

(17) Solids are dissolved before ~~subjecting~~ ^{subjecting} to Raman Spectrograph. any solvent which is suitable for UV Spectra can be used for the study of Raman Spectra.

For spectrograph :- The spectrograph used for the study of Raman spectrum should possess the following characteristics :-

- (1) It said to have large gathering power.
- (2) Special Prism of high resolving power should be employed.
- (3) A short focus camera should be used.

Polarization of light and Raman effect :-

When a beam of light is passed to a nickel prism the only light passing has its electric (or magnetic) vector ~~conf~~ confined to only a particular plane, it is plane polarized light.

Although this light is indistinguishable from ordinary light, it has a very important property which can be demonstrated by using a sculpt prism
nickel

When previously polarized light falls on the second polarizing device (now called the analyzer). It will be passed with ~~undiminished~~ undiminished intensity only if the polarizing axes ^{of the two} prisms are parallel to each other.

At any other orientation of this axis the intensity passed ~~which~~ which will decrease until when the axes are perpendicular, no light at all passes to the analyzer.

This the analyzer serves both to detect polarized light and to determine, its plane of polarization.

If the light incident upon the analyzer is only partially polarized, that is the majority, but not all, of the rays have the electric vector parallel to given plane, then the light will not be completely extinguished at any orientation of the analyzer.

Its intensity will nearly go through minimum when analyzer is perpendicular to the plane of ~~oscillation~~ polarization.

To measure the degree of polarization in terms of the intensity of light transmitted parallel and perpendicular to this plane - "It is more convenient to measure the degree of polarization

$$\text{degree of polarization } P = \frac{I_{\perp}}{I_{\parallel}}$$

Here I_{\perp} denotes minimum and I_{\parallel} its maximum intensity passed by the analyser. ①

For completely plane polarized light $I_{\perp} = 0$ therefore $p = 0$. For completely unpolarized light $I_{\perp} = I_{\parallel}$ i.e. $p = 1$. For ~~intermediate~~ ^{intermediate} degree of polarization p lies between 0 & 1. ②

The relevance to Raman Spectroscopy is that, the lines in same Raman spectra are found to be plane polarized to different extent even though the exciting radiation is completely depolarized.

25/2/20 Intensity of Raman peak :-

The intensity or power of Raman peak is found to depend upon the following factors.

- 1) Polarizability of the molecule.
- 2) Intensity of the source.
- 3) Conc. of the active growth.

In the absence of absorption the power of Raman emission increases with the fourth power of frequency of the source. Raman intensities are directly proportional to the concentration intensity relationship where the concentration intensity relationship is logarithmic.