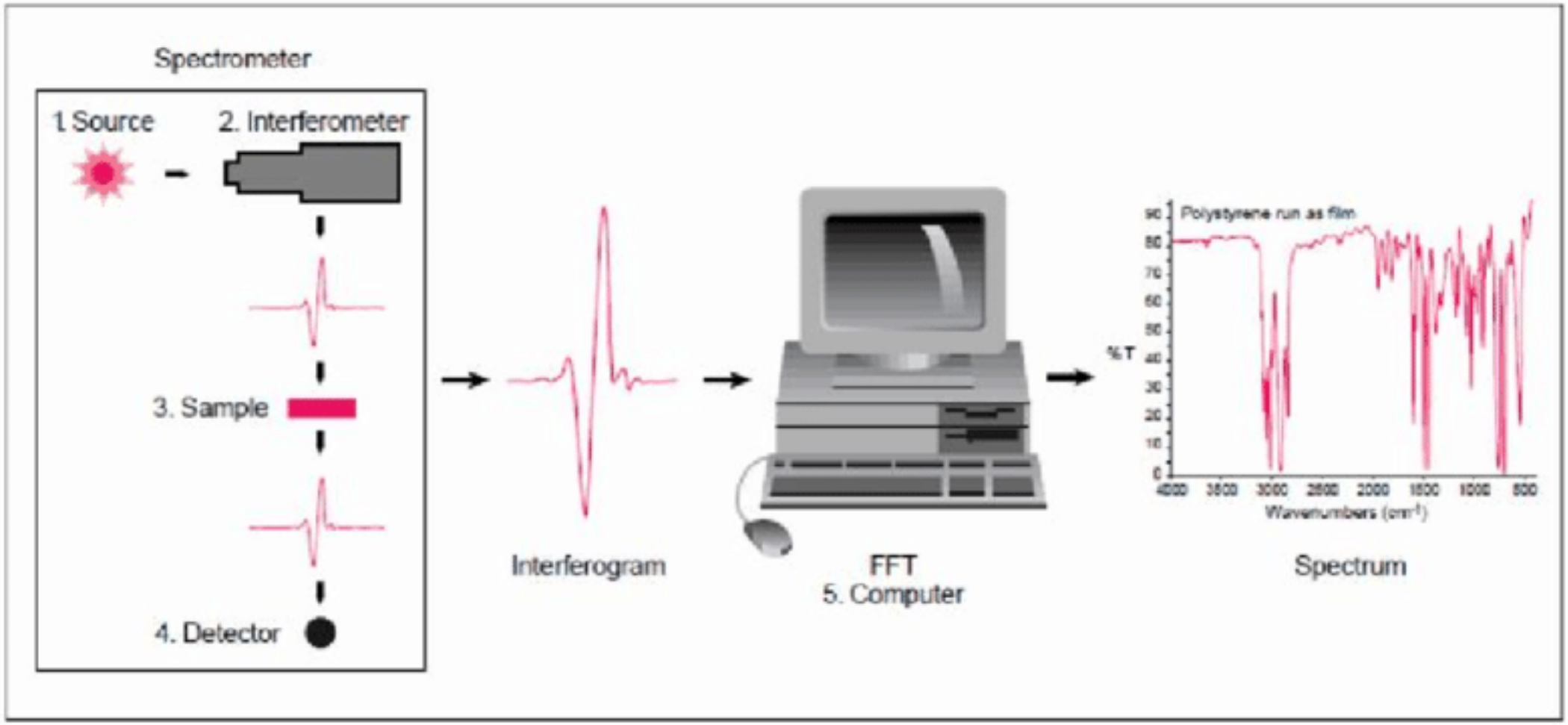
Fourier Transform Infrared Spectroscopy (FTIR) / FTIR Analysis / FTIR Spectroscopy

What is FTIR?

An analytical technique **used to** identify organic, polymeric, and, in some cases, inorganic materials. The **FTIR** analysis method uses infrared light to scan test samples and observe chemical properties.



