

SERS Substrates Instructions for Use

➤ Procedure

Remove glass slide containing SERS substrate without touching the active area to help avoid contamination.

Using ~25 mW excitation at 785 nm (RAM-SERS AU), 638 nm (RAM-SERS SP), or 532 nm (RAM-SERS-AG), ensure that the Raman probe is at the proper focal distance from the substrate so that the laser spot is focused tightly on the active area.

Measure a background spectrum of the substrate without any analyte added using an appropriate integration time (we recommend at least 3 seconds).

Without moving the substrate, add 10-20 μL (RAM-SERS-AU and RAM-SERS-AG) or 10 μL (RAM-SERS-SP) of analyte of interest to the active area and allow to dry.

Measure Raman spectrum of the substrate with analyte of interest.

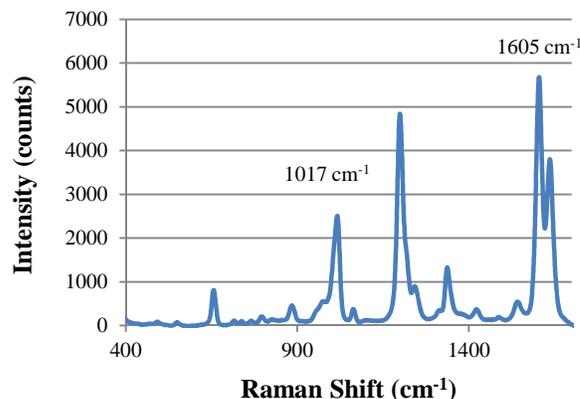
➤ Additional Information

We recommend using laser powers in the range of 25 mW for RAM-SERS-AU and RAM-SERS-AG. Using higher powers may result in progressive loss of signal and/or damage to the substrate and is not recommended. For RAM-SERS-SP, higher laser powers (> 100 mW) can be used since the substrate is glass-based.

The Raman signal may vary as the solvent evaporates after addition of analyte on active area of the substrate; hence, allow the response to stabilize before recording the spectrum.

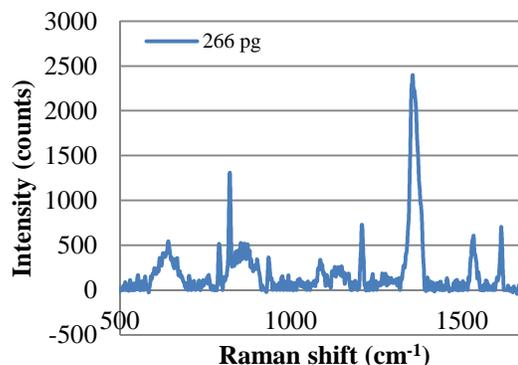
For more complex samples (ie. Biological samples), we recommend adding the solution that does not contain the analyte of interest to the substrate and using this as the background signal. Then, add the solution containing the analyte to a separate substrate and measure the Raman spectrum.

BPE on RAM-SERS-AU Measurement



Here we show a typical SERS spectrum of the fuel marker 1,2-di(4-pyridyl)ethylene (BPE) after applying 10 μL of 1 μM BPE in ethanol to RAM-SERS-AU substrate. For this measurement, 25 mW of 785 nm excitation and 1 second integration time was used with the Ocean Optics QE Pro spectrometer.

TNT on RAM-SERS-SP Measurement



Here we show a typical SERS spectrum of the explosive 2,4,6-trinitrotoluene (TNT) after applying 10 μL of 4 mM TNT in acetone to RAM-SERS-SP substrate. For this measurement, 22 mW of 638 nm excitation and 10 seconds integration time were used with the Ocean Optics IDRaman reader spectrometer.

Please refer to the Ocean Optics SERS User Manual for more detailed information.