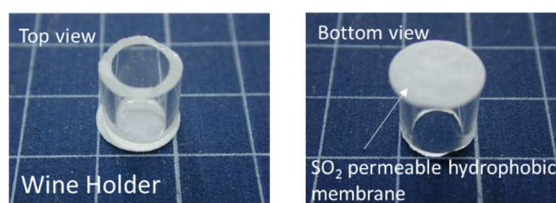


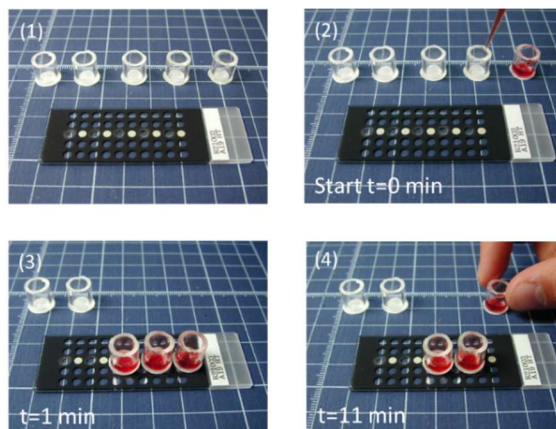
Here is news on our latest project. We have developed a kit for evaluating the concentration of sulfite in wine. While it is still under development, we feel we should share this technique with you because it is so simple and effective. We are very excited about it.

Mr. R. Wada discovered last year that covering our standard SERS substrate with a hydrophobic filter and placing a small droplet of wine (say, 100 μ L or less) on it gives us a SERS spectrum of volatile SO₂ in 15 min. It's that simple. While the calibration protocol for quantitative measurements is being testing, we can clearly obtain semiquantitative results in the range of 5 to 100 mg/L, using wine samples spiked with known concentration of Na₂SO₃.

To make the process even simpler, we have prepared a wine holder to which wine is added. Because the bottom side is a hydrophobic filter, only volatile component can pass through it.



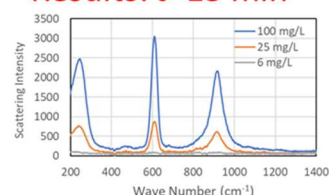
The set of the photographs on the right shows the entire process. (1) Five wine holders are placed next to the standard Nano=Kraft SERS substrate with five SERS spots. (2) Wine holders are filled with 100 μ L of wine, using as many wine holders as necessary. (3) Filled wine holders are placed directly over SERS spots. (4) Remove the wine holders after 10 min.



Now it is time for taking SERS spectra. Any Raman spectrometer should do the job, but we particularly like the Raman spectrometer C15471 from Hamamatsu Photonics (Hamamatsu, Japan), shown on the right. It is compact and relatively inexpensive. It is more than sufficient for this application.



Results: t=13 min



Frontera
Cabernet Sauvignon (spiked)
Wavelength 785 nm

We foresee advantages of our system over traditional methods such as the Ripper method to be;

- (1) High throughput: multiple samples can be processed in parallel. The measurement of a single SERS spot takes only some 15 sec so that theoretically in one hour 240 samples can be measured with an appropriate automated system.
- (2) Low sample volume; we only need some 100 μ L of sample or less.
- (3) Reagent free: Hardly any reagent is used with our technique. This characteristic is compatible with environmental protection.

Now we are making a limited time offer of a free evaluation kit, containing a single Nano=Kraft SERS substrate (with 5 SERS spots) and five wine holders. Enjoy the kit and don't forget to enjoy the leftover wine (😊) after evaluation!