Fourier-Transform Infrared Spectroscopy (FTIR)

When a sample is exposed to infrared radiation, the dipole moment will be excited by absorbing the radiation with a specific wavelength. The vibrational energy will be excited from the ground state to the excited state. Unlike dispersive spectroscopy, Fourier-transform infrared spectroscopy (FTIR) contains many frequencies of light at once and measure absorption. Next, the beam contains a different combination of frequencies of light and repeat it. After repeating several times, the raw data will be processed to resulting data cm-1, wavenumber. This process is called the Fourier Transform.

Generally, for the FTIR spectroscopy, the spectrum range is from 4,000 to 400 cm-1. It is widely used for chemical and biological sample analysis. For example, the absorption peak represents the vibration energy gap, and the number of peaks demonstrates the number of freedom of vibrational modes. It also can be combined with a microscope to observe single nanostructures or microscopic areas called micro-FTIR spectroscopy. Nowadays, many unexpected modes are found in FTIR spectroscopy at cryogenic temperatures.

Customer References:

J.Paul Devlin, Department of Chemistry, Oklahoma State University, USA: Phys. Chem. Chem. Phys., 13, 19707–19713 (2011); Chem. Phys. Lett. 492, 1–8 (2010).

Related Products:

X-1AL ECONOMY

- Easy optical alignment
- All purpose
- Low cost

X-1SS HIGH PERFORMANCE

- Best for electrical, magnetic, and optical experiments

X-20 ULTRA-LOW VIBRATION

- Vibrations < 3-5 nm
- Quick and easy sample access via pop-off shroud
- High temperature stability

Cryostat Model	Type
DMX-1AL	CCR
FMX-1AL	CCR

Cryostat Model	Type
DMX-1SS	CCR
FMX-1SS	CCR
GMX-1SS	CCR
LT3-WMX-1SS	Flow

Cryostat Model	Type
CS202-DMX-20	CCR
CS204-DMX-20	CCR
CS210-GMX-20	CCR

LT4

• All-purpose, low cost flow cryostat
• Maintains the high cooling power of the LT3
• UHV option available

Cryostat Model	Type
LT4	Flow