Project fiche 9 July 2009

Advanced Pathogen Detection for Human Protection

(ref. 983115)

In this project, a novel system for highly specific and rapid pathogen detection will be developed based on Impedance Spectroscopy, a truly reagentless electrochemical transduction scheme. The arisen technology will be directly applicable to clinical testing, food industry and environmental safety, and can easily be formatted for security control in the improbable scenarios of a biological warfare or a biological terrorist attack. The presence of pathogens in a sample can be fatal even at concentrations that are below the limit of detection of most detection assays. Therefore, the system will include a quick pre-treatment step using magnetic beads resulting in the concentration and signal amplification of the pathogens.

The real novelty of this project will be the development of highly specific bio-sensors based on phages. Phages are bacteria specific virus which should provide improved sensor specificity compared to conventional systems using antibodies. The phage system will also have a longer shelf life and are cheaper to produce. Within the framework of this project, two non-pathogenic bacteria will be initially selected as model microorganisms for the development of the detection system in Tunisia.

The developed technology will be patented by the research teams involved, assayed and validated against pathogen bacteria at the facilities of the industrial end-user BioPhage Pharma located in Canada, and commercialised by the latter.

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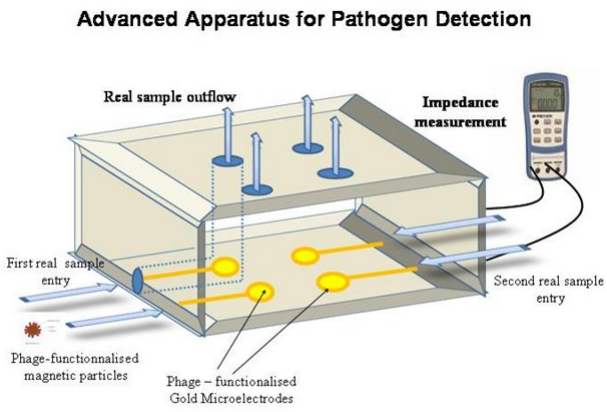
Duration: 2 years; expected completion by April 2011
Website: http://www.cnm.es/projects/apda



(Image courtesy of INSAT, Charguia, Tunisia.)

Microelectrode production at the CNM Clean Room facility. (Photos courtesy of CNM, Barcelona, Spain.)