

Measurement of: Identification of functional groups of compounds.

Equipment: Fourier Transform Infra Red Spectroscopy , (Perkin Elmer FTIR Spectrum, BX-II)

Property Measured: Interpretation of the infrared absorption spectrum helps in determining the chemical bonds (functional groups) in a molecule or molecular structure of materials, whether organic or inorganic.

Photograph (small size):



Basic Principle: FTIR technique works on the fact that bonds and groups of bonds vibrate at characteristic frequencies. A molecule that is exposed to infrared rays absorbs infrared energy at frequencies which are characteristic to that molecule i.e. those frequencies where the infrared light affects the dipolar moment of the molecule. In FTIR analysis, a spot on the specimen is subjected to a modulated IR beam. The specimen's transmittance and reflectance of the infrared rays at different frequencies is translated into an IR absorption plot consisting of reverse peaks. The resulting FTIR spectral pattern is then analyzed and matched with known signatures of identified materials in the FTIR library.

Capabilities: This spectrometer allows us to collect spectra in mid-IR, far-IR and near-IR spectral ranges. The spectrum BX II contains a Class II Helium Neon (HeNe) laser, which emits visible, continuous wave radiation at a wavelength of 633 nm and has a maximum output power of less than 1mW. The recording abscissa range of this instrument is 400-4000 cm^{-1} . Each spectrum was collected with 64 scans co-added at 4 cm^{-1} resolution. The normal operation mode of this spectrometer is temperature stabilized. The spectrometer utilizes continuous dynamic alignment to ensure exceptional high-resolution line shapes.

Sample Requirement: Thin Films