

Infrared Spectrometer

Infrared spectroscopy (IR Spectroscopy) is the subset of spectroscopy that deals with the IR region of the EM spectrum. It covers a range of techniques, with the most common type by far being a form of absorption spectroscopy. As with all spectroscopic techniques, it can be used to identify a compound and to investigate the composition of a sample.

Fourier transform infrared (FTIR) spectroscopy is a measurement technique for collecting infrared spectra. Instead of recording the amount of energy absorbed when the frequency of the infra-red light is varied (monochromator), the IR light is guided through an interferometer. After passing the sample the measured signal is the interferogram. Performing a mathematical Fourier Transform on this signal results in a spectrum identical to that from conventional (dispersive) infrared spectroscopy.

FTIR spectrometers are cheaper than conventional spectrometers because building of interferometers is easier than the fabrication of a monochromator. In addition, measurement of a single spectrum is faster for the FTIR technique because the information at all frequencies is collected simultaneously. This allows multiple samples to be collected and averaged together resulting in an improvement in sensitivity. Because of its various advantages, virtually all modern infrared spectrometers are FTIR instruments.

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