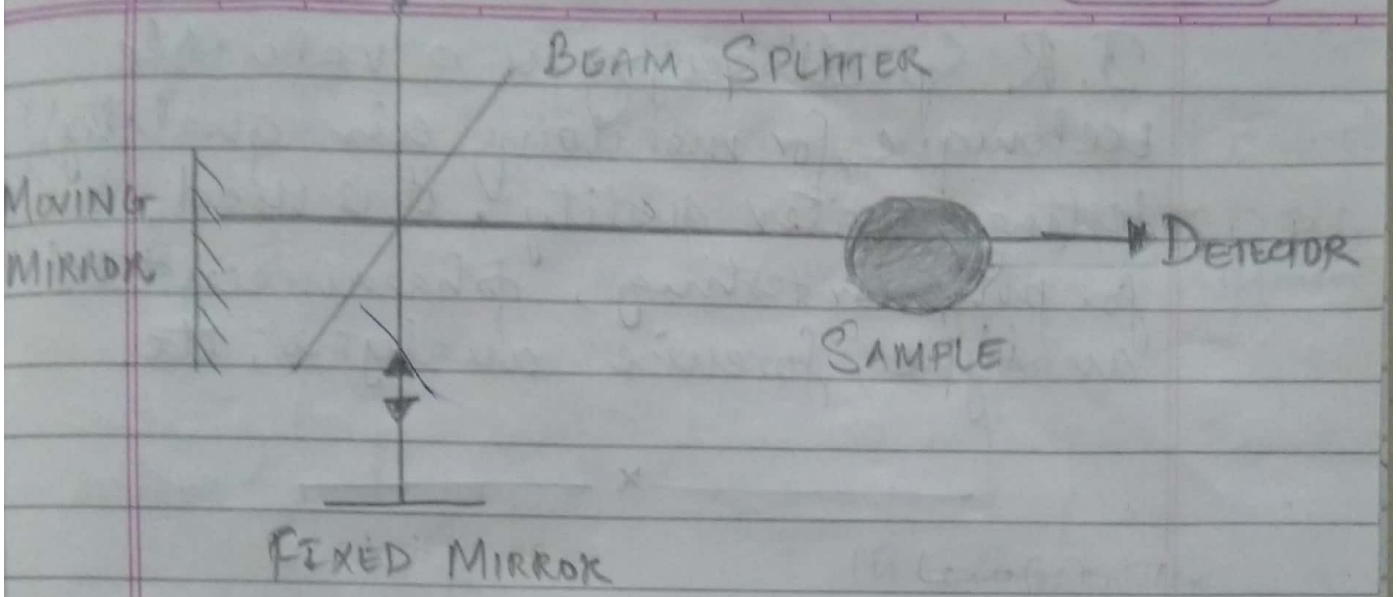
Fourier Transform Infrared Spectroscopy (FTIR)

Principle: FTIR relies on the fact that most molecules absorb light in the infrared region of the electromagnetic spectrum. This absorption corresponds specifically to the bonds present in the molecule. Molecules tend to absorb these specific frequencies of light since they correspond to the frequency of the vibration of bonds in the molecule. The resultant absorption spectrum from the bond natural vibration frequencies indicates the presence of various chemical bonds and functional groups present in the sample.

BLOCK DIAGRAM FOR FTIR :



The IR radiation is passed through a sample Some of the Infrared radiation is absorbed by the sample and some of it is transmitted or passed through. The resulting spectrum represents the molecular absorption and transmission creating a molecular fingerprint of the sample. FTIR consists of Infrared source, Beam splitter which consists of interferometer (causes an interference pattern), Sample compartment, Detector. The radiation which passes the sample through the interferometer and reaches the detector where the signal is transferred to a computer in which fourier transform is carried out.

APPLICATIONS

I.R. Spectroscopy is a valuable technique for monitoring air quality, testing water quality, it is used for polymer testing, pharmaceutical analysis, forensic analyses, etc.