

GladiATR – Highest Performance Diamond ATR



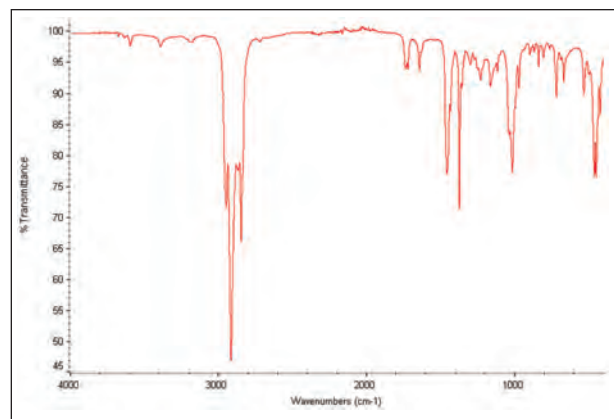
FEATURES OF THE GLADIATR

- *Diamond crystal design – cannot scratch or fracture*
- *Extreme pressure application – for hard and demanding solid samples*
- *Highest energy throughput design – for excellent quality FTIR spectra and minimum scan time*
- *All reflective optics – full spectral range for mid-IR and far-IR analysis*
- *Optional Ge crystal plate – for high refractive index samples*
- *Heated crystal plate options – taking ATR temperature studies up to 300 °C*
- *300 °C Diamond Version – for high temperature/high pressure materials studies*
- *Compatible with most FTIR spectrometers*

The GladiATR™ is an all new optical design from PIKE Technologies providing the highest energy throughput, highest available pressure, widest spectral range and offering optional heated or cooled crystal plates. The GladiATR is a highly durable and rugged design to be used in environments where large numbers of samples are measured, where samples may be intractable solids, where you want the best quality spectrum every time and where you need flexibility for new sample types in the future.

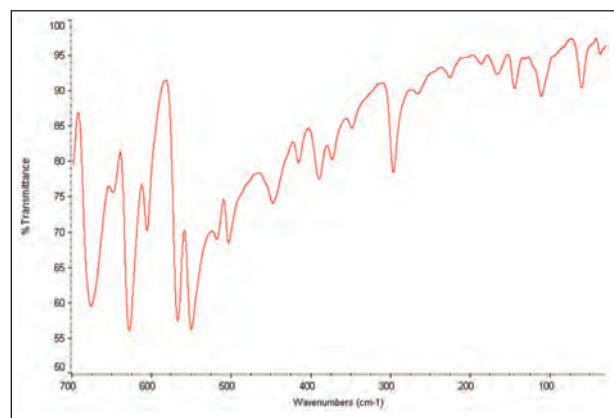
The GladiATR diamond crystal is a monolithic design which will not scratch or fracture even at extreme pressures. This design permits analysis of hard, intractable objects such as coated metal wires, polymer pellets and geological samples without damage to the ATR crystal. The diamond crystal is brazed into the stainless steel plate, which enables this ATR to be compatible with pressure up to 30,000 psi.

The energy throughput of the GladiATR is exceptional; twice that of other monolithic diamond ATR accessories—significantly improving spectral quality and reducing sampling time.



ATR/FTIR spectrum of polymer pellet run on GladiATR with diamond crystal. Spectral range in the mid-IR is 4000–400 cm⁻¹.

The GladiATR is designed and manufactured using all reflecting optics providing full spectral range in the mid-IR and far-IR spectral regions. An optional Ge crystal plate is available for analysis of high refractive index samples. Crystal plates are easily changeable.



Spectrum of sulfathiazole using GladiATR with diamond crystal plate and far-IR optics in FTIR



GladiATR with heated diamond crystal plate and temperature controller

ORDERING INFORMATION

GladiATR Base Optics (must select, insert spectrometer model for XX)

PART NUMBER	DESCRIPTION
026-18XX	GladiATR Single Reflection ATR Base Optics, with heating capability up to 210 °C
026-17XX	GladiATR 300 Single Reflection ATR Base Optics, 300 °C

Notes: All GladiATRs include purge tubes, purge kit, and selected spectrometer base mount. GladiATR 300 is configured and available only with the Diamond plate. Crystal plates for the basic model (026-18XX) must be selected from the table below. High-Pressure Clamp, Digital Force Adapter and Liquids Retainer/Volatiles Cover are optional and need to be ordered separate, if required.

GladiATR Stainless Top (must select one or more)

PART NUMBER	DESCRIPTION
026-2001	GladiATR Standard Stainless Top
026-2002	GladiATR Heated Stainless Top
026-2003	GladiATR Liquid Jacketed Stainless Top

Notes: Stainless top is not required for 300 °C version.

GladiATR Crystal Plates for GladiATR (must select one or more)

PART NUMBER	DESCRIPTION
026-2100	Diamond Crystal Plate
026-2050	Ge Crystal Plate
026-2200	Specular Reflection Plate

Notes: GladiATR Crystal Plates are pre-aligned and pinned-in-place. Changing crystal plates is easy and fast to optimize sampling results.

