Developing custom microstructured fibers for your application

PERFOS platform is fitted with industrial and high tech equipments to meet the needs of customers’ application requirements.

These equipments include:
- 2 drawing towers
- MCVD lathe
- Preform analyzer (index profile)
- Scanning electron microscope
- Spectral attenuation measuring system
- Glass processing system (tapers, couplers, complex splices)
- Dispersion measuring system
- Optical fiber spooler

PERFOS benefits from a 40-year technological expertise in special optical fibers in Lannion, France.

1970’s
The first optical fibers are drawn at the CNET (now Orange Labs)

2003
Creation of the R&D platform PERFOS (Platform for Studies and Research on Microstructured Optical Fibers) as an organization

2007
PERFOS becomes a Technological Innovation Center, approved by the Brittany Council.

2011
PERFOS brings the project « cluster » to fruition. Creation of the « Photonics Bretagne » cluster. PERFOS becomes the R&D platform of Photonics Bretagne.

2013
Growing demand worldwide with more than 20% of international sales

2014
The turnover of PERFOS is increasing of 17%

PERFOS is composed of a team of expert engineers and technicians specialized in microstructured optical fibers.

They all possess a high level of expertise and are involved in developing solutions for various applications such as scientific, defense/security, biophotonics, telecom, machining, sensors, lasers, etc.

A dedicated team

PERFOS platform is fitted with industrial and high tech equipments to meet the needs of customers’ application requirements.

These equipments include:
- 2 drawing towers
- MCVD lathe
- Preform analyzer (index profile)
- Scanning electron microscope
- Spectral attenuation measuring system
- Glass processing system (tapers, couplers, complex splices)
- Dispersion measuring system
- Optical fiber spooler
PERFOS at your service

PERFOS also offers a large panel of services to its customers, including:

**Scientific studies & Consulting in photonics**

PERFOS carries out studies for innovative small and medium size businesses, willing to develop new systems based on photonics:

- Comparative studies
- Bibliographic research
- From global technical studies to specific study for re-engineering

PERFOS also responds to public agencies requesting expertise, impact or development studies on photonics for other economic sectors (agriculture, defense, etc.).

**Modelling**

The studied waveguides are structures, which are invariant in one spatial dimension and arbitrarily structured in the other two dimensions.

They may include:

- Real refractive-index profile of elements
- Stress distribution from stress-applying parts inside the waveguide
- Effects of external factors such as a hydrostatic pressure

PERFOS also studies and simulates the pulse-propagation in nonlinear dispersive single-mode waveguides.

PERFOS possesses a high level of expertise in the modelling of complex optical waveguides, computation of waveguide modes (electric field, magnetic field or both) and corresponding propagation properties:

- Effective refractive indexes and confinement losses
- Transverse electromagnetic fields
- Effective mode area
- Phase and group modal birefringence
- Chromatic dispersion

PERFOS develops Custom Microstructured Fibers

- From conception to integration
- Custom design
- Different material (silica or chalcogenide)
- Preform, capillaries, tapers, fiber components
- For all applications: scientific, defense, biophotonics, energy, telecom, etc.

**Conception**

**Silica : Active and Passive Fibers**

- PM, custom dispersion, rod type
- Air-clad, double-clad, LMA
- Photonic Band Gap (hollow core, all-solid)
- Custom coatings
- Doped Rods (Boron, Fluorine, Germanium)
- Multi filament fibers
- Customs rods, tubes, capillaries, tapers

**Chalcogenide Microstructured Optical Fibers**

- Ultra highly nonlinear fibers (up to 50 000 W⁻¹ km⁻¹)
- Transmission in the Mid-IR (up to 10 µm)
- Custom design

**Solutions**

- Sensors
- Lasers
- Spectroscopy

BUSINESS ACTIVITY

Local key R&D partner for cluster’s members such as laboratories and industries from start-up to multinational companies

Many references in France

- French laboratories : CNRS, CEA, ONERA
- Industries : DCNS (naval), Orange (telecom), DGA (defense), etc.

Growing demand worldwide

- USA, Australia, New-Zealand, Israel, UK, etc.

Numerical simulations showing the spectral (left) and temporal (right) evolution for input pulse at 1060 nm in 20 cm of single-mode microstructured fiber.

The optical field distributions of first three modes in optical microstructured fiber.

Many references in France

- French laboratories : CNRS, CEA, ONERA
- Industries : DCNS (naval), Orange (telecom), DGA (defense), etc.

Growing demand worldwide

- USA, Australia, New-Zealand, Israel, UK, etc.