

Golden Gate™

Low Temperature Diamond ATR System

Specac



The Golden Gate low temperature diamond ATR system is the first ATR accessory to provide high performance ATR measurements down to near liquid nitrogen temperature. The system uses a thermally insulated copper and stainless steel dewar in conjunction with an integral heater to provide continuous temperature control across the working range. The high thermal conductivity of the diamond crystal provides rapid temperature stabilization, accurate temperature measurement, and avoids temperature gradients across the sample.

The diamond ATR crystal is high temperature metal bonded into a tungsten carbide support disk and the top plate is hard-anodized to make the accessory chemically resistant and capable of withstanding the pressures required for optimum crystal and sample contact. Pressure is applied

to the sample using the quick lock and release bridge from the proven Golden Gate diamond ATR system. This clamping device allows rapid sample throughput and reproducible solid sampling. It also has a built-in torque limiter to control the loads applied to the diamond.

The Golden Gate low temperature diamond ATR is constructed in such a way that the crystal mounting is under a constant load. This ensures that the diamond is kept in constant optical alignment, negating the effects of thermal expansion and contraction. The upper body of the system is separated from the top-plate by a replaceable, thermally conducting spacer, avoiding the need for use of sealants that may contaminate the diamond surface. The system is easily and quickly taken apart for cleaning.

A variable temperature diamond ATR system for the FTIR measurement of solids and liquids at ambient to near liquid nitrogen temperatures

Key Sampling Benefits

- Continuous control of sample temperature from near liquid nitrogen temperatures to 80 °C.
- High thermal conductivity provides rapid cooling and temperature stabilization.
- Proven, strong clamping device, based on the Golden Gate Diamond ATR, allows rapid, reproducible sample throughput.
- Thermally insulated copper and stainless steel dewar allows for the use of liquid nitrogen, dry ice, or salt and water mixtures.
- Permanently loaded diamond ATR crystal is self-aligning, eliminating the need for optical re-alignment after cooling.

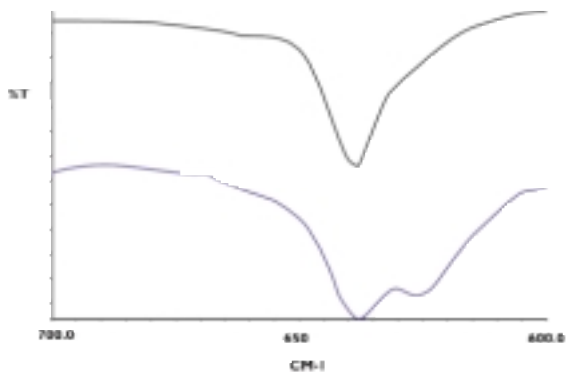


Figure 1: PTFE recorded at room temperature (black) and at -100 °C (blue) using a DTGS detector at 4 cm⁻¹ resolution.

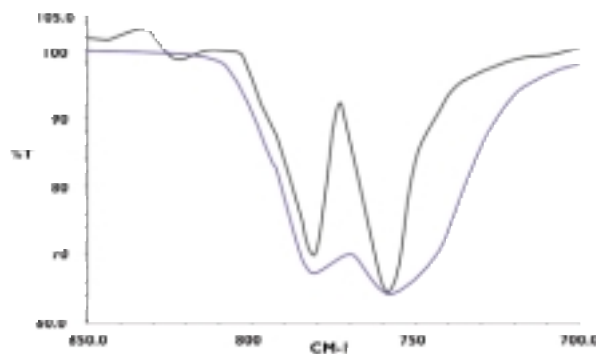


Figure 2: Carbon tetrachloride measured at room temperature (blue) and -143 °C (black) using a DTGS detector at 4 cm⁻¹ resolution.

Ordering Information

- 10592 Golden Gate low temperature ATR system. Includes temperature controller, optics, anodized top-plate, clamping device with integral torque limiter, Benchmark base-plate, and purge bellows.
Please specify spectrometer make and model, country of destination and required voltage.
- 10591 Golden Gate low temperature ATR top-plate, includes temperature controller.
Please specify spectrometer make and model, country of destination and required voltage.

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