GladiATR Pressure Clamp, all models (must select for solid or powdered samples)

PART NUMBER	DESCRIPTION
026-3020	High-Pressure Clamp
076-6026	Digital Force Adapter for High-Pressure Clamp

Notes: The High-Pressure Clamp is required for analysis of solids, powders and use of liquids retainer and/or Digital Force Adapter (Digital Force Adapter cannot be used with heated crystal plates). Pressure clamp includes a flat tip, a swivel tip and a concave tip.

GladiATR Temperature Controlled Crystal Plates

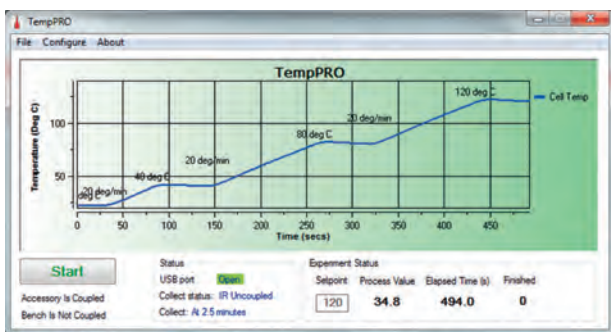
PART NUMBER	DESCRIPTION
026-4102	Heated Diamond Crystal Plate, 300 °C (GladiATR 300 only)
026-4100	Heated Diamond Crystal Plate, 210 °C
026-4050	Heated Ge Crystal Plate, 130 °C
026-4110	Liquid Jacketed Diamond Crystal Plate
026-4150	Liquid Jacketed Ge Crystal Plate, 130 °C
076-1220	Digital Temperature Control Module, 210 °C
076-1420	Digital Temperature Control Module, PC Control, 210 °C
076-1210	Digital Temperature Control Module, 300 °C
076-1410	Digital Temperature Control Module, PC Control, 300 °C

Notes: For heated diamond crystal plates, maximum crystal temperature is 300 or 210 °C, depending on the GladiATR model selected. Ge becomes optically opaque at 190 °C. Max recommended temperature for this crystal is 130 °C. Temperature controller is required for heated crystal plates. Digital temperature controller, PC control includes PIKE TempPRO software. Liquid jacketed crystal plates require customer provided circulator.

GladiATR Sampling Options

PART NUMBER	DESCRIPTION
026-5012	Flow-Through Attachment, 210 °C, sample volume 100 µL
026-5014	Flow-Through Attachment, 300 °C, sample volume 100 µL
026-5013	Liquids Retainer and Volatiles Cover Set
026-5015	Liquids Retainer and Volatiles Cover Set, 300 °C
026-5010	Liquids Retainer for Performance Plates, 260 °C
026-3051	Volatiles Cover for Performance Plates

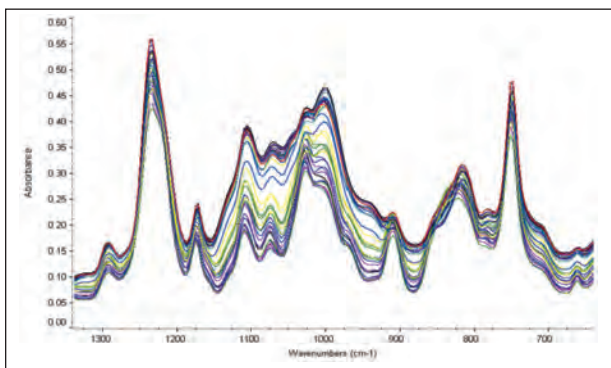
Notes: Flow-Through Attachment, Liquids Retainer and Volatiles Cover are compatible with all crystal offerings (require High-Pressure Clamp).



Selection of the digital control module, PC control includes PIKE TempPRO™ software for graphical setup and automated data collection for thermal experiments

Temperature controlled crystal plates are available for thermal study of materials. PIKE Technologies offers temperature controllers with digital and PC programmable set points.

The GladiATR high performance diamond ATR is available in configurations to fit most FTIR spectrometers.



ATR/FTIR spectra from cure of thermoset epoxy using the heated diamond crystal plate on the GladiATR

