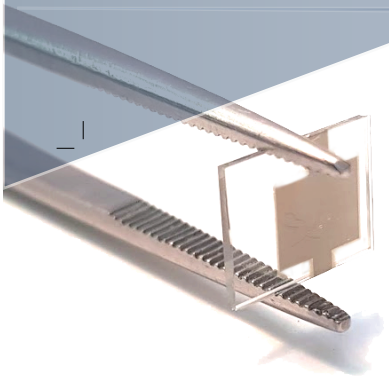
User guide and Datasheed

SERSitive
enhance your sensitivity

About substrates



HOW IT IS MADE?

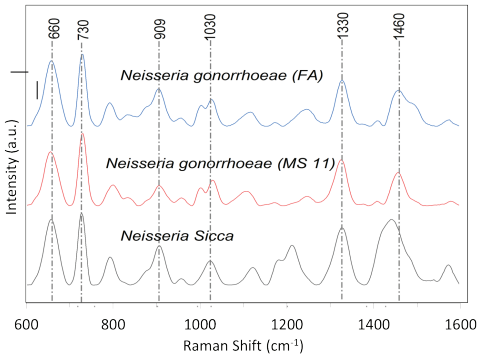
Our SERS substrates are prepared using an electrodeposition of silver and gold nanoparticles on an ITO glass surface. We control all of process parameters therefore our SERSitive substrates indicate so high quality.

REPETABLE AND SENSITIVE

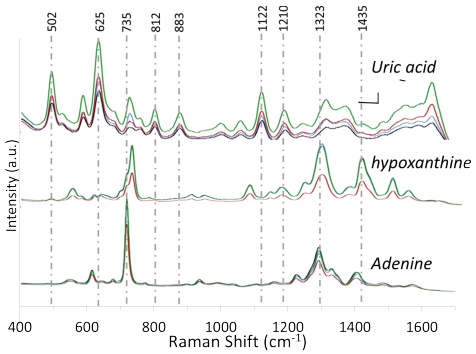
SERSitive SERS substrates nanostructure provides signal uniformity over entire active surface. This makes the obtained results reproducible and reliable. SERSitive surface effectively absorbs analytes as well as biological material, i.e. bacteria and eukaryotic cells.

Applications

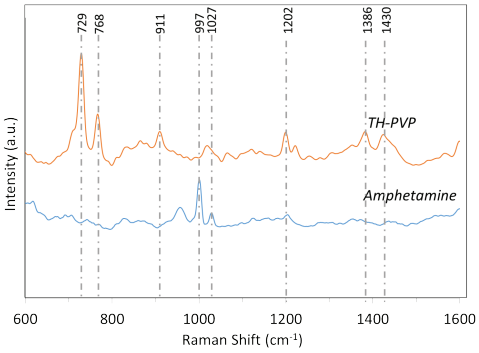
Life science
Biotechnology
Microbiology



Chemistry
Biochemistry



Medicine
Forensics sciences



Technical data

Feature	Value
Dimensions	9 x 7 x 0,7 mm *(width x height x thickness)*
SERS active surface	5 x 4 mm *(width x height)*
Active metal	Ag, Ag/Au hybrids
Substrate material	ITO glass
Sampling methods	drop deposition, immersion
Laser wavelength	514 nm, 633 nm, 785 nm *(recommended)*
Stability	up to 4 months
Ef	$10^5 - 10^6$

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User guide

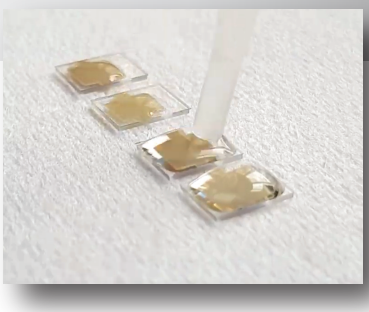
Before you start: important information

- Handle substrates **with care** using tweezers. Do not touch active area.
- Substrates are packed **under argon** to prevent them from oxidation. **Do not take out substrates from tubes if it is not necessary.** If substrates were taken out from the tube we recommend to pack them again under argon.
- Work in **clean area**, away from possible contaminations. We recommend to work in clean room or under hood.
- We recommend the use of **solvents** such **as water (recommended) or ethanol**
- If you want to increase your measurement signal try to reduce the distance between the adsorbed molecule and the surface, for example by using thiols
- You have to remember about the homogenous coverage of SERS active surface with test analite to obtain the best results of SERS measurements You can occasionally detect some Raman signals from the surface background – these signals are derived from inorganic reagents used in the substrate preparation process and should not influence your measurements

