

SM01-8/09

Optical Fiber Adapters and Fiber Interfaces

Bruker Optics offers various fiber optical accessories for the SureSpectrum imaging spectrographs.

SureSpectrum OFA-250 and OFA-500 f/# matching Optical Fiber Adapters

Utilizing a unique f/# matching Optical Fiber Adapter mounted to the entrance slit, SureSpectrum simplifies the coupling of fiber optic bundles to the spectrograph. The interface used by Bruker to mount single fibers or vertical stacks of fibers to the entrance slit offers extremely repeatable and easy to install methods of attaching the fibers. By f/# matching the output of the fiber to the spectrograph, the user avoids overfilling the optical system (which acts as a source of stray light) or underfilling the optical system (which has a negative effect on throughput and resolution). To accommodate the different f/# for the SureSpectrum, each spectrograph has its own OFA model. The method used with the OFA assures that the image of the fiber is projected properly on the entrance slit without contacting the slit with the fiber end.



Fiber Adapter Interface

For use with the Optical Fiber Adapter, each standard spectroscopy fiber optic cable is terminated in either a single SMA interface or a vertical slit interface. The fiber cables are mounted to the OFA interface which locks into the OFA via a repeatable high precision mechanism. This secures the fiber termination at the appropriate spot to be imaged onto the entrance slit through the reflective optics of the OFA.



Vertical slit fiber interface



Single fiber interface

Single Fiber Cables

Bruker offers several single fiber cables that are terminated in SMA connectors on both ends for use when lower cost, single channel input is sufficient. Fiber core diameters of either 200 microns or 600 microns in either UV-VIS or VIS-NIR materials are available in 1 meter or 2 meter lengths.

Fiber Optic Slit Stacks

When there is a need to collect light within as many fibers as possible and deliver the light into the monochromator or spectrograph in the form of a slit, a 19 fiber stack is provided in the vertical slit fiber interface to gain maximum throughput in a high resolution assembly. The 19 fibers (200 micron diameter core) translate into an effective slit height of approximately 4.6mm. This "slit" of fibers is then imaged onto the entrance slit and through the spectrograph to the exit focal plane. This forms an ideal size for use either with an exit slit or a CCD detector.

Multi-track Fiber Optic Assemblies

The SureSpectrum is ideal for simultaneously dispersing multiple fiber optic inputs and maintaining spatial resolution

on a CCD detector. With the superior optical system of the SureSpectrum and a properly designed optical fiber assembly, the images from the entrance slit do not overlap on the CCD focal plane and effectively permit the user to examine multiple sources of light at the same time. The number of fibers that can be used in this manner depends on the fiber diameter and the height of the CCD focal plane.

Fiber Tipped Lens Assembly

The Fiber Tipped Lens Assembly (SPEC-FTLA) collects light and launches it into an optical fiber. The SPEC-FTLA is connected to the fiber tip via an SMA 905 connector. A 75mm focal length, 12.5mm diameter fused silica lens is mounted in a sliding cylinder assembly and has a range of focus of 200mm to infinity.

Standard Fibers

FOC-HOH-200-1M	Fiber optic cable, 200 micron core diameter, 0.22 NA, UV-VIS coverage, 1 meter length with PVC monocoil jacket and SMA connectors.
FOC-HOH-200-2M	Fiber optic cable, 200 micron core diameter, 0.22 NA, UV-VIS coverage, 2 meter length with PVC monocoil jacket and SMA connectors.
FOC-HOH-600-1M	Fiber optic cable, 600 micron core diameter, 0.22 NA, UV-VIS coverage, 1 meter length with PVC monocoil jacket and SMA connectors.
FOC-HOH-600-2M	Fiber optic cable, 600 micron core diameter, 0.22 NA, UV-VIS coverage, 2 meter length with PVC monocoil jacket and SMA connectors.
FOC-LOH-200-1M	Fiber optic cable, 200 micron core diameter, 0.22 NA, VIS-NIR coverage, 1 meter length with PVC monocoil jacket and SMA connectors.
FOC-LOH-200-2M	Fiber optic cable, 200 micron core diameter, 0.22 NA, VIS-NIR coverage, 2 meter length with PVC monocoil jacket and SMA connectors.
FOC-LOH-600-1M	Fiber optic cable, 600 micron core diameter, 0.22 NA, VIS-NIR coverage, 1 meter length with PVC monocoil jacket and SMA connectors.
FOC-LOH-600-2M	Fiber optic cable, 600 micron core diameter, 0.22 NA, VIS-NIR coverage, 2 meter length with PVC monocoil jacket and SMA connectors.
FOS19-HOH-200-1M	Fiber optic bundle, 19 fibers of 200 micron core diameter, 0.22 NA, UV-VIS coverage, 1 meter length with PVC monocoil; jacket, SMA connector on one end and vertical stack of 19 fibers in rectangular ferrule on the other end.
FOS19-HOH-200-2M	Fiber optic bundle, 19 fibers of 200 micron core diameter, 0.22 NA, UV-VIS coverage, 2 meter length with PVC monocoil; jacket, SMA connector on one end and vertical stack of 19 fibers in rectangular ferrule on the other end.
FOS19-LOH-200-1M	Fiber optic bundle, 19 fibers of 200 micron core diameter, 0.22 NA, VIS-NIR coverage, 1 meter length with PVC monocoil; jacket, SMA connector on one end and vertical stack of 19 fibers in rectangular ferrule on the other end.
FOS19-LOH-200-2M	Fiber optic bundle, 19 fibers of 200 micron core diameter, 0.22 NA, VIS-NIR coverage, 2 meter length with PVC monocoil; jacket, SMA connector on one end and vertical stack of 19 fibers in rectangular ferrule on the other end.