High Temperature/High Pressure Cell

In-situ analysis under extreme conditions

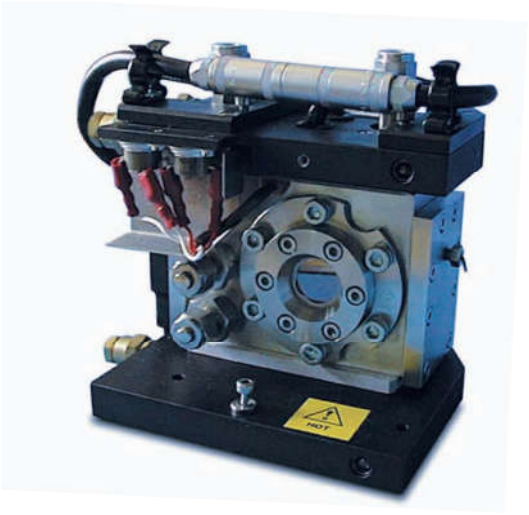


Figure 1 - Transmission analysis mode

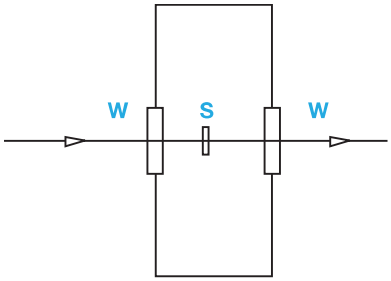


Figure 2 - Reflectance analysis mode

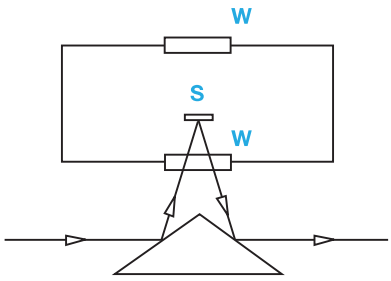
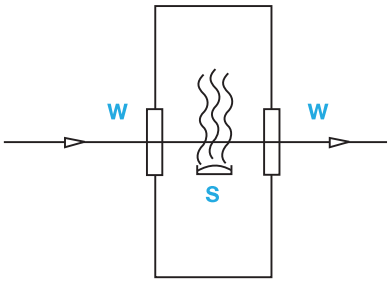


Figure 3 - Decomposition analysis mode



High Temperature/High Pressure Cell

High technology products and modern industrial processes require in-situ analysis under extreme conditions of temperature and pressure.

The ability to recreate these conditions and spectroscopically analyse samples or monitor processes in the laboratory is provided by the Specac High Temperature/High Pressure Cell.

The cell has been designed for high optical throughput and allows simple interchange between its multi-purpose analysis configurations, Transmission, Reflectance and Decomposition (See figures 1, 2 and 3). Key: S = Sample W = Window

Key features

- **Extreme Condition Spectroscopy -** programmable controlled temperatures up to 800°C and pressures from vacuum to 1000 psi
- **Multi-purpose Analyzer -** transmission, specular reflectance and decomposition
- **Optimised Design -** permits easy interchange between analysis modes
- **Safe and reliable construction -** rugged, durable construction incorporating safety approved electronics and safety burst disc

Applications

- Component failure
- Decomposition studies
- In-situ reaction monitoring
- Surface emissivity measurements
- Process gas analysis

High Temperature/High Pressure Cell

The High Temperature/High Pressure Cell permits analysis of solid samples in transmission, specular reflectance and decomposition modes; and process gases in static or flow transmission mode. Sample temperatures of up to 800°C can be achieved and the cell can operate at pressures from vacuum to 1000 psi

The cell windows and body are separately heated and controlled up to 200°C to prevent condensation of evolved materials adhering to the ZnSe windows. Water cooled top and bottom blocks prevent undue heating of the spectrometer sample compartment and maintain accessible surfaces at a safe temperature.

Switching between transmission (maximum sample diameter 13mm) and specular reflectance modes is achieved by changing an optical pressurised window assembly on the cell body and fitting to an alternative baseplate.

The decomposition mode is obtained by a simple repositioning of the sample holder/heater assembly which places the heated sample in a pan just below the optical beam. Gases evolved from the sample at different temperatures can then be analyzed. The cell has provision for a steady gas flow for either gas analysis or purging. The cell volume is 80ml.

Cell temperature is regulated using a dedicated controller that can be programmed manually or through a computer. The design incorporates a number of important safety features. In particular, all electrical supplies to the cell comply to Canadian Standards Association (CSA) regulations (30 volts or less) and the temperature controllers are equipped with open circuit detection on the thermocouple inputs to prevent overheating.

The cell itself is fitted with a burst disk to prevent inadvertent over pressurisation and, if necessary, this can be piped to a fume cupboard or other outlet point.The cell as standard is ruggedly constructed from durable 316 stainless steel and can be disassembled for thorough cleaning if required.

ordering information

Specifications

Body **Stainless steel**
Window **ZnSe**
Seals **Silicone**
Note: check that your chemicals are compatible with these standard specs

GS05850 **High Temperature/High Pressure Cell**
Includes: Optical unit with ZnSe windows and instrument baseplate, transmission/decomposition sample holder, programmable high stability temperature controller.
Please specify spectrometer make and model.

GS05855 **Advanced High Temperature/High Pressure Cell System**
Includes: Optical unit with ZnSe windows and instrument baseplate, transmission/decomposition sample holder, reflectance mode wedge pressurised window assembly and reflectance mode baseplate, programmable high stability temperature controller.
Please specify spectrometer make and model.

GS05860 **Reflectance mode kit**
Consists of a kit of parts to convert a GS05850 HTHP cell to a fully advanced HTHP cell as supplied under GS05855

GS05865 **Replacement Seal kit**
GS05867 **Replacement ZnSe cell windows** (tested and certified)
GS05868 **Decomposition Pans -** spare set (2 off)
GS05869 **Replacement 'Burst-Disk'**

Options

GS05870 **HTHP Cell ESK**
GS28000 **RS232 Connection kit**
GS28001 **USB Connection kit**
GS28002 **RS485 Connection kit**