



● **PL II** FT-Photoluminescence Module

Bruker's PL II is a versatile and powerful external module to the INVENIO and VERTEX Series FTIR spectrometers for photoluminescence spectroscopy.

Fourier transform infrared photoluminescence spectroscopy has many known advantages over the dispersive approaches, such as the Jaquinot and the multiplex advantages. Optional optical components can help cover a broad detection range from the infrared to the visible. The PL II Module provides higher sensitivity and shorter measurement times especially in the infrared range.

Key Features

- High sensitivity and dynamics
- Visible (532nm) internal excitation laser with software controlled intensity adjustment
- Optional near infrared (1064nm) internal excitation laser
- Optional rear side input port for external lasers
- Cryostat adaptation for low temperature measurements available
- Accessories for photoluminescence mapping
- Optical components available for PL detection from infrared up to the visible



PL II sample compartment with NIR/VIS objective and standard sample stage.



Automated x,y stage for laterally resolved photoluminescence mapping.



Cryostat adaption for low temperature photoluminescence spectroscopy.

High Performance

The PL II Module utilizes the high performance characteristics of the INVENIO and VERTEX Series research grade FTIR spectrometers. Data acquisition is based on two channel delta-sigma ADCs with 24-bit dynamic range, which are running in parallel and integrated into the detector preamplifier electronics. This advanced, patented DigiTect™ technology prevents external signal disturbance and guarantees the highest signal-to-noise ratio. E.g. in the near infrared spectral range the high gain InGaAs detector enables outstanding sensitivity even for weak photoluminescence signals.

Versatility

The PL II Module is either available with visible (532 nm) or near infrared (1064 nm) internal excitation laser. Furthermore, an optional external laser input port allows the usage of other lasers, including the adaptation of your existing laser sources.

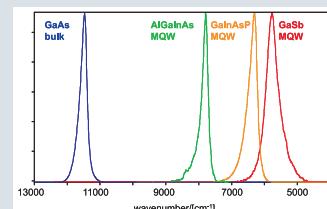
When not in use, the PL II Module can be electronically disconnected, allowing the use of the

INVENIO or VERTEX spectrometers' sample compartment e. g. for reflectance or transmittance FTIR measurements.

A cryostat for low temperature photoluminescence including an objective with increased working distance can be adapted to the PLII Module. In conjunction with a high resolution VERTEX spectrometer (0.06 cm^{-1} are optionally achievable) such measurements can give valuable insight e. g. for solid state physicists and chemists.

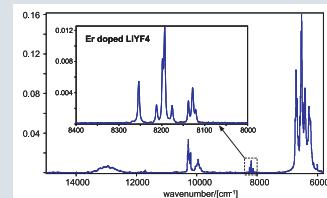
For laterally resolved photoluminescence mapping, there are automated x, y and x, y, z stages available.

PLII Example Spectra with 532nm excitation



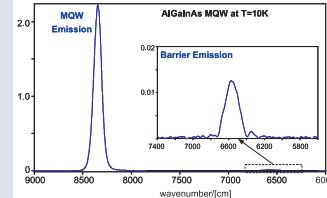
Room temperature PL of multiple quantum wells (MQW's) and a GaAs bulk sample with 532 nm excitation. Typical measurement parameters:

Measm. duration: ~10 s
Resolution: ~50 cm^{-1}
Laser intensity: ~20 mW
Detector: InGaAs



Room temperature PL of Er doped LiYF4: The narrow PL bands are clearly resolved.

Measm. duration: ~1 min
Resolution: ~2 cm^{-1}
Laser intensity: ~40 mW
Detector: InGaAs



Low temperature PL of an AlGaNAs multiple quantum well at 10 K (Data from Walter Schottky Institute, Technical University of Munich). The barrier PL (shown in the inset) is approximately 170 times weaker than the MQW PL but can clearly be measured within less than 10 seconds.

Measm. duration: ~7 s
Resolution: ~16 cm^{-1}
Laser intensity: ~10 mW
Detector: InGaAs