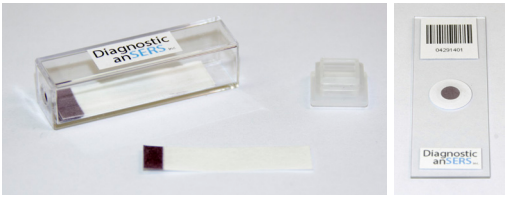
Diagnostic anSERS Inc.

P-SERS™ 2.0

For rapid, on-site trace chemical detection



Advanced SERS substrates enabling rapid, reliable trace detection using Raman spectroscopy

Overview

Diagnostic anSERS' unique approach to SERS substrates enables the use of SERS without the limitations of traditional SERS substrates. We've eliminated expensive, clean-room fabricated silicon wafers: simply pipette, dip or swab to load your sample for immediate SERS measurement *without* sacrificing sensitivity or reliability.

Key Advantages of P-SERS™ 2.0

Excellent Shelf-life P-SERS™ 2.0 provides a dependable and guaranteed level of enhancement without special storage conditions

High Sensitivity Boosts Raman signals by approximately one million times (analyte dependent)

Low variability P-SERS™ 2.0 substrates offer consistent performance within and across batches

Easy to use Simply dip, swab, or pipette your sample onto the sensor, then measure

Cost Effective Our unique fabrication technique allows us to deliver P-SERS™ substrates at a fraction of the price of traditional substrates, without sacrificing performance

Fully customizable We fabricate sensors with custom form-factors to meet our customer's demands: from surface swabs to 96 well plates, we can handle it!

Applications

Narcotics Detection P-SERS™ enables straightforward Raman detection of fluorescent samples (e.g. Heroin street samples), otherwise difficult to detect samples like THC (marijuana) and trace narcotic residues

Food safety can be assured by detecting trace contaminants, such as pesticides and insecticides, as well as adulterants such as melamine

Biologicals P-SERS™ can be used for bacteria and protein detection

Explosives such as TNT can be detected at ppm levels in under a minute through a simple surface swab

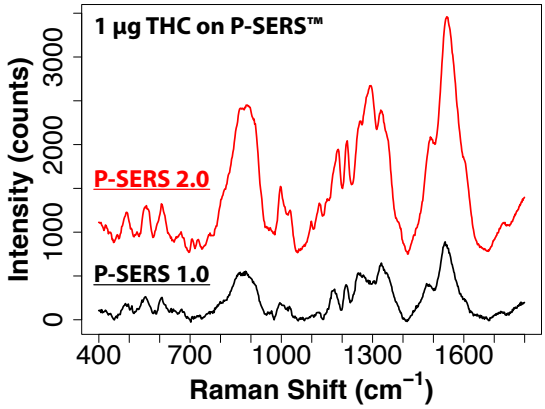
Anti-counterfeiting P-SERS™ can be used to assure product authenticity through the detection of ppb level taggants which form an invisible "barcode". A variety of taggants can be used to impede any counterfeiting attempts; food safe taggants are available. Products that can be tagged include fuels, documents, pharmaceuticals and high-end consumer products.

Technical Data

Specifications	P-SERS™ 2.0
Physical	
Unmounted	~9 × 35 mm, ~9 × 5 mm sensing region
Slides	25 × 75 x 1 mm, 0.25 inch ø sensing region
SERS Sensor	
Enhancement	≈ 10^6, analyte dependent
Excitation	633 nm ≤ λ ≤ 1064 nm, 785 nm optimal
SERS material	Gold nanoparticles
Support	Cellulose (customizable)
Shelf life	3 months guaranteed, 6+ months typical

Improved limits of detection

P-SERS™ 2.0 is stable under much higher laser powers than the previous version. As a result, substantially improved detection limits are possible with a number of analytes. Here, we applied 1 µg marijuana (THC) to P-SERS™, and then measured at the highest laser power possible without damaging the substrate (40 mW vs 15 mW, 2.0 vs 1.0).

