

## LAYERED SUBSTRATE AND USES THEREOF

### The need

Biosensors for continuous *in situ* detection or quantification of various analytes in real time

### The Solution

The present invention provides a new layered substrate useful in Surface-enhanced Raman spectroscopy (SERS) that allows the *in situ* detection or quantification of one or more analytes in real time.

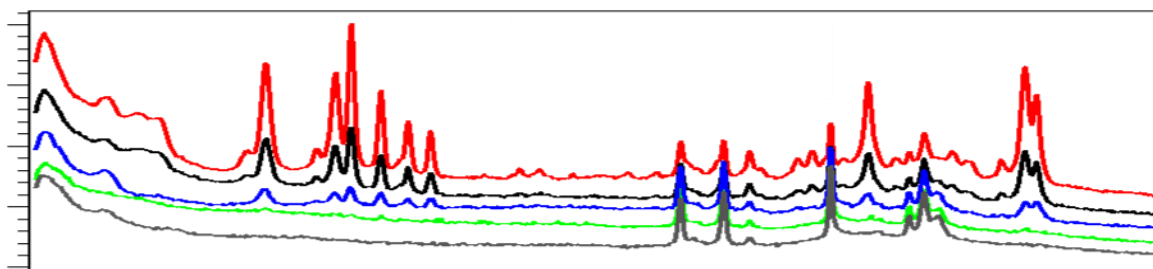
This innovative technology demonstrates that by applying a sheathing layer with particular properties, over a whole plasmonic substrate surface, an efficient spatio-temporal control in the identification and/or quantification of the analyte(s) of interest can be achieved.

### Innovative Aspects

The present invention provides a new layered substrate comprising (a) an electromagnetically active layer, (b) a support layer adjacent to the electromagnetically active layer, and (c) a thermolabile sheathing layer adjacent to the electromagnetically active layer wherein: at least one of the layers adjacent to the electromagnetically active layer is transparent to an incident electromagnetic radiation of wavelength  $W$ ; the sheathing layer: is not-permeable to a fluid  $FL$ ; and it is capable of being degraded at a temperature  $T$ ; and the electromagnetically active layer is integrally attached to the support layer, is capable of converting electromagnetic energy carried by the incident electromagnetic radiation of wavelength  $W$  into thermal energy; and is thermostable at temperature  $T$ .

The invention also provides processes for the preparation of the material, uses as spectroscopy substrate, methods for identifying/quantifying one or more analytes and kits and devices comprising the substrate.

Advantageously, this innovative substrate allows the *in situ* detection or quantification of analyte(s) in real time and overcomes the “memory effect” reported with the spectroscopic substrates known in the state of the art.



**Stage of Development:** Successful proof of concept, lab prototype under development

### Intellectual Property

European patent application (Priority date: December 21, 2020)

Suitable for international extension (PCT application)

Available for  
Licensing

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