

OFS Announces Acceptance of Key Post Deadline Paper at OFC 2023

OFS 2023, San Diego, California, March 9, 2023 – Telecom and hyperscale data center operators worldwide are seeking ways to increase the carrying capacity of their networks at lower cost. Researchers at OFS demonstrated high-capacity transmission in an optical fiber spectral region not used for dense wavelength division multiplexing (that is, the O-band). They demonstrated that a carrying capacity of more than two-times what's used today can be realized. A key feature in the demonstration is a bismuth doped fiber that enables optical amplification to extend the transmission distance.

The results will be presented in the post-deadline paper, *9.6-THz Single Fibre Amplifier O-band Coherent DWDM Transmission*, at OFC 2023 on Thursday, March 9th from 4:30 PM to 6:30 PM PDT at OFC 2023, San Diego Convention Center, Room 6D.

Introduction

OFS members demonstrate O-band coherent DWDM (dense wavelength division multiplexing) transmission up to 135 km using 9.6-THz bandwidth for the first time. Such an ultra-wideband is supported by bismuth-doped fiber amplifiers (BDFAs) without any other doped fiber amplifiers, semiconductor amplifiers or band multiplexers. The achievable fiber capacity can exceed 36.8 Tb/s over 135 km without digital signal processing to compensate for chromatic dispersion.

Alongside a consistent growth of data traffic demands for global cloud services, bandwidth requirements of data center interconnects (DCI)s are increasing rapidly. Coherent pluggable transceivers are deployed for use in DCIs with DWDM links. The DCI DWDM transport architecture connects data centers typically separated by >10 km with single-span or multi-span point-to-point transmission systems. Whereas the C-band coherent transceivers are vastly deployed, the O-band coherent transceivers become attractive because the near-zero dispersion window helps to improve energy efficiency by shedding a step of DSP, i.e., chromatic dispersion compensation.

In addition, ultra-wideband can be supported in O-band by only a simple single-stage BDFA. Since the ultra-wideband can be achieved without other bands or amplifiers, the BDFA can reduce the total link loss as band multiplexers/demultiplexers are not required. This feature mitigates the higher attenuation in the O-band compared to multiband systems. Furthermore, the ultrawideband can support the higher port counts required in the next generation DCI, where the number of channels is more important than spectral efficiency.

Paper Information:

Paper Title: 9.6-THz Single Fibre Amplifier O-band Coherent DWDM Transmission

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This paper is based on a result of the joint work between OFS and KDDI Research, Inc. (<https://www.kddi-research.jp/english/>).

About OFS

OFS is a world-leading designer, manufacturer, and provider of optical fiber, fiber optic cable, connectivity, fiber-to-the-subscriber (FTTx), and specialty fiber optic products. We put our development and manufacturing resources to work creating solutions for applications in such areas as telecommunications, medicine, industrial networking, sensing, aerospace, defense, and energy. We provide reliable, cost-effective fiber optic solutions that help our customers meet the needs of consumers and businesses today and into the future.

Headquartered in Norcross (near Atlanta) Georgia, U.S.A., OFS is a global provider with facilities in several countries worldwide. OFS is part of Furukawa Electric Group, a multi-billion-dollar leader in optical communications.

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