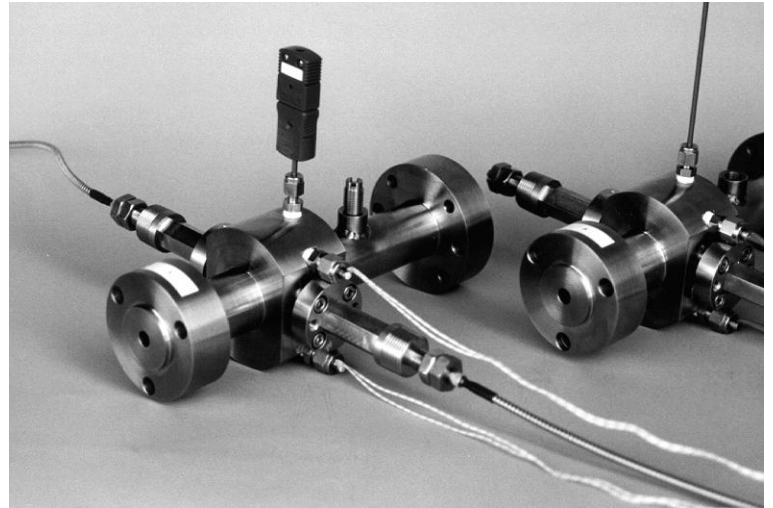


# FCT Series Spectroscopic Transmission Cells For Extreme Conditions

*Fiber-optic coupled flow cells for spectroscopic analysis of polymer melts and other demanding process applications.*



Axiom's FCT sampling systems bring high performance chemical composition monitoring to some of the most demanding process environments. These products are designed for use in high temperature (to 350°C), high pressure (to 350 bar), and/or high viscosity applications. While ideal for a variety of sample types, FCT systems are especially suited for the analysis of hot polymer melts. In these applications, the cells are often mounted in series with a die on a small extruder or in a rheometer loop on a larger extruder.

FCT cells are available in two basic designs. The FCT-980 is an integrated, permanently assembled cell, which is designed to meet the majority of requirements at modest cost. The FCT-930 differs from the 980 in that the optical elements are contained in separable probes (Model FCP-090), which can be removed for cleaning and maintenance. The probes are generally mounted on an FCB Series flow fixture. These fixtures can be customized for individual installations.

## FCT-980 Integrated Flow Cell

The key to this cell's extreme durability is the use of thick sapphire windows, which are permanently sealed into the probe structure by means of Axiom's patented welded metal seal design (US Patent: 6,587,195 B1). This provides an extremely robust and permanent optical seal, virtually eliminating the possibility of window breakage, chemical attack, or mechanical seal failure. The standard cell includes fittings for cartridge heaters and a temperature sensor.

## FCP-090 Optical Probes

The FCP-090 probe employs a robust plunger insertion design and is flange-mounted to its sample fixture. The mounting flange includes a pair of jack screws to aid in probe removal. These make it possible to remove the probes without damage, even in the presence of solidified polymer. The FCP-090 uses the same metal window seal design as the FCT-980<sup>(1)</sup>.

## FCB Series Flow Fixtures

Axiom offers a variety of custom and standard flow fixtures to meet the needs of diverse applications. For example, fixtures for use between an extruder and a die are usually custom designed to match the requirements of the mating hardware.

For hot polymer applications where a slip stream (sample loop) is available, the FCB-300 Cell Body offers an alternative to a custom fixture. It features solid 316 stainless steel construction, a 1/8 NPT thermocouple or RTD fitting, and dual steam trace channels for temperature control. The combination of the FCB-300 fixture with a pair of FCP-090 probes constitutes the standard FCT-930 Sampling System.

## Features:

- Metal seals for extreme robustness
- Compatible with high temperature, pressure, and viscosity
- Minimum possible flow restriction
- Customized flow fixtures to meet individual needs

## Reference

1. US Patent: 6,587,195 B1



## FCT Series Specifications

FCT-980R Integrated Cell or FCT-930R (Two FCP-090R Probes with FCB-300 Flow Fixture)

	FCT-930R	FCT-980R
Window Material:	Sapphire (Fused silica for UV range)	Sapphire (Fused silica for UV range)
Wetted Metal:	316 Stainless Steel	316 Stainless Steel
Window Seal:	Permanent welded-in gold plated high nickel alloy C-ring	Permanent welded-in gold plated high nickel alloy C-ring
Probe to Fixture Seal:	Interchangeable gold plated high nickel alloy C-ring	Permanent weld
Maximum Pressure:	350 bar	400 bar
Maximum Temperature:	400°C	400°C
Flow Fittings:	Customer specified	Customer specified
Probe Attachment (FCT-930 only):	Custom flange	NA
Probe Length (FCP-090):	15 cm from flange to fiber connection	NA
Fiber-optic Connectors:	SMA-905 female, standard, FC optional	SMA-905 female, standard, FC optional
Recommended Fiber-optic Cables:	0.6 mm core diameter	0.6 mm core diameter
Conduit Termination Fittings:	¾ NPT, male	¾ NPT, male
Spectral Range: (Specify R value)	R = N (800 – 4500 nm) R = V (400 – 2000 nm) R = U (230 – 800 nm, Optimized for 230 – 300 nm)	R = N (800 – 4500 nm) R = V (400 – 2000 nm) R = U (230 – 800 nm, Optimized for 230 – 300 nm)

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