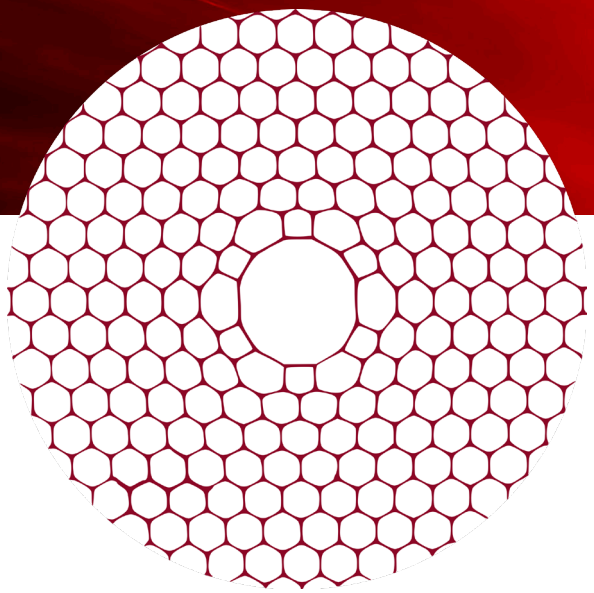
NKT Photonics

Hollow-core fibers

Hollow-core photonic bandgap fibers



UNIQUE PROPERTIES FOR DEMANDING APPLICATIONS

Hollow-core fibers enable a large variety of applications

In hollow-core photonic bandgap fibers, a microstructured silica cladding with air holes confines the light inside a hollow core.

Hollow-core fibers enable a large variety of applications which require performances that can not be met using traditional solid-core fibers.

Applications

- Power delivery
- Pulse shaping and compression
- Gas spectroscopy
- Nonlinear optics
- Fiber optic gyroscopes
- Sensors
- Narrow linewidth delivery

HOLLOW-CORE FIBERS

Unique properties

The hollow core allows control of the gas composition and pressure, enabling extremely long interaction lengths between the light and the gas.

The weak interaction between the fundamental mode and the surrounding silica also makes these fibers radiation insensitive.

Reduced non-linearities

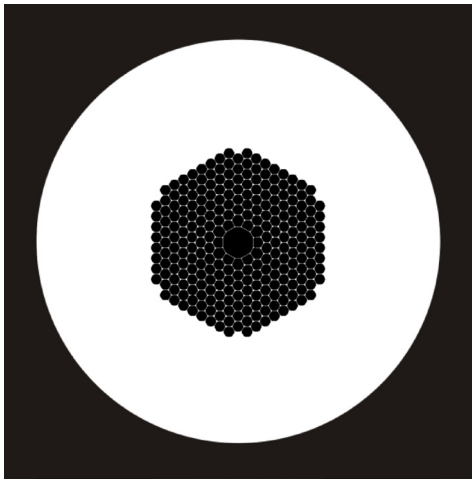
Since only a small fraction of the light propagates in silica, the effect of material non-linearities is significantly reduced compared to solid core fibers.

Our standard products cover three wavelength ranges around the wavelengths: 800 nm, 1060 nm, and 1550 nm. Talk to us about custom wavelengths.

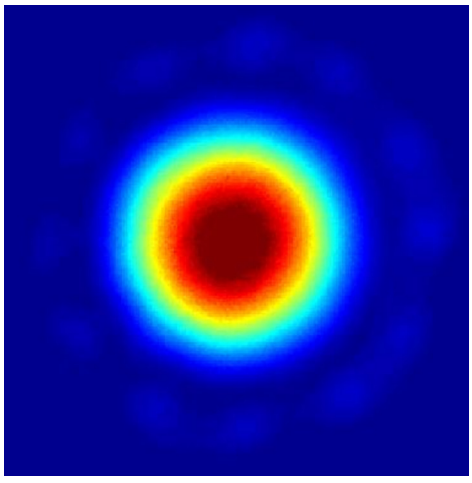
Features

- > 98% of the optical power is located in the hollow core
- Can be gas or particle filled
- Ultra-low bend loss
- Low Fresnel reflections at end faces
- Group index close to unity
- Radiation insensitive
- Pure silica

Schematic fiber cross section



Typical near field intensity profile



SPECIFICATIONS

Optical

Model	HC-800	HC-1060	HC-1550
Design wavelength [nm]	820	1060	1550
Operating wavelength loss threshold [dB/km]	250	100	30
Operating wavelengths [nm]	780-860	1030-1090	1490-1680
Mode field diameter @ design wavelength [µm] [1)]	5.5 ± 2.0	6.7 ± 1.0	9.0 ± 1.0

1) Full $1/e^2$ width of the near field intensity distribution

Physical properties

Model	HC-800	HC-1060	HC-1550
Core diameter [µm]	7.5 ± 1.5	9.0 ± 1.5	11.5 ± 1.0
Cladding diameter [µm]	130 ± 5	120 ± 5	120 ± 2
Coating diameter (single-layer acrylate) [µm]	220 ± 50	240 ± 40	220 ± 30

Typical attenuation