

# RAMAN MICROSCOPY

The UWS Raman Microscope (RAM) is a laser-based microscopic device used to perform Raman spectroscopy. Raman spectroscopy (Raman Analysis) is a (non-destructive) spectroscopic technique used to observe vibrational, rotational, and other low-frequency modes in a system. This enables you to determine the chemical structure in a sample and identify the compounds present.

The Raman Microscope begins with a standard optical microscope, and adds an excitation laser, laser rejection filters, a spectrometer or monochromator, and an optical sensitive detector such as a charge-coupled device (CCD), or photomultiplier tube (PMT).

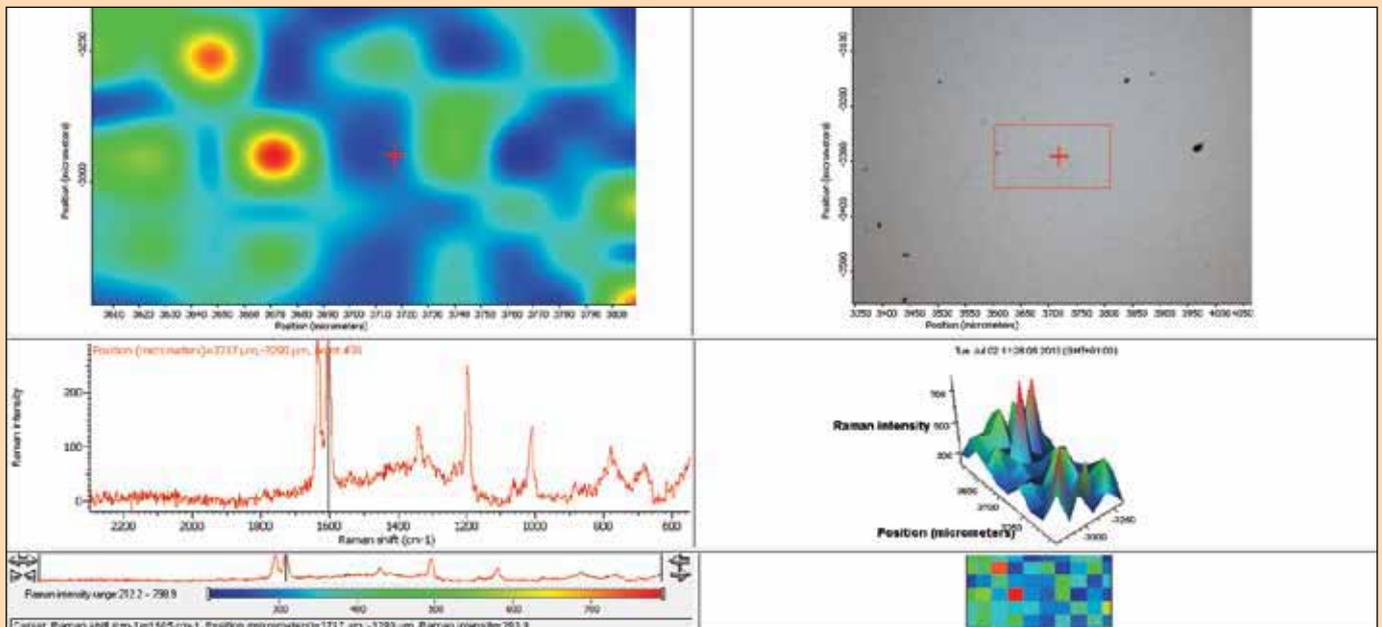
Traditionally Raman microscopy was used to measure the Raman spectrum of a point on a sample, more recently the technique has been extended to implement Raman spectroscopy for direct chemical imaging over the whole field of view on a 3D sample.

## INDUSTRIAL APPLICATIONS OF RAMAN SPECTROSCOPY

Raman spectroscopy is a powerful, non-destructive in situ technique for the qualitative analysis of organic and/or inorganic mixed materials. If you have a reported or suspected change in your product, Raman spectroscopy may be applicable to assess if this is damage.

It is also used to:

- Measure the stress and crystalline structure in semiconductor and other materials
- Identify organic molecules, polymers, biomolecules, and inorganic compounds both in the bulk and in individual particles
- Raman imaging and depth profiling is used to map the distribution of components in mixtures, such as tablets, lab-on-chip and drug-eluting stent coatings
- Determine the presence and proportions of different carbon types
- Determine inorganic oxides and their valence state



Map of the SERS response of a Silver nano-structured sensor

## CONTACT US

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