

Measurement of: Raman Spectrum

Equipment: Renishaw inVia Raman spectrometer-1

Property Measured: Raman spectrum (Intensity vs. wavelength shift)

Photograph (small size)



Basic Principle:

Raman spectroscopy is scattering technique named after famous Indian physicist C.V. Raman. In the Raman effect, a frequency of a small fraction of scattered light is different from frequency of incident monochromatic light. It is based on the inelastic scattering of incident radiation through its interaction with vibrating molecules. In Raman spectroscopy, sample is illuminated with monochromatic laser beam which interacts with molecules of sample and originates a scattered light. The scattered light has a frequency different from that of incident light which is used to construct the Raman spectrum.

Capabilities: This Raman spectrometer can provide Raman spectrum of the sample by two different laser sources (514 nm and 785 nm) in 100 cm^{-1} to 3500 cm^{-1} spectral range with spectral resolution better than 1 cm^{-1} and laser spot size 1 micron to 300 micron. The spectra can be collected for solid substances/thin or thick film at room temperature.

Sample Requirement: The sample requirement is about 50 mg solid substance or thin/thick film of size from $100\mu\text{m} \times 100\mu\text{m}$ to 1 inch x 1 inch. Thickness of the film can be few μm to few mm.