Short user guide

1

Apply droplet or immerse substrate in solution



2

Wait untill sample evaporates or incubate in for some time



3

Measure

Wavelength: 785
Laser power: 19mW



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User guide

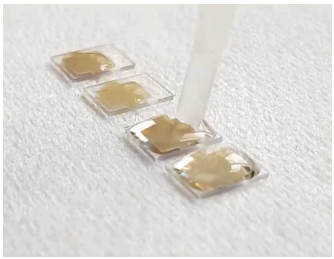
1. For wather solution deep substrates in 20% alcohol (only hydrophobic substrates)



Due to the appearance of the hydrophobicity of the substrates, we suggest to dip them for a few seconds in a 10-20% ethanol solution, in order to moisten the surface, before immerse them in the analyte solution. To remove the excess of alcohol gently touch the edge of the slide to a dust-free wipes.

2. Apply droplet or immerse substrate in solution





You can apply analyte on substrate active Surface in 3 ways:

1. Immerse substrate in analyte solution for couple of hours
2. Apply droplet of the analyte solution on active surface and wait until it evaporates. This is recommended for biological samples like bacteria.
3. Apply droplet of the analyte solution on active surface and incubate for couple of hours in wet chamber. In this case we recommend to put substrates on hydrophobic surface (i.e. surface covered with parafilm). This will prevent solution from spilling out from the surface. To prepare wet chamber:

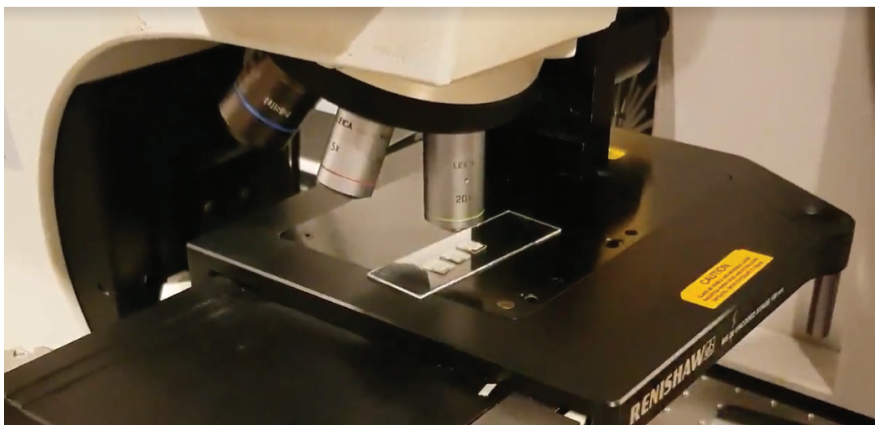
a. Put wet paper towels on the bottom of the dish.
b. Put the plate covered with parafilm on the wet towels in the dish. Make sure that the surface of plate is level.
c. Put the SERS substrates on the plate covered with parafilm.
d. Carefully applied droplet of analyte solution (about 30 µl) on the active surface of substrate. (ATTENTION! In case of water solution remember to dip substrates in 20% ethyl alcohol first – see paragraph 1).
e. Cover the dish with the lid and put it in the cold room or freezer overnight or in

3. Take out substrates from solution and leave them to dry



After incubation, remove the excess of analyte solution by gently touching the edge of the substrate slide to a dust-free wipes and air dry the substrates by leaving them under hood for couple of minutes.

4. Analyze under Raman spectroscope



Analyze the analyte on jour substrate with Raman microscopy. Wavelength 785 nm is recommended. We recommend to start from 19mW of laser power and 1 second of integration time and increase the parameters in case if no signal is detected. We recommend to increase the integration time first (up to 6-9 seconds). If no signal in still detected, increase laser power. Remember that to high laser power may burn the substrate active