



MULTY-ANALYTE ELECTROCHEMICAL BIOSENSORS ON FLEXIBLE FOILS

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An innovative methodology to amperometric multy-analyte biosensor (glucose and lactate) based on enzymes immobilization by using photo-patternable hydrogels is proposed. Our approach deals with the analyte simultaneous detection from an electrode array on flexible substrates. The photo-definable hydrogels act as excellent biocompatible matrices providing near-physiological conditions that minimize protein denaturation. This allows biosensor miniaturization for a continuous non-invasive glucose/lactate monitoring [1].

Moreover, the three-dimensional aspect of hydrogels enables them to contain a much larger quantity of sensing reagent, thereby increasing their signal-to-noise ratio and sensitivity.

We have developed a method to fabricate biosensors which is based on:

- a 3-electrode configuration array: working (WE), reference (RE) and an auxiliary counter electrode (CE) as current drain;
- a specific flexible foil functionalization for hydrogel immobilizing on electrode arrays;
- the set-up of lithographic steps for photopatterning of hydrogel charged with enzyme;
- the amperometric set up for sensor testing device.

The hydrogel used is a mixture of PolyEthylene Glycol-DiAcrylate (PEG-DA) and 2-hydroxy-2methyl-propriophenone acting as photoinitiator.

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REFERENCES

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