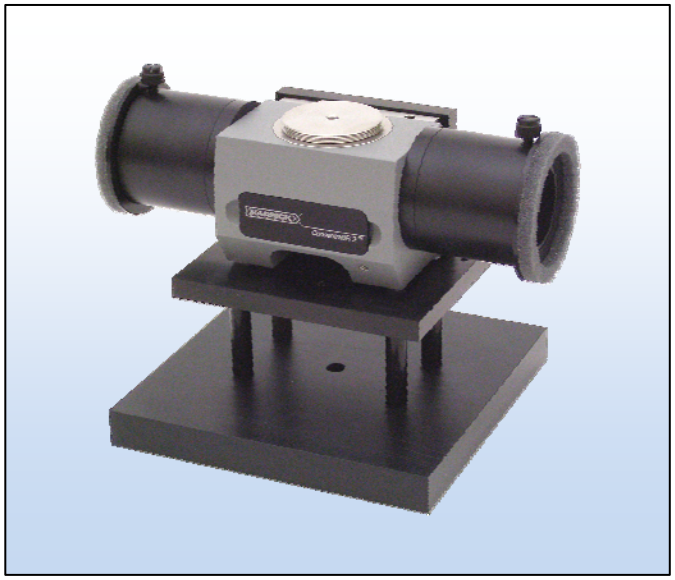
THE CONCENTRATIR2™

The ConcentratIR2™ is a miniaturized version of the original Harrick multiple-reflection ATR accessory which is compatible even with smaller FTIR sample compartments. Designed for micro-liquid samples, it features interchangeable diamond and silicon ATR sampling plates. Both ATR configurations consist of a thin disk of silicon or diamond that is optically contacted to a special ZnSe component. The silicon configuration has eleven internal reflections with a nominal incident angle of 30° and is suitable for use from 4000 cm^{-1} to 650 cm^{-1}. The diamond configuration has ten internal reflections with a nominal angle of incidence of 45° and has an approximate wavelength range from 4000 cm^{-1} to 550 cm^{-1}. Because of diamond lattice bands, the signal-to-noise ratio is limited for the diamond version in the vicinity of 2000 cm^{-1}. Turn-tilt mirror adjustments as well as a vertical adjustment are provided to maximize optical throughput. The ConcentratIR2™ is fully enclosed for rapid sample exchange minimal interruption of the purge of the spectrometer.

APPLICATIONS

- Minute samples of liquids, pastes, and slurries.
- Proteomic, forensic, and quality control samples.



FEATURES

- Pre-aligned for easy start-up.
- Rapid purging.
- Little or no sample preparation.
- Only 10 µl of sample required
- Easy clean up between samples.
- Durable and sensitive ATR elements.
  - Si with a nominal incident angle of 30° and eleven reflections.
  - Extended Si a nominal incident angle of 30° and twenty-three reflections.
  - Diamond with a nominal incident angle of 45° and ten reflections.
- Optional heated and flow cells available:
  - Ambient flow cells with Luer Lock or Swagelok™ fittings.
  - Heatable trough and flow cells for operation to 200 °C.

INCLUDES

- Mating hardware for the specified spectrometer.

ORDERING INFORMATION

	CATALOG NO.
Silicon ConcentratIR2™	UQA-E-XXX
Diamond ConcentratIR2™	UQA-W-XXX

OPTIONS & REPLACEMENT PARTS

Si Sampling Plate, 30° incident angle and eleven reflections	UQA-LSP-E
Extended Si Sampling Plate, 30° incident angle and twenty-three reflections	UQA-LSP-0E
Diamond Sampling Plate, 45° incident angle and ten reflections	UQA-LSP-W
Volatiles Cover	FAS-XCS
Liquid Cell, Luer Lock Fittings	UQA-FLC-M
Liquid Cell, Swagelok™ Fittings	UQA-FLC-S
Heatable Trough, 24V	UQA-HTC
Heatable Flow Through Liquid Cell, Luer Lock Fittings, 24V	UQA-HFC-M
Heatable Flow Through Liquid Cell, Swagelok™ Fittings, 24V	UQA-HFC-S
Temperature Controller, 110V input, 24V output with USB adapter	ATK-024-3
Temperature Controller, 220/240V input, 24V output (CE marked) with USB adapter	ATK-024-4

