CUV-CCE Electrophoresis Sample Cell

The **CUV-CCE Electrophoresis Sample Cell** for chromatography and capillary electrophoresis is an optical fixture for measuring the UV absorbance of fluids in chromatography or capillary electrophoresis systems. The cell is attached on-line, i.e., the light is projected through the sides of fused silica tubing without violating the tube integrity. For this reason, there are no pressure limitations associated with the device. The cell can accommodate fused silica tubing up to 500 µm in diameter. The user must provide a clear optical window. For standard polyimide-jacketed tubing, this can be accomplished by burning off a short section of the jacketing. The CUV-CCE comes with F230 0.016" ID tubing sleeves. If your tubing is a different size, you can order sleeves with different inner diameters.

The cell fixture is made from a standard 10-32 PEEK™ Cross (Upchurch # P-729) with a 0.02" through-hole, 10-32 coned female threads and (4) F-300 PEEK finger-tight fittings. The optical fibers are aluminum-jacketed, 300-µm diameter, solarization-resistant, silica-core/silica-clad UV waveguides. The optical fibers are inserted facing each other across the sample tubing, and secured with the same F230 0.016" ID tubing sleeves and finger-tight fittings.

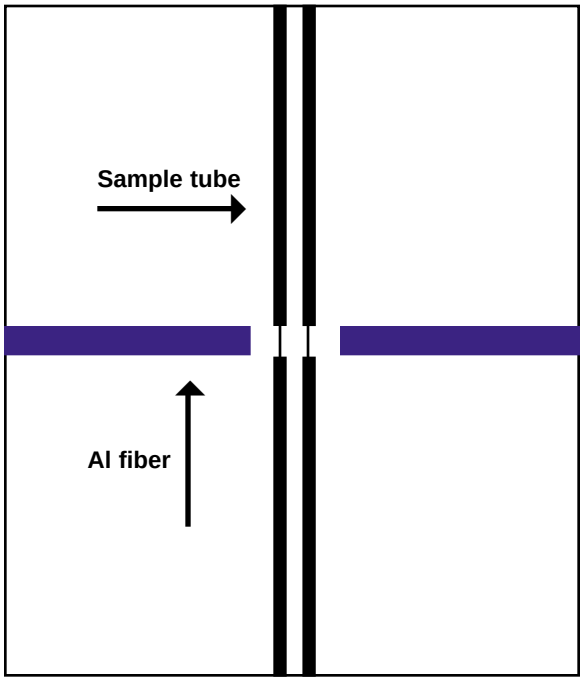
Operation

Eliminating Polyimide Jacketing

1. Prepare the silica sample tube by burning off the polyimide jacketing with a match or butane lighter.
2. Make sure the tube has completely cooled and then rinse the tubing to remove any burn residue, particles, etc.

Inserting the Sample Tubing

1. Insert the sample tubing through a finger-tight 10-32 fitting and tubing sleeve. Carefully feed the tube through the through-hole of the cross, until the clear window is approximately at the center point of the cross.
2. Tighten the 10-32 fitting until the tube is just snug enough to stay in place. Do not over-tighten.
3. Install the other 10-32 fitting and sleeve on the tubing and into the cross. Leave this fitting loose for now.

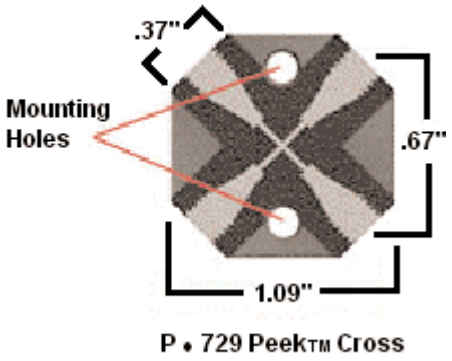


Configuring the Optical Fibers

1. The optical fiber may already be installed in the cross. If it is not, insert the fiber through a 10-32 fitting and tubing sleeve. Insert the fiber into the through-hole of the cross, pushing it gently until it makes contact with the sampling tube. Back the fiber off just enough to leave the sample tube free to manipulate. Tighten the finger-tight fitting to hold the fiber firmly. Do the same for the other fiber as well.
2. Connect one fiber to the SMA connector on a deuterium source (we recommend the DT-1000 for UV/VIS work, or the D-1000 for UV only).
3. Connect the other fiber to the spectrometer (we recommend a unit with an L2 lens and either grating #1 or #2, a 25 µm slit, the UV2 detector upgrade and an OFLV 200-850 order-sorting filter).

Checking the Alignment

1. With the spectrometer running, observe the signal in Scope Mode. When the optical window is properly positioned, you can see a full UV transmission through the cell. If the polyimide is in the optical path, you will see just the red end of the spectra. If this occurs, loosen the fittings and slide the sample tube to align with the window until you achieve the best signal (on both the wavelength and intensity axes).
2. If the fibers are not properly inserted in the through-hole, the intensity will be low. To maximize intensity, loosen the fiber fittings and adjust the fiber.
3. When the fibers and sample tubing are perfectly aligned, make sure all fittings are snug.
4. Mount the cell in your apparatus using the mounting holes. It is important that the optical fibers are not moved during measurements. If necessary, secure the optical fibers to relieve stress, especially where the fibers connect to the cell.



P • 729 Peek™ Cross

Performing CUV-CCE Measurements in OOIBase32

1. Make sure you are in Scope Mode. Select boxcar smoothing and signal averaging values and an integration period that won't saturate the detector.
2. While still in Scope Mode, take a dark spectrum by first disconnecting the optical fiber from the lamp. Take the dark reading by clicking the store dark spectrum icon on the toolbar or selecting **Spectrum | Store Dark** from the menu.
3. Fill the tube with the blank solution or solvent. The peak intensity of the reference signal should be about 3500 counts. Take a reference spectrum by first making sure nothing is blocking the light path going to your sample. Take the reference reading by clicking the store reference spectrum icon on the toolbar or selecting **Spectrum | Store Reference** from the menu.
4. Reconnect the optical fiber to the lamp.
5. Switch from Scope Mode to Absorbance Mode.
6. The data can viewed as a time series of values from a single wavelength, an integrated band around a wavelength, or a mathematical combination of wavelengths. Consult the directions in the **OOIBase32 Spectrometer Operating Software Manual** for using the time series functions.

Specifications

Dimensions:	1.09" x 1.09"
Maximum fused silica tubing allowed:	500-μm in diameter
ID tubing sleeves:	F230 0.016"
Cell fixture:	10-32 PEEK Cross (Upchurch # P-729)
Through-hole size:	0.020"
Coned female threads:	10-32
Fingertight fittings:	F-300 PEEK
UV waveguide optical fibers:	Al-jacketed, 300-μm diameter, solarization-resistant, silica-core/silica-clad
Path length:	silica tubing diameter
Size of light beam reaching sample:	~5 mm (circular)