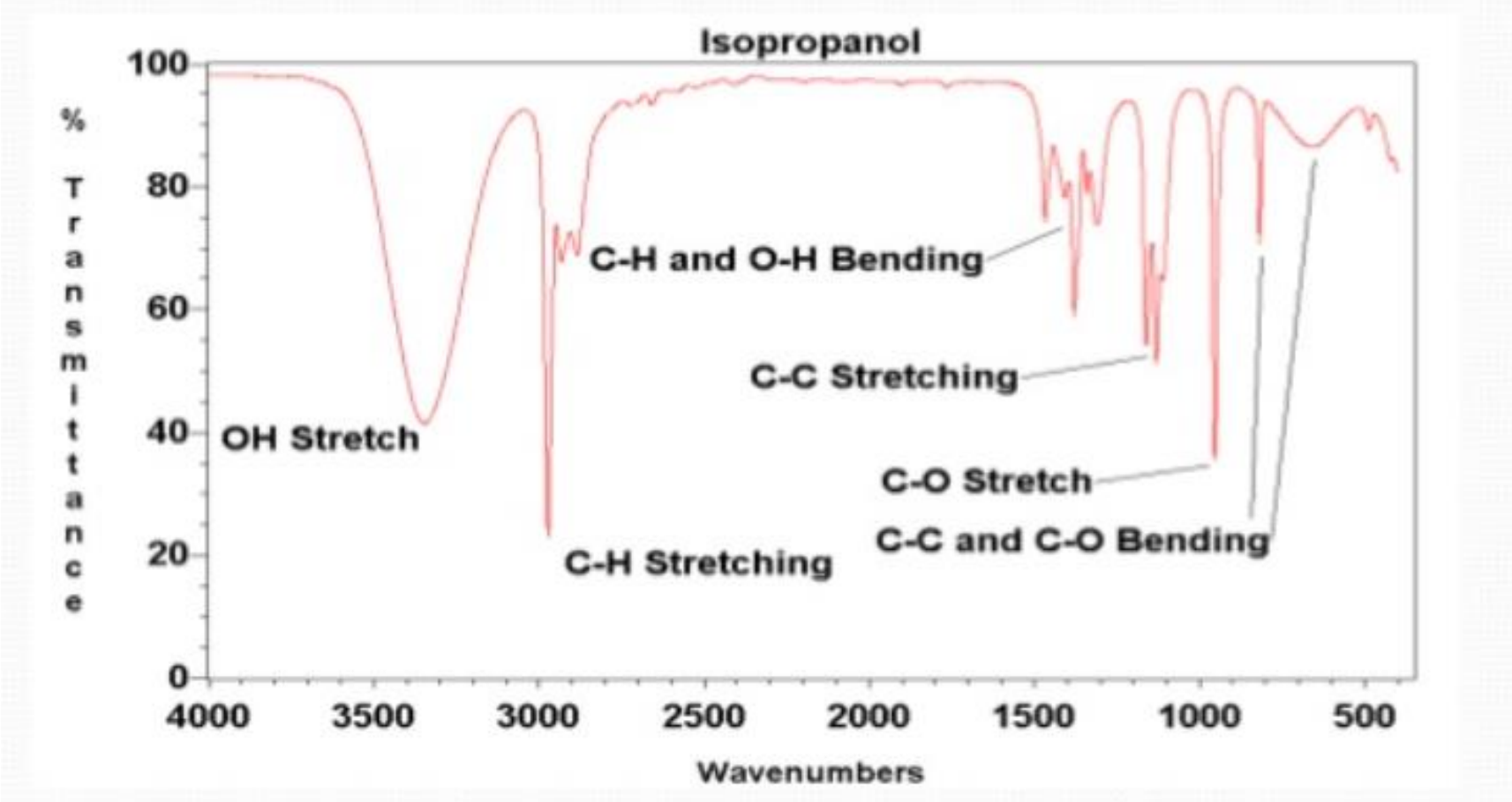
Principle of FTIR

Principle

Working principle of Fourier transform infra-red spectrometer Infra-red (IR) spectra involve the study of interactions between matter and electromagnetic fields in the IR region. Sample is bombarded with infra-red radiation. When frequency of infra-red radiation matches the natural frequency of vibration of bond, the amplitude of vibration increases and the infra-red is absorbed. Every bond or functional groups requires different frequency for absorption. Characteristic peak is observed for every functional group or part of the molecule. IR spectroscopy is a very powerful technique which provides fingerprint information on the chemical composition of the sample.

