

# MIRa-Guide®

## Advanced mid-infrared waveguide technology for analyzing solids and liquids



### Features:

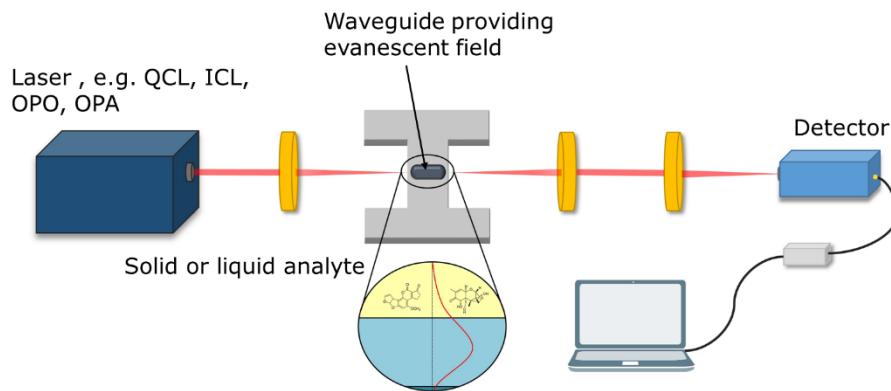
- Miniaturized ATR set-up
- Best performance with laser spectroscopy
- Frequency-matched to MIR-Lasers
- MIRa-lab-on-a-chip possible
- Waveguide material: GaAs
- ACTUAL transmission range:  
approx. 1700 to 1250 cm<sup>-1</sup> (6-8 µm)  
and 1250 to 900 cm<sup>-1</sup> (8-11 µm)

**MIRa-Guide®** is a single-mode waveguide especially designed for mid-infrared absorption spectroscopy based on tunable IR light sources such as Quantum Cascade Lasers (QCLs), Interband Cascade Lasers (ICLs), and Optical Parametric Oscillators (OPOs).

The integrated photonics approach reduces the footprint by an order of magnitude compared to conventional attenuated total reflection (ATR) accessories. This enables compact sensor designs that are less sensitive to thermal drift and vibrations.

The technology was pioneered by the **Institute of Analytical and Bioanalytical Chemistry at Ulm University (team of Prof. Boris Mizaikoff)** and has proven its maturity during the EU-project MYCOSPEC ([www.mycospec.eu](http://www.mycospec.eu)). **MIRa-Guide®** enabled the partners to detect mycotoxin contamination in selected food and feed matrices at relevant regulatory limits.

### Principal of Operation



### Präzision ist unser Geschäft

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**Lasers and light sources**  
**Spectroscopy**  
**Measurement of light**  
**Optical instrumentation**

# MIRa-Guide®

**MIRa-Guide®** can be used to analyze solids (e.g., powders), semi-solids (e.g., gels, pastes) or liquids. The sample is placed on top of the GaAs thin-film waveguide, thereby, approximately 10 µL of sample is required. An option for continuously analyzing liquids (microfluidic flow cell **MIRa-Guide®**) can be used for continuous on-line and in-line monitoring. The liquid channel is designed to reduce the risk of plugging even if biological fluids are analyzed. Improved solid analysis is enabled by an optional stamp system compressing the sample at the waveguide surface (**MIRa-Guide®**).

Its long optical interaction path length of a couple of millimeters offers pronounced interaction between a uniform evanescent field and analytes present at or close to the waveguide surface. The waveguides are spectrally matched to the emission characteristics of QCL, ICL, and OPO light sources for best performance.

Tight mechanical specifications and kinematic base plates reduce alignment efforts to a minimum.

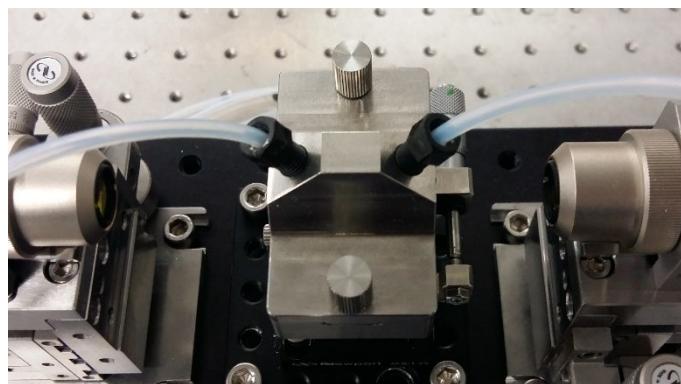
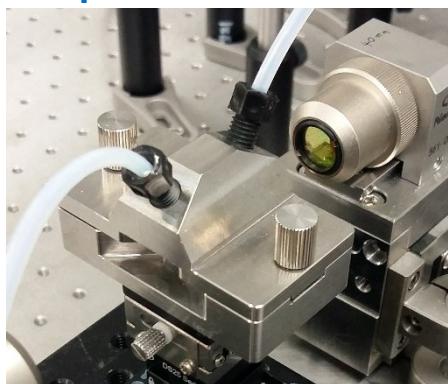
#### Dimensions:

**MIRa-Guide®:** approx. 60x35x14 mm

**MIRa-Guide® Flowcell:** approx. 60x35x30 mm

**Threads:** UNF 1/4" 28G

#### Setup:



**More information:**  
[www.mgopticalsoolutions.com/mira-guide](http://www.mgopticalsoolutions.com/mira-guide)

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