

Ultraviolet light for fiber optic communication

Article Overview

Fiber optic communication can use ultraviolet (UV) light, but it requires specialized fibers due to high attenuation and material degradation in conventional fibers.

Feasibility of UV Transmission

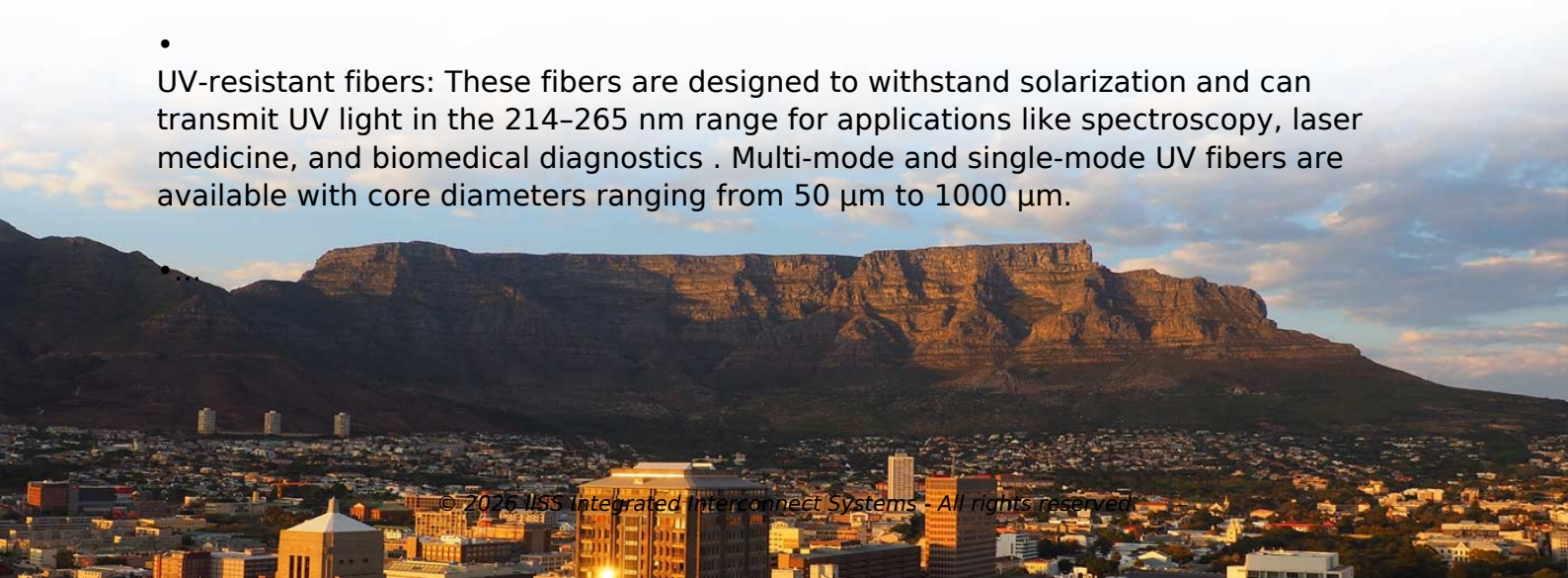
Standard optical fibers are optimized for near-infrared wavelengths (770–1675 nm) because visible and UV light experience high attenuation and can damage the fiber material over time. Conventional silica fibers suffer from solarization, a degradation caused by energetic UV photons, especially at wavelengths shorter than 260 nm. This makes typical fibers unsuitable for long-distance UV communication.

Specialized UV Fibers

Recent developments have enabled UV transmission through UV-resistant fibers and hollow-core fibers:

-

UV-resistant fibers: These fibers are designed to withstand solarization and can transmit UV light in the 214–265 nm range for applications like spectroscopy, laser medicine, and biomedical diagnostics. Multi-mode and single-mode UV fibers are available with core diameters ranging from 50 μm to 1000 μm .



Article Content

Aug 03, 2025

Non-Line-of-Sight Ultraviolet Communications: Principles and ...

Besides, the strong absorption effect of ultraviolet lights in the atmosphere also guarantees a good local security due to the verified

Oct 29, 2025

Unleashing the power of deep-ultraviolet light: Innovative fiber optic ...

Deep-ultraviolet (DUV) irradiation plays a crucial role in space exploration engineering, necessitating the design of

Dec 02, 2025

Guidance of ultraviolet light down to 190 nm in a hollow-core optical fibre

Abstract: We report an anti-resonant hollow core fibre with ultraviolet transmission down to 190 nm, covering the entire UV-A, UV-B

Dec 19, 2025

Ultraviolet

Ultraviolet radiation (UV; sometimes called ultraviolet light) is electromagnetic radiation of wavelengths of

Mar 26, 2026

Method of transmitting UV light through optical fibers

This invention relates to a method of transmitting light having a substantial UV component via an optical fiber, and especially to a

Feb 06, 2026

Which type of light is used in optical fiber

Optical fiber primarily uses infrared light, not visible light, due to lower signal attenuation. Common

Jun 24, 2026

Broadband guidance of ultraviolet light in a hollow-core optical fibre

Anti-resonant hollow core fibres (AR-HCFs) can circumvent these problems because the overlap of light with the glass

Apr 11, 2026

Fiber Optics: What is it? and How Does it Work?

