

HIGH-TECH EQUIPMENTS FOR

Design Studies

- High-performance computing station for accurate modelling

Fibre and Preform Fabrication

- MCVD lathe with rare earth vapor phase deposition system
- Glass-working lathe
- Two 12-metre-tall drawing towers
- Acrylate, polyimide, metal and carbon coating capability while drawing

Component Fabrication

- Bragg Gratings photo-inscription setup (UV laser) during fibre drawing
- 8-metre-tall stretching draw tower for rods and capillaries
- Glass processing by filament fusion, plasma advanced control or CO₂ laser splicers

Characterisation

- Preform analyser (PK)
- Interferometric fibre analyser (IFA)
- Scanning electron microscope with energy dispersive spectrometer (MEB-EDS)
- Optical fibre rewinder with proof-testing capabilities
- Tensile test machine (Weibull test)
- Spectral attenuation measuring system (Bentham, OTDR, custom in-house setups)
- Optical Backscatter Reflectometer (OBR)
- Dispersion measuring system (400-2400 nm)
- Supercontinuum sources
- Spectrometers (UV-Visible-IR and Raman)
- Laser test benches
- Spectral analyzers, oscilloscopes, ...

CONTACT US

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ABOUT US

Located in a unique French Photonics Park in Lannion (Brittany), Photonics Bretagne is a Photonics Innovation Hub which gathers:

A Research and Technology Organisation

High level of expertise in specialty optical fibres, components and biophotonics. Services include technology consultancy, POCs, design of fibre and fibre-based sensor systems.

An Innovation Cluster

Coordination of a network of more more than 100 members: companies, research centres, schools and support agencies. Tailor-made training offer on fibre and laser technologies for employees and job seekers.



DISTRIBUTORS

FRANCE & WORLDWIDE

Exail (formerly iXblue)

Website: <https://www.exail.com>

USA

Cybel

Email: contact@cybel-llc.com

Website: <https://cybel-llc.com>

CHINA

Aunion Tech

Email: info@auniontech.com

Website: <https://www.auniontech.com>

FUNDERS



CUSTOM SPECIALTY OPTICAL FIBRES

Modelling | Preform Fabrication | Fibre Drawing
Characterisation | Components

DEVELOPING CUSTOM SOLUTIONS SPECIALTY OPTICAL FIBRES AND COMPONENTS

Our skilled team of technicians, engineers and PhDs with expertise in all key areas offers a fully tailored fibre service: from design studies to prototyping and characterisation.

CAPABILITIES

Bibliography

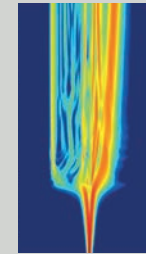
Bibliographic studies

- Overview of the state of the art in technologies of interest

Modelling

Standard and proprietary fibre designs

- Spectral attenuation, bending losses
- MFD, modal content
- GRIN geometry, birefringence
- Nonlinear pulse propagation



Preform Fabrication, Stack and Draw Assembly

Complex preforms from our in-house innovative processes

- Active (erbium, ytterbium, bismuth...)
- Polarisation maintaining
- Photonic crystal and Multicore
- Boron stress rods

Fibre Drawing

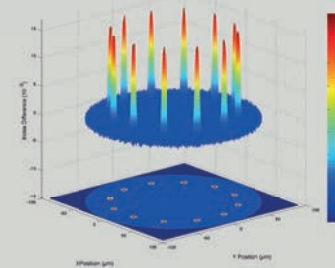
From in-house or customer-supplied preform, Up to kilometer-long fibres for a wide range of applications

- Capabilities: all type of silica glass preform
- Various coatings: polymer or metal with optional carbon layer
- Taperised fibres

Characterisation

Fully verified and operational fibres

- Refractive index profile on preforms and fibres
- SEM geometry
- EDS chemical composition
- Optical attenuation and reflectivity
- MFD, M², dispersion
- PER, birefringence
- Laser expertise



Components

Plug-and-play solutions

- Draw Tower Bragg Gratings
- Tapers and combiners
- Capillaries
- Endcaps and patchcords
- Mode field adaptors (MFA)
- Packaged fibre units (SUP, VLMA...)
- Custom splicing



FIBRES AND COMPONENTS *Product line* **PERFOS®**

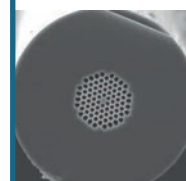
Our fibres are fully designed, manufactured and characterised in-house. Custom products can be developed through specific orders or R&D projects.

