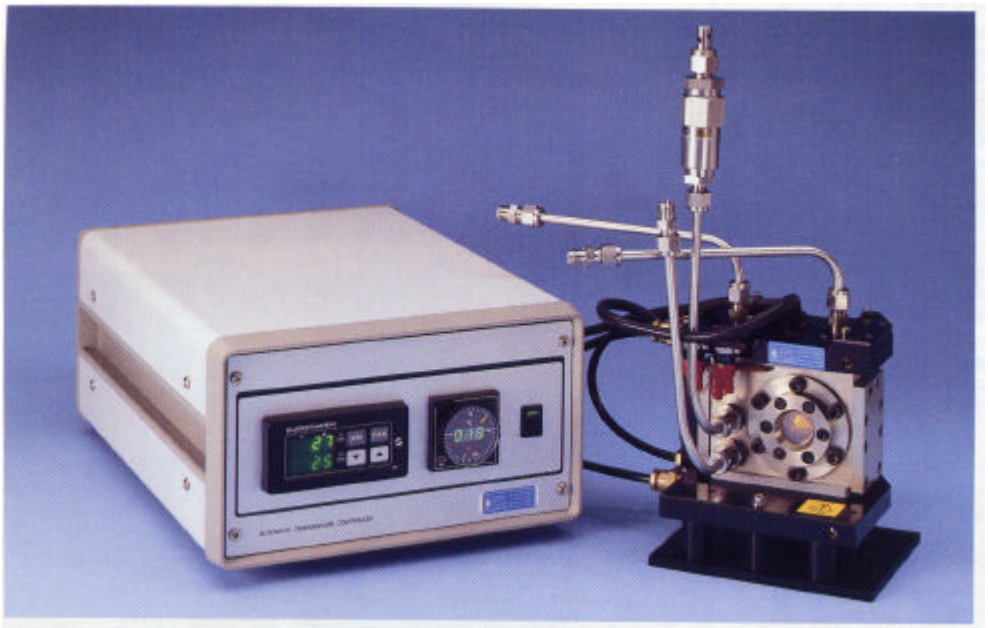

Cell shown without heat shield to expose detail of components.

This multipurpose high temperature, high pressure cell can be operated in transmission, decomposition and reflectance modes at temperatures to 1000°C and at pressures from vacuum to 1000 psi. It is useful for in-situ analysis under extreme conditions that replicate industrial processes outside of their normal industrial environment. Solid samples can be analyzed in the transmission, specular reflectance and decomposition modes. Gases can be introduced to cell in flow or static operation, either for transmission analysis or use as a purge gas. Figures 1, 2 and 3 illustrate operation of the cell in different modes.

To switch from transmission analysis to decomposition analysis, the user simply relocates the assembly comprising the sample holder and heater which positions a heatable sample pan immediately below the IR beam. Gases can then be evolved from the sample at different temperatures for analysis. The specular reflection mode requires a simple change of the optics baseplate (available in Catalog No. 0025-5229/5230 configuration or with upgrade kit No. 0025-5231).

Cell temperature is controlled by 2 temperature controllers contained in a single dedicated bench top electronics unit. Sample temperature is controlled from ambient to 800°C with a PID controller available in both 110v and 220v, featuring: high stability of within 0.1°C of set point; continuous digital displays for both set point and sample temperature; programmable features such as ramp rates, °C or °F display, and maximum power levels; and an RS-232 connection for computer control. The temperature of the windows and cell body are separately controlled up to 200°C by a simpler unit, which also features digital display, for the purpose of preventing condensation of evolved sample materials on the windows or for operation of the cell as a heated gas cell.

The cell incorporates numerous design features that ensure safety and enhance performance. All electrical supplies to the cell are 30v or less and the thermocouple inputs to the temperature controllers have open circuit detection to prevent overheating. Construction of the cell body is 316 stainless steel and all parts are vacuum compatible and corrosion resistant. External ZnSe windows are factory pretested to withstand the maximum operating pressure. Seals are silicon. To prevent excess pressurization a burst disc is provided which can be piped to a vent, exhaust or fume hood. The temperature of the main parts of the cell body is maintained near ambient by water cooling.

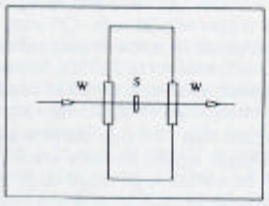

Fig. 1:
The accessory in Transmission analysis mode.

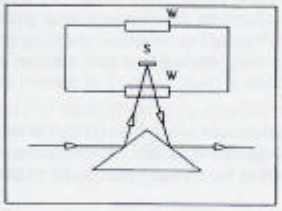

Fig. 2:
The accessory in Reflectance analysis mode.

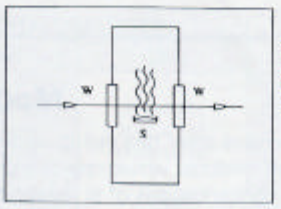

Fig. 3:
The accessory in Decomposition analysis mode.

Key
S = Sample
W = Window