Globally, the deployment of fiber optics has been rapidly increasing as the demand for high-speed data transmission, via optical fiber

Jul 02, 2026

Ultraviolet communication technique and its application

1. Introduction Optical wireless communication (OWC) has been a re-search hot spot for decades. From ultraviolet (UV) light to in

Oct 18, 2025

UV Curing Optical Fiber

Microwave powered UV lamp systems utilizing electrodeless UV bulbs offer the perfect solution for curing

Nov 09, 2025

Understanding Wavelengths In Fiber Optics

Understanding Wavelengths In Fiber Optics Fiber optics is full of jargon but it's important to understand it. One of the more confusing

Sep 04, 2025

Optical wireless communications

Optical wireless communications (OWC) is a form of optical communication in which unguided light is used "in the air" (or in outer

Aug 01, 2025

Fiber-optic cable

A fiber-optic cable, also known as an optical-fiber cable, is an assembly similar to an electrical cable but

Mar 24, 2026

How Fiber Optics Work

Fiber-optic lines have revolutionized phone calls, cable TV and the internet. It's a really cool technology that enables the long

Jun 01, 2026

High efficiency deep ultraviolet micro-LED and optical fiber coupling ...

A common method involves using optical fibers to transmit ultraviolet (UV) light, leveraging the photoelectric effect for

Sep 08, 2025

Ultraviolet communication technique and its application

With recent developments of deep ultraviolet (DUV) light-emitting diodes and solar-blind detectors, UV

May 14, 2026

UV Fibers

UV Fibers New Possibilities: UV LEDs and lasers are more cost effective than deuterium and xenon lamps.

Sep 07, 2025

Ultraviolet communication technique and its application

However, the poor stability of conventional LCs against ultraviolet irradiation and their weak electro-optical response

Sep 25, 2025

Fiber Optics: Understanding the Basics

Optical fiber s are made from either glass or plastic. Most are roughly the diameter of a human hair, and

Oct 26, 2025

Fast ultraviolet-C photonics: generating and sensing laser ...

A UV-C source-sensor communication system combines phase-matched second-order processes in nonlinear optical

Jan 06, 2026

Basics of Fiber Optics

Mark Curran/Brian Shirk Fiber optics, which is the science of light transmission through very fine glass or plastic fibers, continues to

Mar 14, 2026

Hollow optical fibers for UV light

If you want to send light on a trip through optical fibers -- with as little loss as possible, you should opt for infrared light,

Apr 10, 2026

Fibre sources in the deep ultraviolet

Wavelength-tunable ultraviolet light sources are required for a wide range of applications, but are typically difficult to

Nov 12, 2025

[Introduction to Ultraviolet Communications | Springer Nature Link](#)

Besides, similar to other optical wireless communications (OWCs), such as the visible light communication and the

Sep 09, 2025

[Introduction to Ultraviolet Communications | Springer Nature Link](#)

Ultraviolet (UV) communications working in “solar blind” wavebands (200–280 nm) can well overcome this drawback

Feb 20, 2026

Optical fiber for deep ultraviolet light

Deep ultraviolet optical fibers are fabricated using modified SiO₂/ glasses containing 2000-ppm fluorine for the

Mar 19, 2026

Modeling and application of array light sources in ultraviolet ...

Since most UV communication occurs over distances of a few meters to several hundred meters, exploring the far-field

Dec 14, 2025

Ultraviolet communication technique and its application

Semiconductor Materials and Application, Beijing 100083, China Abstract: With recent developments of deep ultraviolet (DUV) light

Feb 15, 2026

Telecommunications media

Telecommunications media - Optical Transmission, Light Signals, Fiber Optics: Optical communication

Sep 19, 2025

The use of electromagnetic radiation in fiber optic communication

In Summary: Fiber optic communication harnesses the power of electromagnetic radiation (light) to transmit information with

Apr 27, 2026

electromagnetism

Why aren't other electromagnetic waves used in optical fibres instead of visible light? Is it because the wavelength of

Jun 09, 2026

High-speed communication systems based on ultraviolet radiation

Military and civil authorities could benefit from secure optical communication systems that use light to carry messages

Dec 13, 2025

Fiber-optic communication

Fiber-optic communication is a form of optical communication for transmitting information from one place to

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.iiss.co.za>

Email: sales@iiss.co.za

Phone: +27 63 174 2895

Address: Unit 8, Innovation Park, 15 Rivonia Road, Sandton, Johannesburg, 2196, South Africa

This document is for informational purposes only. Specifications subject to change without notice.