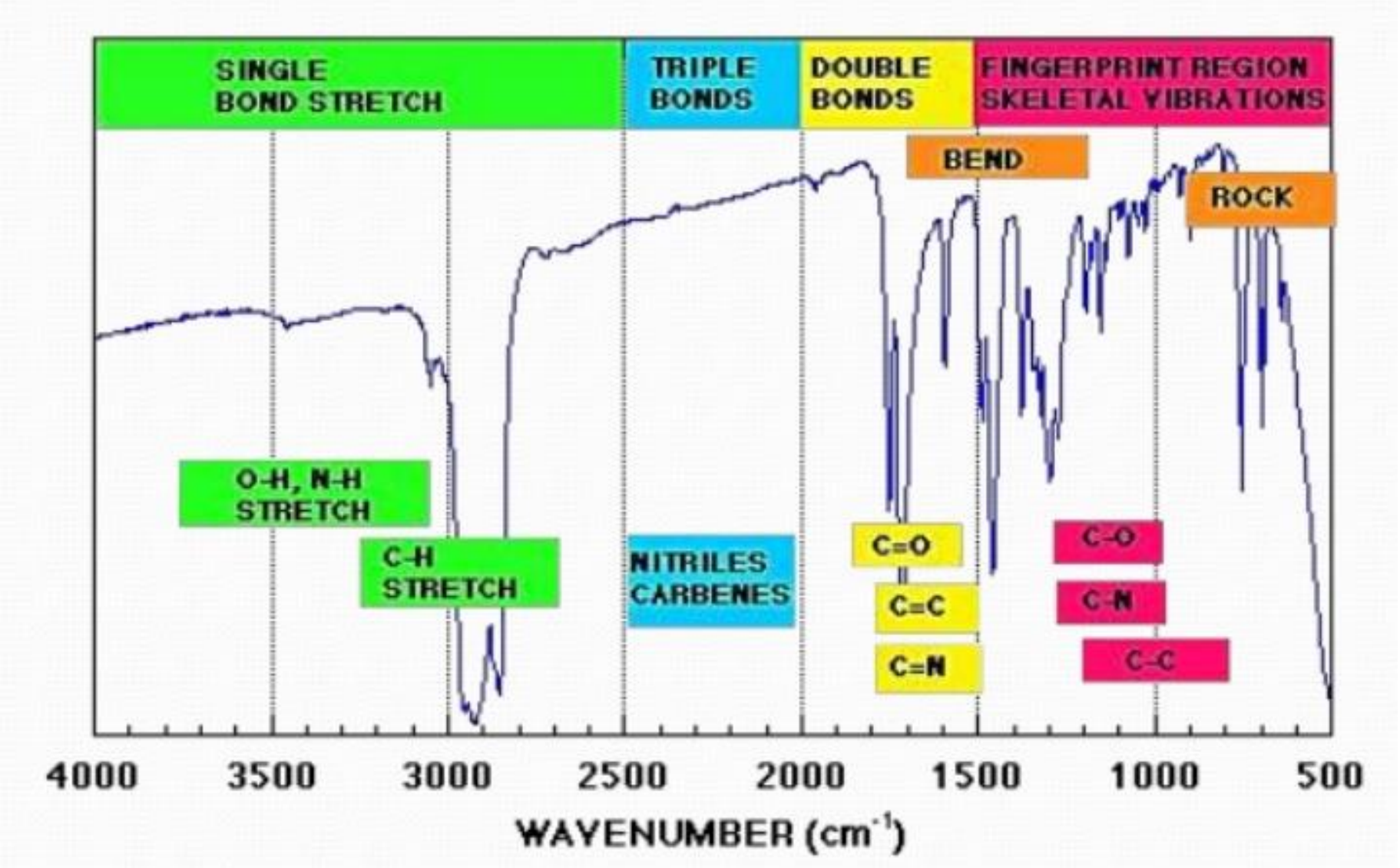
For isopropyl alcohol, the infra-red absorption bands identify the various functional groups of the molecule.

In FTIR, the IR is passed through the sample. Some of the IR radiation is absorbed by the sample and some of its is passed through (transmitted). The resulting spectrum represents the molecular absorption and transmission, creating a molecular fingerprint of the sample.



This chart is a result of interaction between infra-red radiations and matter.

Four regions of the chart



Properties of peak

- Intensity (weak, medium or strong)
- Shape (broad or sharp)
- Position (cm-1) in the spectrum