



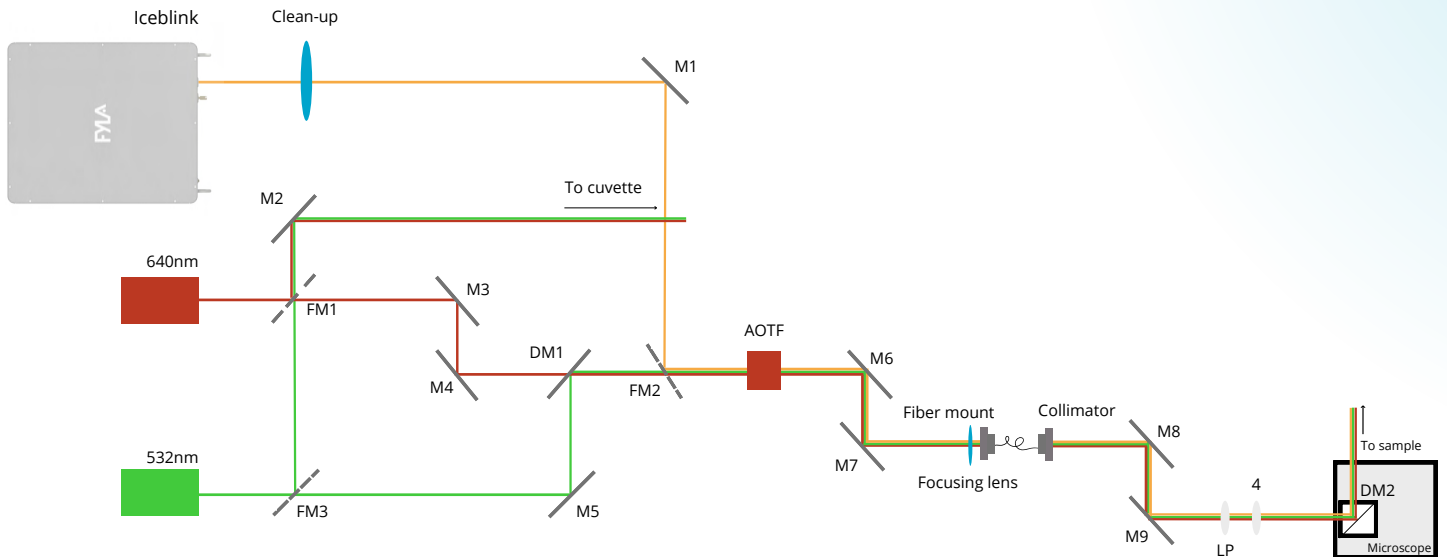
# Setting up a lab?

This guide contains the setups of some of the main laboratories dedicated to photonics



# Measurements of Single-molecules

## Setup of Homemade Confocal Microscope



The setup shows how the three lasers with their mirrors pass through the AOTF and an optical fiber that makes them all Gaussian and collimated to the same diameter to enter the microscope objective.

The types of samples used are: fluorophores with nanoparticles at the single molecule level, with the aim of seeing how the latter affects the former. In addition, they are paired using DNA.

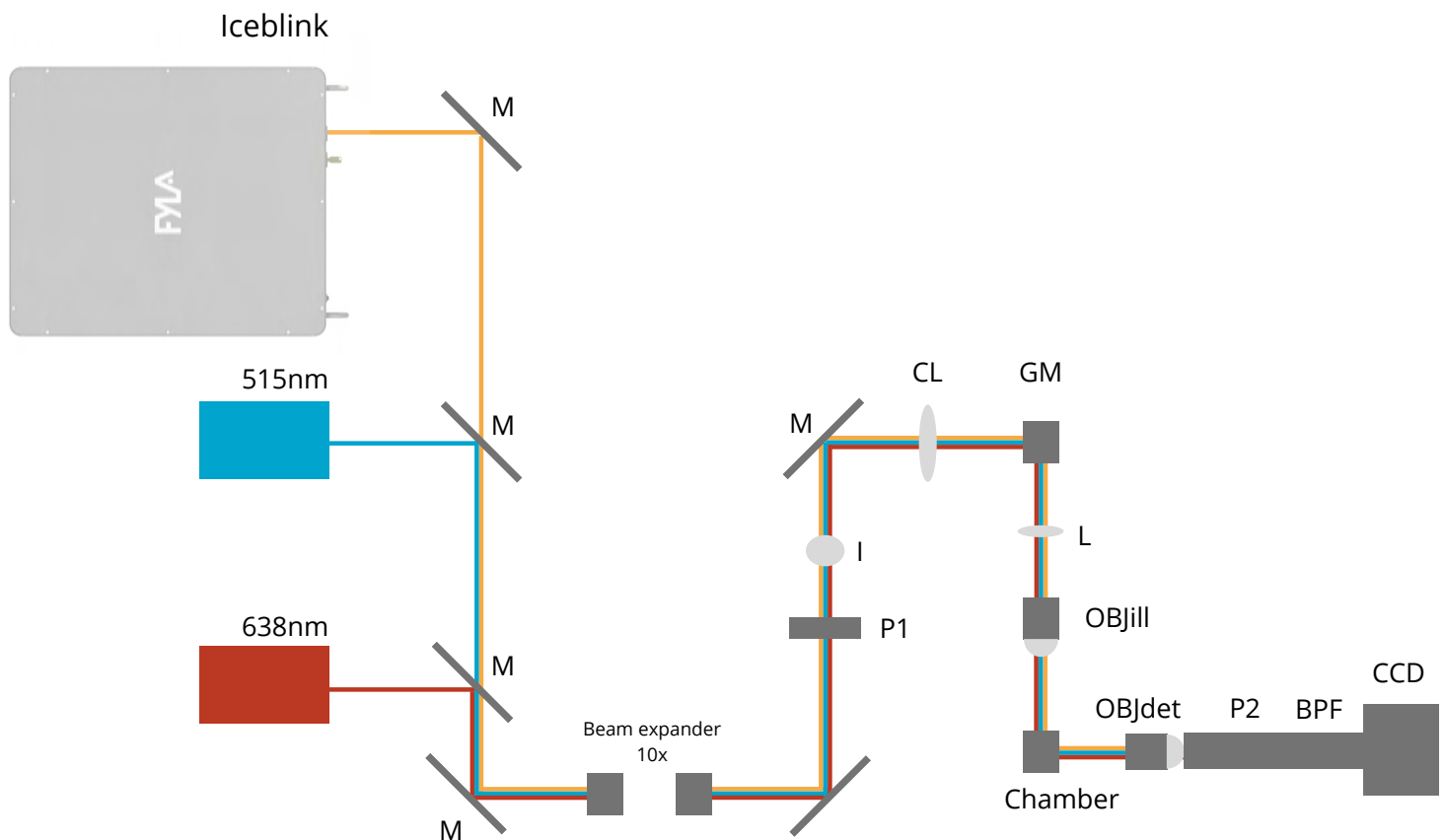
Are you interested  
in this setup?  
[Contact us!](#)