MICROSTRUCTURED FIBRES

SOLID-CORE

Supercontinuum | SUP *

Supercontinuum and nonlinear wavelength conversion



- Optimised for pumping near 780 nm and 1060 nm
- Low background loss
- Small effective area
- High nonlinear coefficient

Endlessly Single-Mode | ESM

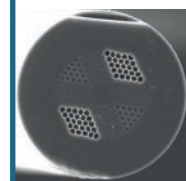
Single frequency laser delivery



- Single-mode at all wavelengths
- Wavelength-independent mode-field diameter
- Available in polarisation-maintaining version

All-Solid ESM | ASM

Single frequency laser delivery



- All-solid microstructured cladding
- Single-mode at all wavelengths
- Low nonlinearity
- Available in polarisation-maintaining version

Airclad | ACF

Power delivery

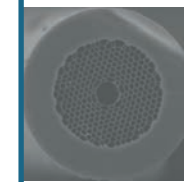


- Multimode
- Ultra-high numerical aperture

HOLLOW-CORE

Photonic Bandgap | HCF

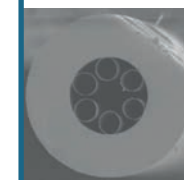
Ultra short pulse delivery



- Different transmission bands in Near-IR with low background loss
- Ultra-low nonlinearity
- High damage threshold
- >98% of the optical power in the core
- Ultra-low bend loss

Anti-Resonant | ARF

Low latency transmission, power delivery



- Various spectral transmission bands (700-3150 nm) with ultra-low dispersion
- High damage threshold
- ~99% of the optical power in the core
- Nearly single-mode guidance

CABLE

Hollow-Core Fibre Optic Cables

Low latency data transmission



- Large bandwidth transmission at 1310 nm, over the full C/L bands and beyond
- Low loss
- Easy integration into existing networks

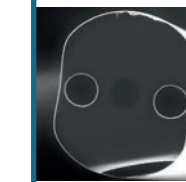
ACTIVE FIBRES

Passive version available on request

Ytterbium Doped | VLMA *

Very Large Mode Area

Ultra-fast pulsed fibre lasers/amplifiers



- All-solid step-index fibre
- Truly single-mode polarization maintaining behaviour with 750 μm² mode area
- Photodarkening-free silica matrix
- Cladding absorption >7 dB/m

Bismuth Doped | BDF

Amplification in the O-Band



- Single mode fibre with Bismuth and Phosphorus codoping
- All-solid step index fibre design based on our all-vapor phase delivery process

METAL COATED FIBRES

Aluminum Coated Fibres | AL

Harsh environment



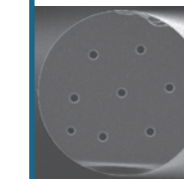
- Multi/single-mode fibres with aluminium or carbon+copper coating
- Wide temperature range and water/hydrogen sealing barrier

* Also plug-and-play modules available on request

MULTICORE FIBRES

2, 7, or 12 Cores | MCF

Sensing, telecom, lasers

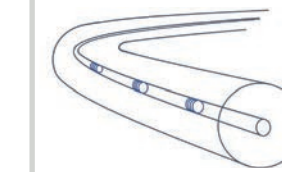


- Excellent fibre geometry
- Passive, photosensitive, erbium or ytterbium doped cores

COMPONENTS

Draw Tower Bragg Gratings

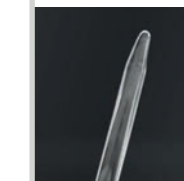
Temperature and strain sensors



- Single or multicore fibres
- Weak reflectivity
- Customisable FBG length and spacing

Boron Stress Rods

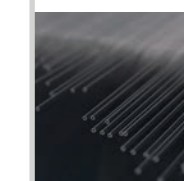
For polarisation maintaining fibres



- Highly doped
- Various core diameters and lengths

Capillaries

Combiners, biophotonics



- High-precision homogeneous vertical drawing
- Pure or doped (fluorine, boron, germanium...) silica

