



NANOELECTROMECHANICAL INFRARED ANALYZER

BRKR-EMILIE™

For Bruker VERTEX and INVENIO Spectrometers

EMILIE™ is a unique nanoelectromechanical system-based accessory for Fourier transform infrared spectroscopy (NEMS-FT-IR). The high sensitivity of EMILIE™ enables the bulk chemical characterization of nanomaterials, including ultrafine aerosols, nanoplastics, biopharmaceuticals, and nanomedicines, with a sensitivity reaching picogram levels. Samples can be directly collected from powders, aerosols, dispersions, or solutions.

EMILIE™ integrates seamlessly within your Bruker FT-IR spectrometer (Figure 1). The specific spectrometer requirements are listed in Table 1.

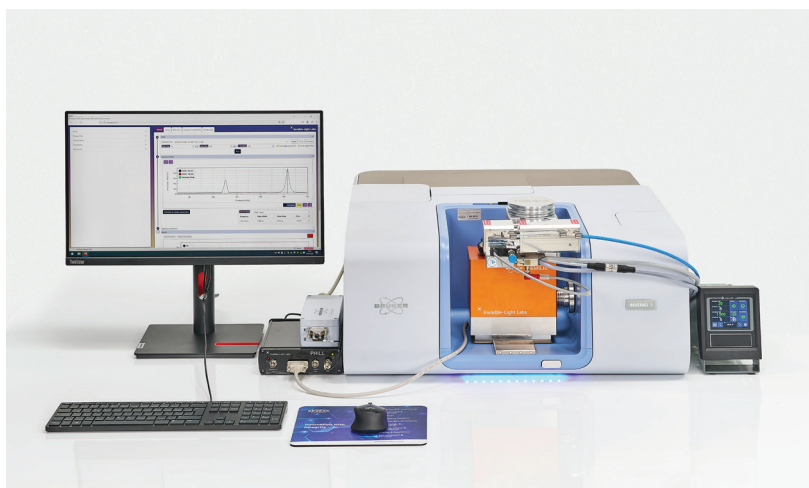


Fig. 1
EMILIE™ inserted in the sample compartment of a Bruker INVENIO R.

FT-IR Spectrometer Configuration

Compatible with	Bruker INVENIO R Bruker INVENIO X Bruker VERTEX NEO (on request) Bruker VERTEX 80/80v
Required Accessory	ASM external Analog-Box Bruker Part No.: E550/A
Required Firmware	StepScan must be available
Spectral Range	MIR as standard, FIR and NIR as optional extension

The photothermal detection principle of EMILIE™ is wavelength-independent, allowing access to the entire wavelength range of your spectrometer. The EMILIE™ measurement chamber is equipped with a wedged diamond window (Figure 2) to provide access to the entire wavelength range of your Bruker FT-IR spectrometer. An example absorption spectrum of a sub-micrometer aerosol measured over a spectral range from 6000 cm^{-1} - 30 cm^{-1} is shown in Figure 3.

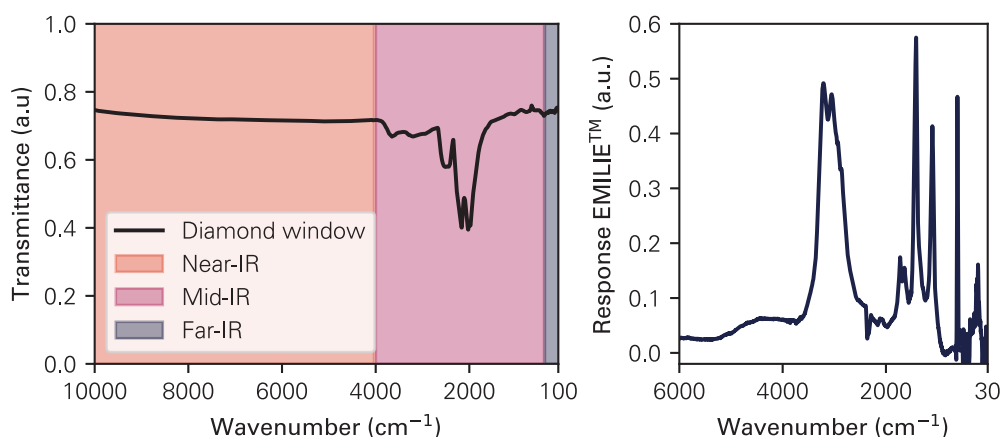


Fig. 2 (left)

Transmission spectrum of EMILIE™'s wedged diamond window.

Fig. 3 (right)

FT-IR spectrum of rural aerosol (particle size <700 nm, 15 min sampling time), collected and measured with EMILIE™ in conjunction with a Bruker VERTEX 80 FT-IR spectrometer covering the range 6000 cm^{-1} - 30 cm^{-1} (1.67 μm - 333 μm).

- High sensitivity without cryogenic cooling
- Wide spectral range
- Ideal for aerosols, nanoparticles, and samples available in very small quantities.
- Direct collection of samples from powders, aerosols, dispersions, and solutions.
- Temperature control of the sample for thermal desorption and stability studies.

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**Bruker Optics is ISO 9001, ISO 13485,
 ISO 14001 and ISO 50001 certified.**

