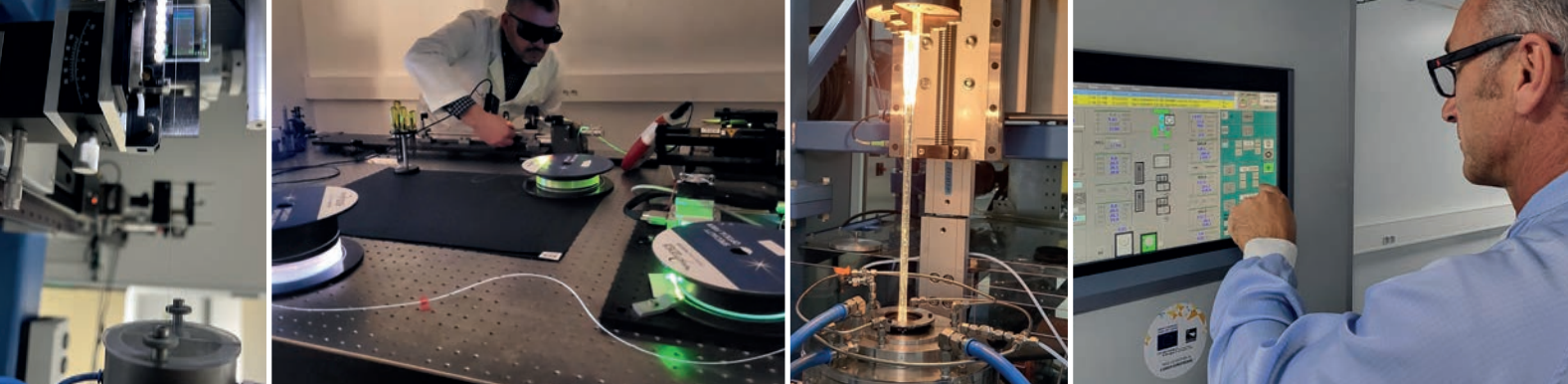




HIGH-TECH EQUIPMENTS FOR

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

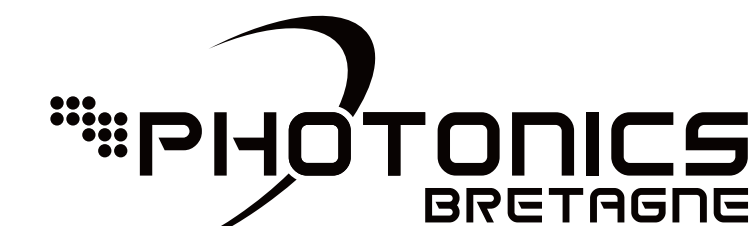
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Photonics Innovation Hub

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FUNDERS



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 photonics instruments.

An Innovation Cluster

Coordination of a network of 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.



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

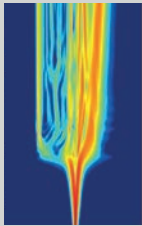
Bibliographic studies

- 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

Fibre Drawing

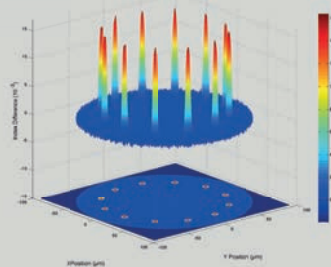
From in-house or customer-supplied preform, Up to kilometer-long fibres for a wide range of applications

- 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
- Fan-in/out and combiners
- Capillaries
- Boron stress rods
- End-caps and ball lenses
- Mode field adaptors (MFA)
- Packaged fibre units (SUP, VLMA...)
- Custom splicing



FIBRES AND COMPONENTS

Product line **PERFOS®**

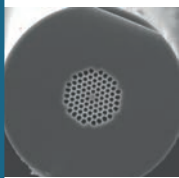
Our fibres are fully designed, manufactured and characterised in-house. Custom products can be developed through specific orders or R&D projects. Patchcords available on request.

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

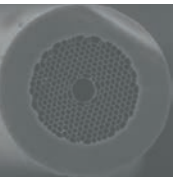


- Multimode
- Ultra-high numerical aperture

HOLLOW-CORE

Photonic Bandgap | HCF

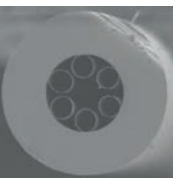
Ultra short pulse delivery



- 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 (500-3150 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

* Also plug-and-play modules available on request

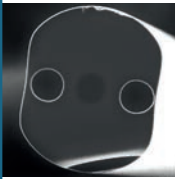
ACTIVE FIBRES

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 μm^2 mode area
- Photodarkening-free silica matrix
- Cladding absorption >7 dB/m

Bismuth Doped | BDF

Amplification in the O and E-Band

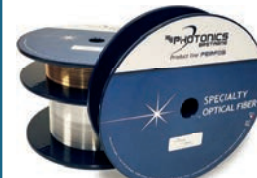


- Single mode fibre with Bismuth and Phosphorus or Germanium codoping
- All-solid step index fibre design based on our all-vapor phase delivery process

METAL COATED FIBRES

Aluminum Coated Fibres | AL

Harsh environment

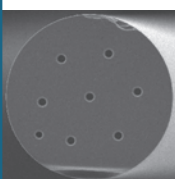


- Multi/single-mode fibres with aluminium or carbon+copper coating
- Wide temperature range and water/hydrogen sealing barrier

MULTICORE FIBRES

2,7, or 12 Cores | MCF

Sensing, telecom, lasers

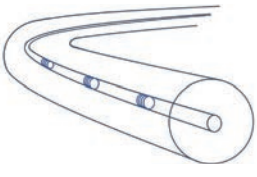


- Excellent fibre geometry
- Passive, photosensitive, erbium or ytterbium doped cores

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

Fibre Components

Material processing, telecom, sensing, life science, spectroscopy



- End-cap, ball lens, fan-in/out, combiner, MFA, taper
- Custom design from our silica fibres or your soft glass fibre
- Small-scale manufacturing of passive/active module