

TITULO High sensitivity photonic sensors

DESCRIPTION OF TECHNOLOGY

Researchers at the Polytechnic University of Valencia have developed a new method of producing highly sensitive photonic sensors, which are particularly useful in the early detection of diseases such as cancer and Alzheimer's, monitoring environmental contamination, and detecting biological threats, among others.

The technique, patented by the UPV, was developed by a team from the university's Centre for Nanophotonic Technology and Institute of Molecular Recognition and Technological Development. The device will make it possible to obtain lab-on-a-chip analysis systems with significantly higher sensitivities than those of present-day photonic sensing systems and other technologies. It will also allow the direct detection of analytes with reduced molecular mass, which currently can only be achieved through extremely complicated processes.

Analytes with reduced molecular mass or at extremely low concentrations, such as certain

biomarkers associated with contaminants and cancer, are detected at the present time by previously marking those required to be detected in a sample with the selected markers fixed to the analytes to be studied. These markers possess certain physical properties of fluorescence and radioactivity, which, when they become attached to an analyte, can be measured indirectly from the marker's properties.

The newly proposed technique, on the other hand, directly recognizes any changes in the shape of the bioreceptors used. This change in shape causes a particle or molecule with a larger size or refraction index than the analyte to be detected to move away and provides more efficient detection.

COMMERCIAL APPLICATIONS

- Medical diagnosis
- Environmental monitoring
- Pharmaceutical development
- Detection of chemical and/or biological threats.
- Research

TECHNICAL AND COMMERCIAL BENEFITS

- Permits direct amplification of detection process without the need for complex sample preparation procedures, marking or PCR amplification.
- Provides highly sensitive results.
- Able to detect one or more low-mass molecules
- Can provide simpler and cheaper analysis systems.

STATE OF THE TECHNOLOGY

The sensing photonic chips have been developed. Work is now proceeding on the application of the technique for the early diagnosis of different types of cancer within the framework of the European SAPHELY Project. Diagnosis will be achieved by high-sensitivity identification of microARN-type biomarkers in a small blood sample.

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INDUSTRIAL AND INTELLECTUAL PROPERTY

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COLLABORATION SOUGHT

Companies interested in reaching an agreement on a patent licence for its use, manufacture or marketing are invited to contact the developers.

VIEW OF THE DEVICE



CONTACT information

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