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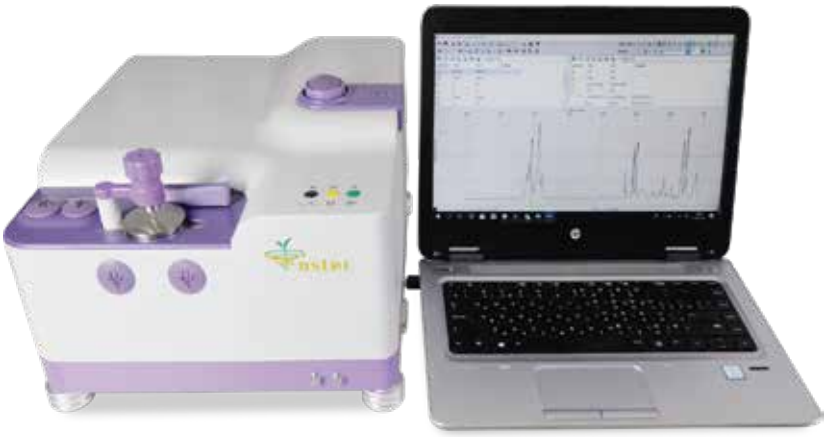
IROS 05
FTIR Spectrometer

IROS 05 FTIR spectrometer is designed to provide the wide range of sample measurement techniques in the most challenging environments from the laboratory to the pilot plant. Compact size, reasonable price for unique set of accessories and high performance - these advantages of IROS 05 Spectrometer allow it to fit to most of research and field tasks as a mid-level spectrometer for academic and industrial applications.



Main features:

- Wide array of functions due to various attached modules and detectors
- Capability of additional external devices connection for IR spectrum registration
- Stability to temperature fluctuation and vibration due to unique patented interferometer design
- Moisture durability because of ZnSe optics
- Compact and light-weight

Key advantages:

- Integrated ATR module is equipped with ZnSe, Ge or diamond crystals (including registration with controlled heating up to 200°C)
- Transmission, specular-diffuse and ATR
- Connection to IROS M2 or M3 IR microscope with specular reflection and micro-ATR (Ge) modes of spectra registration
- Ports for external devices, such as multi-pass gas cell or IR telescope
- Up to two ATR fiber probes connected simultaneously
- Possibility of simultaneous operation with two detectors, such as MG-32, DLaTGS, Si, InGaAs, MCT LN_2, MCT TE cooling, $LiTaO_3$
- Expansion to NIR spectral range with second external light source

Specification:

Interferometer	Cat`s Eye
Beam splitter	ZnSe
Spectral resolution	0.5 cm^{-1}
Spectral range with pyroelectric detector (MG-32)	5700 – 470 cm^{-1}
Spectral range with DLaTGS detector	8500-470 cm^{-1}
Spectral range with MCT detector	6000 - 600 cm^{-1}
Spectral range with MG-32 and NIR detectors and two IR sources	12500-470 cm^{-1}
SNR with pyroelectric	detector not less 40 000, 1 min acquisition, 4 cm^{-1} resolution, 2 000 - 2 200 cm^{-1}
Dimensions (WxHxD)	34x20x38 cm
Weight	15 kg

Wide-range IR microscope IROS M series combined with FTIR spectrometer IROS 05

Spectrum registration modes:

- Transmission
- Reflection (with ATR objective)
- Min. linear sample size: 5-10 μm

Two built-in detectors:

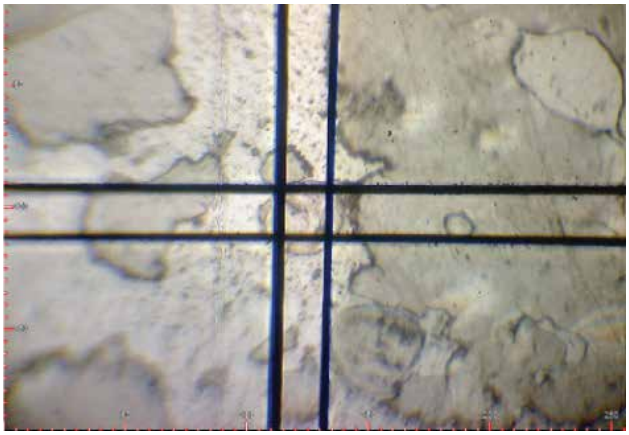
- MCT with nitrogen cooling
- MG-32M (DLaTGS analog)

