What kind of measurements can I make with the High Temperature High Pressure Cell?

The High Temperature High Pressure Cell (HTHP Cell) P/N 5850 has the capability of being operated at temperatures approaching 800C and pressures up to 1000psi. In terms of its absolute limits of operation, the maximum temperature achievable by the HTHP Cell is at vacuum conditions. Gases analyzed in a pressurized environment at 1000psi tend to be limited to approximately 550 to 600C in temperature in this accessory.

The HTHP cell as P/N 5850 can be operated in transmission or decomposition mode. For the transmission mode of operation the sample is mounted as a solid 13mm disc into the sample heating post of the cell. The source of light radiation passes through the 13mm disc which is enclosed in a surrounding gas chamber, set to the operating conditions obtainable for the cell. For the decomposition mode of operation, the 13mm sample disc, or a sample powder, fluid or gum is placed into a separate decomposition pan that rests in an alternative part of the sample heating post. Vapors that may evolve from the decomposition pan, generated from heating and/or depressurization of the surrounding gas in the enclosed chamber, are analyzed by the radiant light beam as it passes through the cell and over the decomposition pan.

An advanced version of the HTHP cell, P/N 5855, also includes an alternative baseplate and wedged window assembly to allow the cell to operate in a Specular reflectance mode. The sample MUST be a solid 13mm diameter disc when operating in this mode as the radiant light beam enters the cell through the wedged window from underneath the cell and is specularly reflected off the surface of the sample to exit through the same window. Because the IR beam enters the cell from below (deflected off a mirror on the baseplate), the sample cannot be loose or powdery as it would not be retained in the sampling position. Similarly, fluids or gum like substances cannot be analyzed in this mode of operation.

Depending on how the HTHP Cell is configured, either for transmission or reflectance measurements, it can be considered as a very flexible accessory with wide ranging applications for determining the type of information obtainable from a sample. Transmission spectroscopy is useful for total content measurement of a sample, whereas reflection spectroscopy is useful for surface information.

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