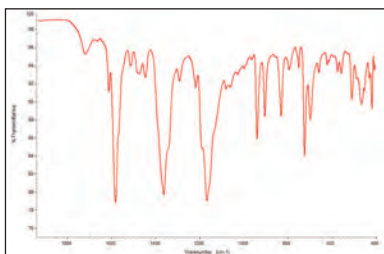
GLADIATR ACCESSORY SPECIFICATIONS

ATR Crystal Choices	Diamond, germanium
Crystal Plate Mounting	User changeable plates
Crystal Type	Monolithic
Diamond Mounting	Brazed
Crystal Plate Mounts	Stainless steel
Angle of Incidence	45 degrees, nominal
Crystal Dimensions, Surface	3.0 mm diameter
Optics	All reflective
Pressure Device	Rotating, continuously variable pressure; click stop at maximum
Digital Force Adapter (option)	Load cell sensor for precise and reproducible pressure control. Attaches directly to GladiATR clamp. Digital readout.
Maximum Pressure	30,000 psi
Sample Access	80 mm, ATR crystal to pressure mount
Spectral Range, Diamond	4000 to 30 cm ⁻¹ (IR optics dependent)
Heating Options	Diamond, 210 or 300 °C maximum
Accuracy	+/- 0.5%
Sensor Type	3 wire Pt RTD (low drift, high stability)
Temperature Control	Digital or digital with PC control (up to 10 ramps, automated data collection, USB interface)
Input Voltage	100–240 VAC, auto setting, external power supply; 110/220 VAC switchable (300 °C version)
Operating Voltage	4A/24 VDC, 100 W 6A/24 VAC, 150 W (300 °C version)
Cooling Options	Liquid jacketed crystal plates available
Specular Reflection Option	Optional, 45 degree nominal angle of incidence
Purge Sealing	Purge tubes and purge line connector included
Accessory Dimensions (W x D x H)	140 x 205 x 340 mm (excludes FTIR baseplate and mount)
FTIR Compatibility	Most, specify model and type

Dedicated GladiATR and GladiATR Vision Sampling Tools – More Options to Address Your Specific Application Requirements

Expanded Range Ge Crystal Plate

Due to the compact crystal size and the all-reflective optics of the GladiATR platform, the Ge Crystal Plate offers an expanded spectral range from 4000–450 cm⁻¹. A Ge ATR crystal is used to measure samples with a high refractive index. Types of high refractive materials that would benefit from sampling on the expanded range Ge ATR crystal are carbon black filled samples and inorganic materials such as oxides, aluminas, titania, and minerals. The Ge crystal plate (non-viewing) may be fitted for the GladiATR or GladiATR Vision. Crystal plates are easily interchangeable. A heated version is available.



Spectrum of malachite green oxalate collected using the GladiATR with Ge crystal plate

Specular Reflection Plate

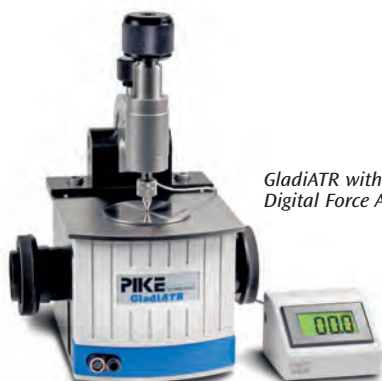
The GladiATR may be converted from an ATR accessory to a specular reflection accessory by using the Specular Reflection Plate. A viewing Specular Reflection Plate is available for the GladiATR Vision. The angle of incidence is 45 degrees, and plate is easily interchangeable with ATR plates.



GladiATR Specular Reflection Plate

Digital Force Adapter for High-Pressure Clamp

The Digital Force Adapter attaches directly to the clamping assembly to precisely measure the applied force by using an embedded load cell that exhibits high linearity and exceptional accuracy. The magnitude of applied force is displayed on an external easy-to-read LCD readout. The digital clamp is ideal for applications that require controlled and reproducible pressure.



GladiATR with Digital Force Adapter

Flow-Through Attachment

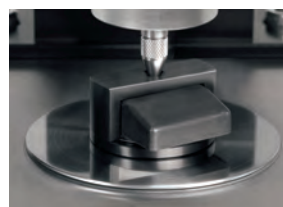
The Flow-Through Attachment is used for continuous monitoring or handling samples that pose a hazard from ambient exposure. Samples are introduced using the Luer-Lok fitting by connecting a syringe or a flow line. The High-Pressure Clamp is required.



Flow-Through Attachment

Liquids Retainer and Volatiles Cover

The Liquids Retainer offers a trough configuration for GladiATR and GladiATR Vision. The volatiles cover reduces the amount of evaporation of a highly volatile liquid sample on the surface of the crystal. The High-Pressure Clamp is required.



Liquids Retainer and Volatiles Cover Set

ORDERING INFORMATION

GladiATR Options

PART NUMBER	DESCRIPTION
026-2050	Ge Crystal Plate (non-viewing)
026-4050	Ge Crystal Plate, 130 °C (non-viewing)
076-1220	Digital Temperature Control Module
076-1420	Digital Temperature Control Module, PC control
026-2200	Specular Reflection Plate (non-viewing)
026-2202	Specular Reflection Plate (viewing)
076-6026	Digital Force Adapter for High-Pressure Clamp
026-5012	Flow-Through Attachment, 210 °C, sample volume 100 µL
026-5014	Flow-Through Attachment, 300 °C, sample volume 100 µL
026-5013	Liquids Retainer and Volatiles Cover Set
026-5015	Liquids Retainer and Volatiles Cover Set, 300 °C
026-5010	Liquids Retainer for Performance Plates
026-3051	Volatiles Cover for Performance Plates

Note: The heated Ge crystal plate requires a temperature control module.