

Automated Micro Raman Spectrometer



Model: RENISHAW InVia Raman Microscope

Specification:

- Spectral resolution (FWHM): 0.5 cm^{-1}
- Raman Spectral range: 100 cm^{-1} to 4000 cm^{-1}
- Spectrometer Range: 200 nm – 2000 nm
- Laser: Multiline Argon Ion Laser (514/488 nm).
- 5x, 20x, 50x, & 100x objectives.

Applications:

Raman Microscopy is applicable for the Phase and chemical identification, characterization of molecular structure, their bonding effect, environment and stress of any material of different disciplines *viz.* Geological, Physical, Chemical, Biological and forensic sciences.

Features:

- Micro-Raman spectrometer-In-Via reflex Raman spectroscopy system combined with research grade Leica microscope allows scatter, line, area mapping and confocal depth profiling.
- Renishaw Raman can be used with two types of lasers- 514 nm and 785 nm with different magnification lenses.
- Argon Ion laser 514 nm 20 MW-5000 hours usage.
- Renishaw Diode laser, solid state Near IR -3000 hour.

Capability:

- High resolution – better than 0.5 cm^{-1} , Confocal depth profiling with step size as small as $0.1\text{ }\mu\text{m}$.
- Long working distance objectives for liquid sampling.
- Macro sampling kit for liquid samples, High temperature cell unit with peltier heating and cooling stage, Fiber optic probe for macro samples with flexible sampling arm.
- Raman spectrometer can be used for getting characteristic vibrational frequencies of atoms which provides finger print by which chemical composition and structure of material can be identified, crystallographic orientation of the sample, identification of particles in micrometer dimension variation in composition can be mapped to provide images based on the distribution of molecular composition.
- Focusing can be done with the use of coarse focus, fine focus and super fine focus.

Do's or don't for RAMAN Laboratory:

- **Only authorised/registered users are allowed to access the RAMAN laboratory;**
- Non authorized users are not allowed to remove objectives of the microscope or attempt any maintenance;
- Users are not permitted to setup, alter and save new configurations of lasers and filters. The pre-programmed configurations are suitable to cover most of the applications in the Institute.
- There is only one on/off switch for the entire system. Do not touch any other on/off switch on the microscope, computer or power supplies.
- When completed your studies and imaging work please switch off the lasers and wait until they are properly shut down before exiting the WIRE software;
- Copy your images to CD, and DVD or network drive before you leave. There is no scope of long time storage of images left on the microscope operating system and may be deleted at any time without warning.
- Samples should preferably be solid or semi-solid or in powder form. For liquid analysis, please make inquiry in advance.
- Please make available the analysis related publications to expedite the sample preparation related protocols.
- Analysis of samples is restricted to generation of spectra in case Laser Raman Spectroscopy.
- Interpretation of spectra and imaging is available in certain cases and it will be chargeable extra.