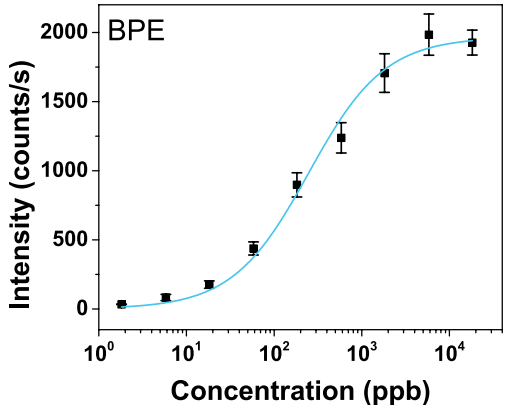


Diagnostic anSERS Inc
Sensitive, flexible sensors for trace chemical detection
5000 College Ave. Ste. 3122
College Park, MD 20740 USA
T: +1 (301) 886 - 0280
F: +1 (301) 886 - 0280
http://www.diagnosticansers.com
we.have@diagnosticansers.com

Diagnostic anSERS Inc.

Quantitative Response

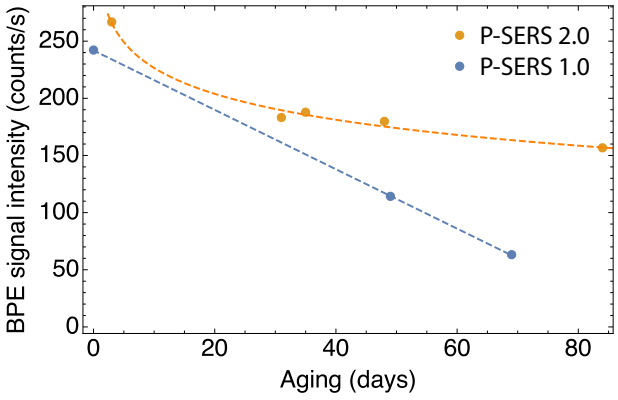
For samples applied in a consistent manner, P-SERS substrates can provide highly quantitative results. Here, metered amounts of a solution containing the Raman marker 1,2-Bis(4-pyridyl)ethylene (BPE) in water were applied to a P-SERS substrate and then measured. The calibration curve is fitted using the standard Langmuir isotherm with an R^2 of over 0.99.



Storage and Shelf Life

When stored as delivered (in the resealable foil pouch with desiccant), P-SERS™ 2.0 substrates are guaranteed to be fresh for a period of 3 months from the date of shipment, but often last for 6 months or more.

Below is a comparison showing the superior aging characteristics of P-SERS™ 2.0. Here, a 10 ppb BPE sample was applied to the substrate, measured, and the height of the most prominent peak was plotted.



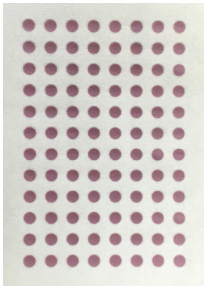
The Custom Development Process

Our engineers work hand in hand with you throughout the P-SERS™ and reader customization process. After a consultation to establish suitable technical fit of P-SERS™ and the client's application, we conduct feasibility testing in our facility to help guide the planning phase and reduce risk for the customer. In collaboration with the customer, we then formulate a project plan and move towards development, implementation and support.

1. Technical consultation
2. Feasibility testing, project planning
3. Sensor and reader development
4. Implementation, ongoing support

Customized P-SERS™ *for your application*

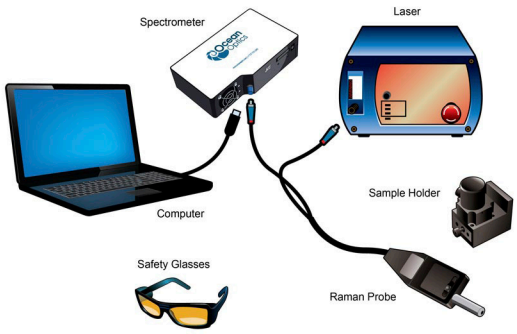
Off the shelf P-SERS™ sensors offer great all around performance, however by tailoring the sensors towards specific targets and use cases, significant performance improvements are possible. We work hand in hand with our customers to develop custom P-SERS™ sensors and reader hardware to achieve their performance targets.



96 well P-SERS™

Custom Readers / Raman spectrometer setups

With close ties to a variety of manufacturers, we can put together Raman and SERS systems which meet our customer's needs, from standard modular configurations to fully customized hardware and software.



Diagnostic anSERS Inc
Sensitive, flexible sensors for trace chemical detection
5000 College Ave. Ste. 3122
College Park, MD 20740 USA
T: +1 (301) 886 - 0280
F: +1 (301) 886 - 0280
http://www.diagnosticansers.com
we.have@diagnosticansers.com