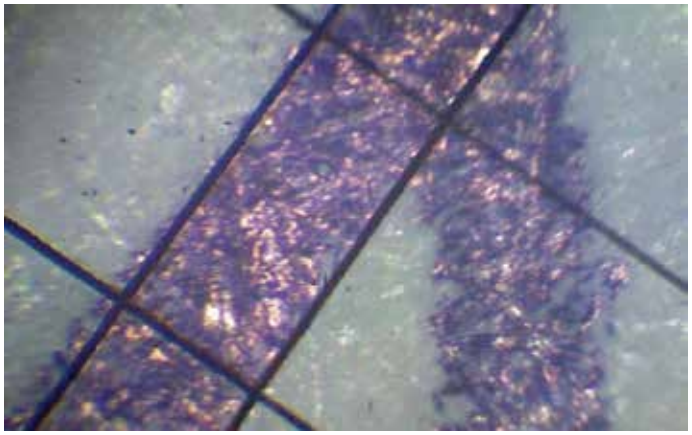
Ability to combine spectrum registration and sample monitoring

Main characteristics:

- Spectra registration of microobjects up to 5 μm in transmission, specular reflection and ATR (with suitable objectives) modes
- Spectral range: 600 – 6000 cm^{-1} (with MCT detector)
- Min. resolution: 0.5 cm^{-1}
- Signal-to-noise ratio: ≥20 000 (1 min, resolution 4 cm^{-1}, range 2000 – 2200 cm^{-1})
- Motorized sample stage with autofocus system and mapping mode according to programmed parameters. Step: 2.5 μm
- Revolver mechanism with changeable lenses IR objective 15x

- Visual objectives 4x, 10x, 36x or 60x
- ATR objective 36x or 60x
- Highly sensitive MCT detector with liquid nitrogen cooling
- Additional MG32 detector (DLaTGS analog) for operation without liquid nitrogen
- Simultaneous operation in IR spectra registration mode and visual sample observation mode
- Adjustable and rectangular diaphragms to identify IR spectrum registration area
- Built-in video camera (2 mpx, USB)





IROS 05 with Attenuated Total Reflection (ATR) probes designed for harsh application conditions

The spectrometer can be equipped with an adapter for fiber optic probes with a universal connector (SMA) and various high-quality fiber optic probes.

Immersion fiber optic probes are suitable for monitoring processes in laboratory-scale plants as well as in commercial reactors. They allow you to increase the accuracy of chemical processes analysis in real time and reduce the cost of process control.

Fiber optic ATR probed can be equipped with various tips: Diamond, ZnSe, Si, ZrO_2.

Key features:

- High efficient transmission in parts of the near and mid infrared spectrum
- ATR probe tips without dead zones
- High reliability for industrial applications in harsh environments up to 250ºC
- High pressure resistance

Specification of ATR fiber probes:

Probe type	Di- ATR	ZnSe- ATR	Si- ATR	ZrO_2- ATR
Transmission range	600-1900 cm^{-1}	600-3100 cm^{-1}	600-3100 cm^{-1}	1550- 650 cm^{-1}
Fiber type	PIR-900/1000 Silver Halide	PIR-900/1000 Silver Halide	PIR-900/1000 Silver Halide	CIR 500/550 Chalcogenide glass
Temperature range	-100ºC / + 140ºC (optional 250ºC)	-100ºC / + 140ºC	-100ºC / + 140ºC (optional 250ºC)	-150ºC / + 200ºC
Pressure (max)	200Bar (300 Bar) on request	10 Bar	100 Bar	100 Bar

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