# thermo scientific



# Spectroscopy techniques



### **ATR** stand Pressure / device tip Table Sample Crysta ATR crystal mount

## **Optical diagram of** conventional FTIR spectrometer





Gratin Multichannel detector

Learn more at thermofisher.com/spectroscopy Find more spectroscopy teaching resources at thermofisher.com/cic

Visible Wavelength										
<b>500 nm</b>				600 nm						
µm ometer) )0 nm	10 µm	Infrared 100	1 m (millim μm 1000	m eter) µm 1	0 mm	100 mm	1 m (meter) 1000 mm	10 m		Radiow
— One Electron Volt	Human Body Radiation	IR Molecular Structure S	Rotational Spectra Measurement 🗕	Radio Astronomy Oxygen Resonance =	SHF One Inch Electroni Telephone Microwave Relay	C Cooking - F	HF eather Satellites Telemetry RS and GMRS — — —	VHF	HF Marine F Ham Radio Dis	iadio <b>—</b> Inte aster Comm <b>—</b>
Heating and Forest Fire Heat Lamp Detection	Satellite Peak Earth Radiation	Tracking Primary Sun Emission	Microwave Spectroscopy Meas	vvater Reso urements Dopple Master Atomic	r Weather Radar <b>–</b> Clock <b>–</b> Poli	Mobili Mobili UHF TV ce Radar	Public Safety	Adio Astronomy CB Rad Aircraft Radio FM Broadcasting VHF TV — Dia	thermy Di	AM Broadcasti
10 <sup>8</sup> MHz	Aolecula Vibratio	10 <sup>7</sup> MHz ar n	10 <sup>6</sup> MHz Molec Rotat	10⁵ MHz sular ion	10⁴ MHz Electronic Spin	10 <sup>3</sup> Nuclear Spin	MHz 1	00 MHz	10 MHz	1000 1 Me

# **OES** excitation



### X-ray fluorescence process





![](_page_0_Figure_20.jpeg)

Readout

Detector

. . . . . . . . Sample

Compartment

![](_page_0_Figure_23.jpeg)

**Thermo Fisher** SCIENTIFIC

Monochromatic

Light