Ocean MZ5 ATR-MIR Spectrometer

Rapid, Accurate Mid-Infrared Analysis

The Ocean MZ5 is a miniature ATR spectrometer with measurement capabilities from 1818–909 cm^{-1} (5.5-11 µm). This fully self-contained instrument -- including sample interface, light source and detector -- provides a compact, fast and scalable alternative to traditional FTIR spectroscopy. Applications include chemical discrimination, food and flavorings analysis, environmental testing and scientific research.

Ocean MZ5 is a complete system and does not require any external equipment such as light sources or fibers. Ocean Mirror, the dedicated software platform that comes with the system, is designed for measuring absorbance and transmittance of liquids placed on the instrument's crystal surface. A rotating cover protects the crystal when not in use.

Ocean Optics

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PERFORMANCE

Spectral range: 1818–909 cm^{-1} (5.5-11 µm)

Signal to noise: >300:1 (60 s measurement)

Spectral bandwidth (FWHM): 75 cm^{-1}

Measurement time (typical): ~30 seconds

Operating environ.: 0–45 °C non-condensing

Storage environment: 0-60 °C non-condensing

PHYSICAL AND MECHANICAL

Weight: ~812 g

Dimensions: 165 mm x 165 mm x 66 mm

Housing and ATR frame material: Aluminum

ATR surface area: 17 mm x 27 mm

Crystal material: ZnSe (zinc selenide)

Crystal cover: Protects sample area

DETECTOR AND OPTOELECTRONIC

Number of sample reflections: 9

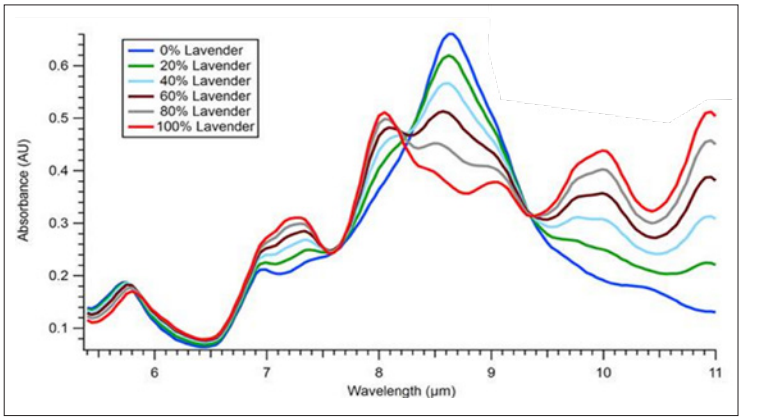
Illumination source: Electrically modulated MEMS emitters

Source lifetime: >5,000 hrs. of continuous use

Dispersing element: Linear variable filter

Detector: 128-pixel uncooled pyroelectric array

Analog to digital converter: 16-bit



The Ocean MZ5 measured a series of absorbance spectra of lavender oil samples diluted with almond oil, a common adulterant, revealing differences associated with concentration. Chemometric analysis can be applied to the data to derive additional information.

APPLICATIONS

Fuel Analysis

Examples
- Fatty acids content in biodiesel
- Octane level testing
- Ethanol spiking in gasoline

Materials Identification

Examples
- Biomaterial analysis
- Solvent analysis
- Polymer analysis

Farm to Table Technologies

Examples
- Agricultural measurements and monitoring
- Food and beverage quality control
- Food safety

Anti-Counterfeit

Examples
- Testing and qualification
- Identification and authentication of essential oils

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