Harrick Scientific Products, Inc.
141 Tompkins Ave, 2nd Floor, Pleasantville NY 10570
Ph: 800-248-3847 or 914-747-7202, FAX: 914-747-7209, web site: www.harricksci.com, e-mail: info@harricksci.com

The ConcentratIR2™ is designed for the analysis of liquids, pastes, and slurries. The sample is placed on the top of the Silicon or Diamond ATR wafer. The sample analysis area is a 4 mm diameter circle and approximately 10 µl of sample are required. The ATR top is constructed of 316 stainless steel. An optional liquid cell, also of 316 stainless steel, is offered for static or flow introduction of the sample. Both ATR configurations consist of a thin wafer disk of Silicon or Diamond that is optically contacted to a special ZnSe component. The approximate wavelength ranges are 4000 cm^{-1} to 650 cm^{-1} for Silicon and 4000 cm^{-1} to 550 cm^{-1} for Diamond. Because of crystal lattice bands, the signal-to-noise ratio is limited for the Diamond version in the vicinity of 2000 cm^{-1}. Turn-tilt mirror adjustments as well as a vertical adjustment are provided to maximize optical throughput.

Several optional cells are available for use with the ConcentratIR2. For flow applications at ambient temperature, low volume cells are available with either Luer or Swagelok™ fittings. Our Luer and Swagelok™ heated flow cells can be operated at temperatures up to 200 °C and have an internal volume on the order of 26 µL. A heated trough with a maximum volume of 1.1 mL is also available, for use with non-volatile samples.

Concentrated Multiple Reflection ATR spectroscopy allows the enhanced sensitivity of multiple reflection ATR in a very confined sampling area hitherto reserved for single reflection equipment. This makes the ConcentratIR2™ especially useful in applications such as proteomics and forensics, where high sensitivity is required and sample amounts are limited, as well as in less demanding situations. Additional applications include the determination of low concentration components in alcoholic beverages and quality control testing of food oils.

A useful application of this method is in the analysis of solutes dissolved in small amounts of volatile liquids. A droplet of the liquid is deposited on the sampling surface. The solvent is allowed to evaporate leaving the solid solute deposited on the ATR element surface. The spectrum of the solute is then taken. Figure 1 presents a spectrum of a 20 µl sample of a 1.62 x 10^{-3} M solution of carminic acid after the methanol solvent evaporated. The Silicon ATR configuration of the ConcentratIR2™ was used.

The ConcentratIR2™ is equipped with purge ears that are compatible with the most spectrometer. Under many operating conditions, no additional purging of the accessory is required. For those cases where additional purging is required, however, a purge input fitting is provided which can be installed by the user on the front of the accessory.

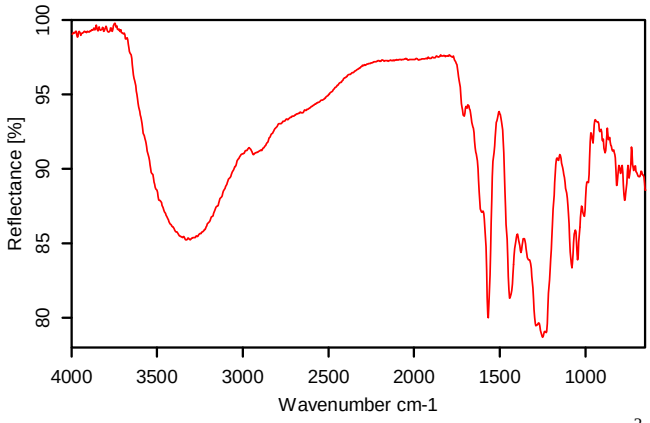


Figure 1. ATR spectrum of 20 µl sample of a 1.62 x 10^{-3} M solution of carminic acid after solvent evaporation.