G*A*TR™

The G*A*TR™ grazing angle ATR accessory is a revolutionary approach to the analysis of monolayers on semiconductor and metallic substrates. The G*A*TR™ is optimized for high sensitivity to these types of samples. Its specially designed pressure applicator is optimized for delivering good contact between the sample and the Ge ATR crystal. The GATR™ provides at least an order of magnitude increase in sensitivity relative to grazing angle methods, in addition to the convenience of an easy to use, fully prealigned, horizontal sampling accessory.

APPLICATIONS

- Analysis of monolayers and adsorbed species on semiconductors and metals.
- Rapid, repeatable measurements.

FEATURES

- Convenient horizontal sampling surface.
- Built-in pressure applicator optimized for contact with hard samples.
- 65º fixed incident angle.
- Ge ATR crystal.
- Accommodates samples up to 8” in diameter with center-sampling of discs up to 6” in diameter.
- PermaPurge™ for rapid purging of the system.
- Options available:
  - Wire grid polarizer (KRS-5 substrate) for enhanced spectral contrast and orientation studies
  - Fixed torque Slip-Clutch to apply repeatable ATR contact pressures to solids.
  - Torque Screwdriver to apply your choice of contact pressure for repeatable ATR spectroscopy measurements of solids.

INCLUDES

- Ge hemispherical ATR crystal.
- Built-in pressure applicator, designed to accommodate large samples.
- Mounting hardware for the specified spectrometer.

ORDERING INFORMATION

	CATALOG NO.
G*A*TR™	G*A*TR-XXX

XXX denotes the spectrometer code

OPTIONS AND REPLACEMENT PARTS

Slip-Clutch, 56 oz-in	SLP-CHI
Torque Screwdriver	PTW-SXX
Mounted Ge ATR Crystal	G*A*TR-ATR-J
GATR™ Wire Grid Polarizer (KRS-5 substrate)	PWG-GATR-XXX

Harrick Scientific Corporation
88 Broadway, PO Box 1288, Ossining, NY 10562
Ph: 800-248-3847, FAX: 914-762-0914, web site: www.harricksci.com, e-mail: info@harricksci.com

The G*A*TR™ is a single reflection ATR accessory designed for analyzing monolayers and adsorbed species on semiconductor and metallic substrates.

The G*A*TR™ integrates the theoretical conditions that provide the highest sensitivity to these extremely thin films[1,2] in a convenient horizontal ATR sampler. The G*A*TR features a 65º incident angle and a Ge ATR crystal for use from 5000 to 650 cm^{-1}. Its specially designed pressure applicator optimizes contact between the sample and the relatively small active portion of the crystal. For greater sensitivity, a wire grid polarizer can be added to the G*A*TR and, for repeatable FT-IR spectroscopy measurements. In addition, a slip-clutch or torque screwdriver can be used for reproducible and consistent contact.

Figures 1 and 2 demonstrate the high sensitivity of the G*A*TR to monolayers. Figure 1 is a spectrum of an organic monolayer on a polished silicon surface. Figure 2 shows the spectrum of a monolayer on a gold-coated glass substrate.

For sampling versatility, the G*A*TR can also be used to analyze liquids, powders, pastes, and other solids. It is especially useful for samples with intense spectral bands. Such samples might otherwise exhibit too high absorbance or band distortions.

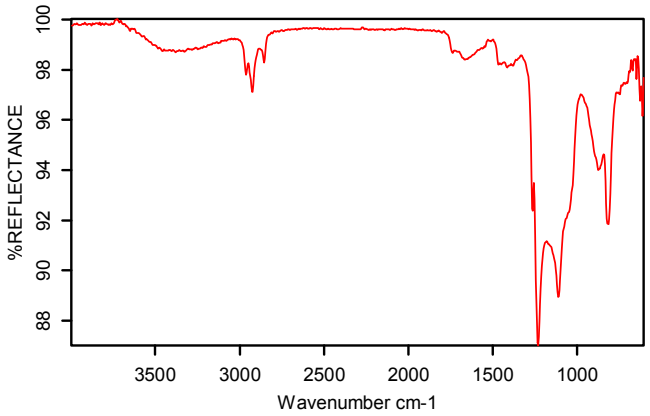

Figure 1. ATR Spectrum of an Organic Monolayer on Silicon.

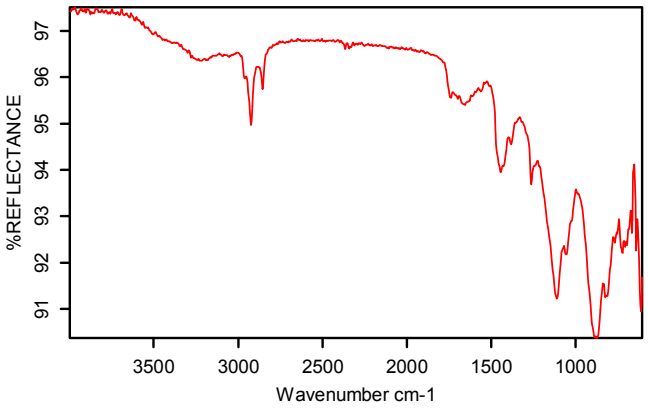

Figure 2. ATR Spectrum of an Organic Monolayer on Gold.

[1] M. Milosevic and S. L. Berets, 'ATR of Monolayers on Si and Neat Powders by Single Reflection ATR,' PittCon 2002 invited paper.

[2] S.L. Berets and M. Milosevic, 'ATR Spectroscopy of Thin Films on Silicon,' paper in preparation.