



# Ocean MZ5 ATR-MIR Spectrometer

## Rapid, Accurate Mid-Infrared Analysis

The Ocean MZ5 is a miniature ATR spectrometer with measurement capabilities from 1818–909  $\text{cm}^{-1}$  (5.5–11  $\mu\text{m}$ ). 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.

## PERFORMANCE

**Spectral range:** 1818–909  $\text{cm}^{-1}$  (5.5-11  $\mu\text{m}$ )

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

**Spectral bandwidth (FWHM):** 75  $\text{cm}^{-1}$

**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

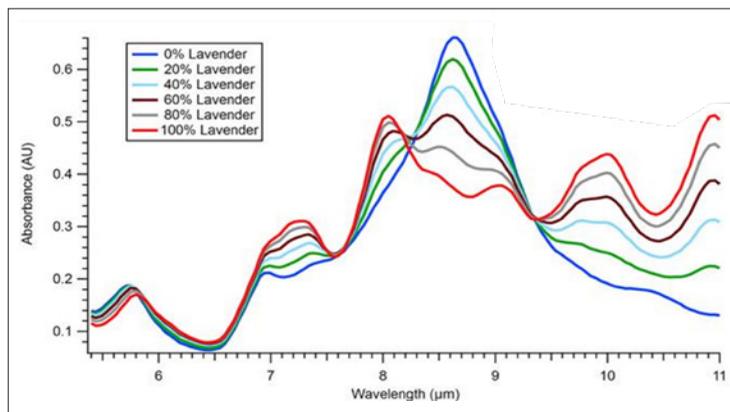
**Illumination source:** Electrically modulated  
MEMS emitters

**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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