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IR-spectroscopy

Infrared (IR) spectroscopy studies the absorption of infrared radiation of molecules. The infrared radiation is electromagnetic radiation in the wavelength range 780 nm – 1 mm. The IR-radiation is divided into three sections: near, middle and far IR. Most of the changes in the rotation or vibration energies in molecules occur in the region from 4000 – 670 cm⁻¹, corresponding to the middle IR region. When a molecule absorbs IR-radiation changes the dipole moment of the compound due to a changes in the vibrations of the compounds bonds. Many types of samples can be measured: solids, solutions and gases. Even nanograms of pure compounds can be detected and from mixtures amounts of 0.1 – 10 m-% of the compound. To obtain the IR-spectrum the transmission of light is measured on each wavelength. Other type of instrument, Fourier Transform IR-spectrometer (FTIR), measures the interference of the light and converts it mathematically into spectrum.