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IAEAC

sensors

biosensors

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Biosensors: Coupling Smart Molecules into Chips

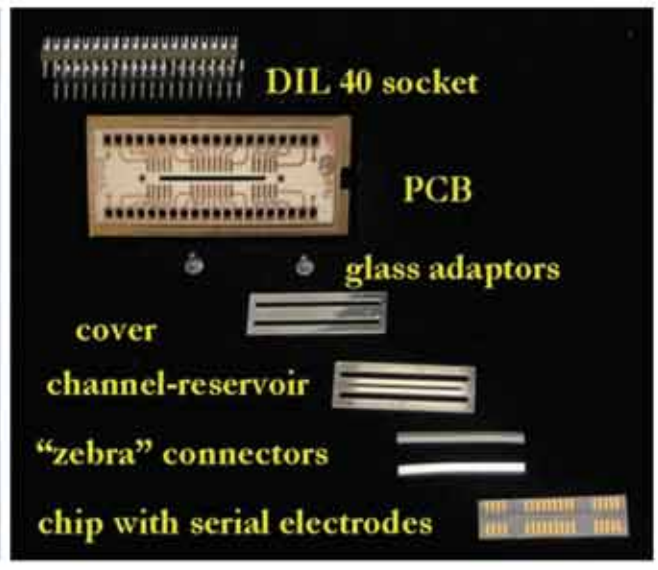
Chemical analysis of environmental or food samples are expensive, their cost prohibiting systematic surveys or monitoring activities. Inexpensive analytical tools for rapid screening are needed. Use of biosensors is made be possible by thick-film technology for the construction of (bio)sensors.

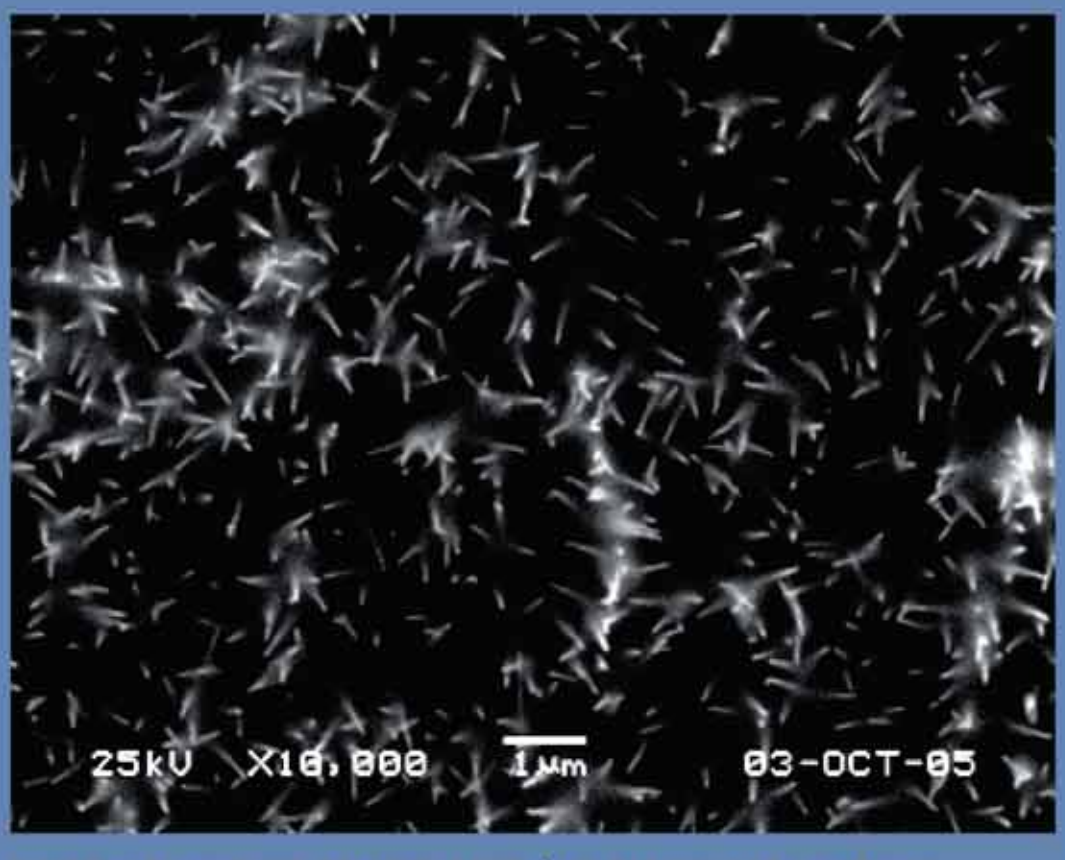
SCREEN PRINTED BIOANALYTICAL DEVICES FOR RAPID SCREENING OF ENVIRONMENTAL OR FOOD SAMPLES

Rapid, portable, inexpensive analytical tools for Pesticides, Herbicides, Phenolic compounds in soils and water, atmospheric precipitations, waste waters, wine, extra virgin olive oil, milk and whey, juice fruits and vegetables. Monitoring several crucial steps of the winemaking process.

Compared to other available technologies for manufacturing electrodes, such as thin-film, thick-film electrodes are cheaper, simple to fabricate and are congruent for mass production of flexible and disposable devices. In addition thick film technology enables selective membranes and nanostructured materials to be deposited onto/into the electrodes for improving their performances. In our experience biosensors are a suitable alternative for analysis of pesticides, herbicides, phenolic compounds in soils and water, waste waters, wine, extra-virgin olive oil, milk and whey, fruit and vegetables. Wine quality can also be monitored throughout several crucial steps of the winemaking process.

Know-how on immobilisation of biomolecules and cells (bacteria, blood cells)





FABRICATION OF MICRO AND/OR NANO ELECTRODES

ORIGINAL PROCEDURE FOR SUITABLE IMMOBILISATION OF ENGINEERED (HIS)6 TAGGED PROTEINS

An original procedure for introducing Ni(II)NTA functional groups on different sensor materials (gold, polycarbonate, graphite, glass, quartz) for suitable immobilisation of engineered proteins with an (His)6 tag has been developed and evaluated for specific binding and activity of several recombinant proteins. Optimal (oriented) electrochemically addressed immobilization of crude or purified recombinant proteins on a micro- or a nano-electrode ensemble (NEE) was obtained. No loss of functional properties was observed, indicating recombinant proteins as suitable sensing molecular tools for biosensors. (www.biosensing.net