self-assembling moiety and in the other hand the specific recognition ability of the target protein. Herein a fungal class I hydrophobin works as self-assembling moiety and a fungal laccase as recognition element. The chimera protein is provided with an enhancement of the sensibility to polyphenolic compounds respect to the free laccase, due to its stable anchoring onto the electrode surface with a precise orientation.

In the proposed biosensor enzymatic specific recognition is combined with electrochemical detection. The sensor performance was compared.



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