

FTIR – Spectroscopy

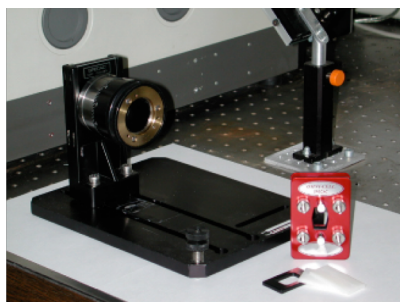
In the infrared spectral range the absorption of radiation is associated with the excitation of molecular vibrations. The absorption bands occurring in the IR spectra can be assigned to the vibrations of specific valences of molecules or molecular groups. The identification of these bands is possible with the help of existing extensive databases of IR spectra and model calculations.

Application:

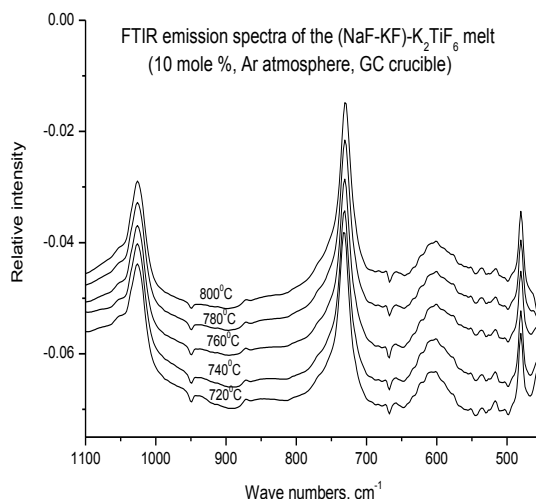
- Qualitative and quantitative analysis of liquids, gels and solids using a Golden Gate ATR with diamond reflective element
- Emission spectroscopy for the analysis of solids in vacuum, air or inert gas
- In situ measurements of various molten salts and ionic liquids in inert atmospheres at temperatures of 20-850°C
- Transmission spectroscopy for the analysis of liquids and liquid films

Specifications:

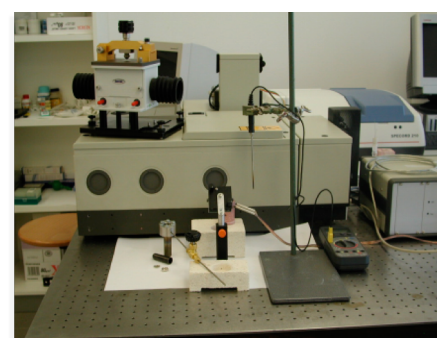
- Equinox 55 (Bruker) FTIR spectrometer with two external parallel outputs and one input for emission measurements; spectral resolution 0.5 cm⁻¹
- "Golden Gate" ATR unit with diamond reflection lens and KRS5 lenses (allows measurement range up to 370cm⁻¹)
- MIR source (water-cooled) for higher energy throughput in the measuring range 7,500-100 cm⁻¹
- Beam splitter for measuring ranges from 12,000cm⁻¹ to 10 cm⁻¹
- Rapid Scan Mode: 60 scans / sec (at 8 cm⁻¹ resolution)
- Step Scan Mode: Time resolution in μs to ns range for reversible processes
- Sensitive (DTGS, MCT, DLATGS) detection systems for the wavelength range of 12,000cm⁻¹ to 10cm⁻¹
- 320 Nicolet FTIR spectrometer with microscope in the measuring range 7400cm⁻¹ to 400cm⁻¹



Cells for FTIR measurements



FTIR emission spectra of titanium (IV) complexes in high-temperature molten salt, 720-800°C



Applications:

- plastics, polymers and paints
- salt residues of pickling
- monomer granulates
- solvents
- galvanic baths (for organic additives)
- ionic liquids

Requirements for solid samples:

- maximum size 8 x 8 cm
- minimum size 0.1 x 0.1 cm
- maximum height 0.2 cm
- smooth or soft surface

Requirements for liquid samples:

- not too corrosive
- no high vapor pressures

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