### More about the research

Courtesy of Dr. María Sanz, postdoctoral researcher at the “[Photonics Nanosystems](#)” group led by Prof. [Guillermo Pedro Acuna](#) at the University of Fribourg (Switzerland).

# Elastic Scattered Light sheet fluorescence microscopy

## Setup for polarization and coherence control in LSFM



The light sheet illumination path consists of a couple of diode lasers emitting at 515 nm and 638 nm, and FYLA supercontinuum laser (Iceblink). Laser beams are expanded 10 times before entering the microscope.

P1 is a half-wave plate (HWP) that controls the polarization of the three beams before passing through the cylindrical lens (CL), the galvo mirror (GM), and the illumination objective (OBJill). GM scans the beam at OBJill's pupil generating a pivoting light sheet at the sample plane.

Samples are kept within a custom-made immersion chamber (C) filled with water. The detection system is composed of a 0.5 N.A. objective lens (OBJdet), a 200 mm tube lens (for a total magnification of 20X), and a polarizer (P2).

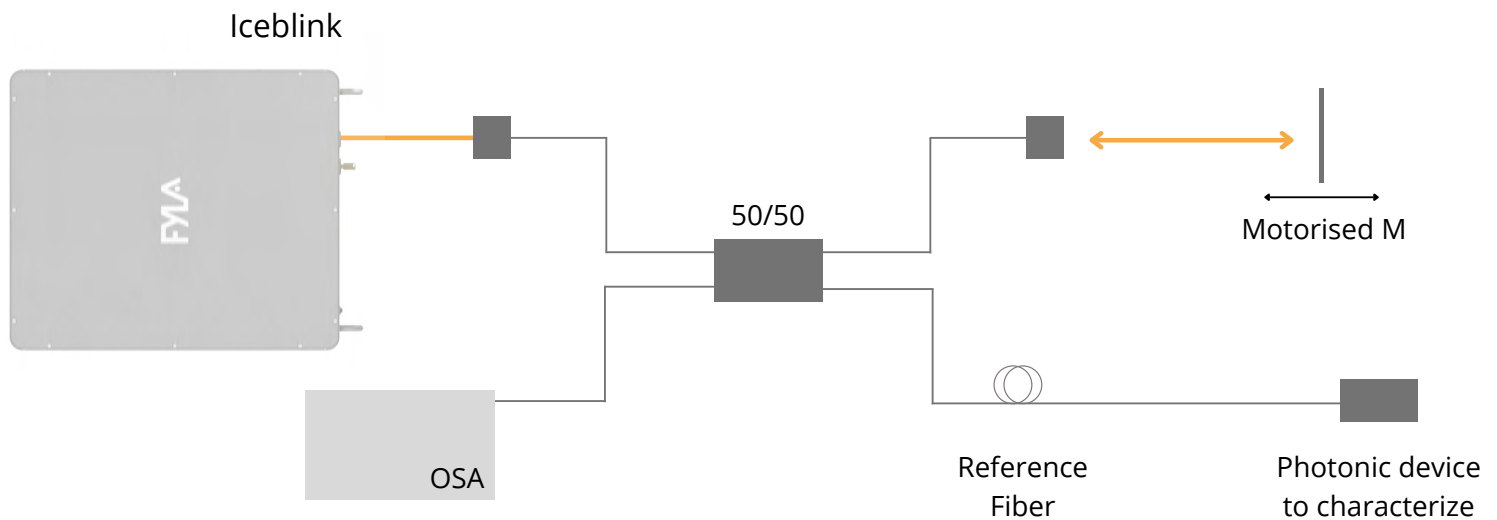
Do you know how much is this setup?  
[We can tell you!](#)

### More about the research

[David Merino, Omar Olarte, J.L. Cruzg, A. Díez, Y. O. Barmenkov. M. V. Andrés, Pere Pérez-Millán, Pablo Loza-Alvarez from ICFO Barcelona, ICMUV Valencia, Centro de investigaciones en Óptica México y FYLA Laser Valencia.](#)

# Interferometric measurement of chromatic dispersion

## Setup for photonic device characterization



The setup shows how the FYLA supercontinuum laser Iceblink emits light that gets into the fiber wide coupler and a free space length-tunable arm with a motorized mirror.

The laser light passes through the reference standard fiber to get to the photonics device to characterize.

The Optical Spectrum Analyzer shows the result of the characterization.

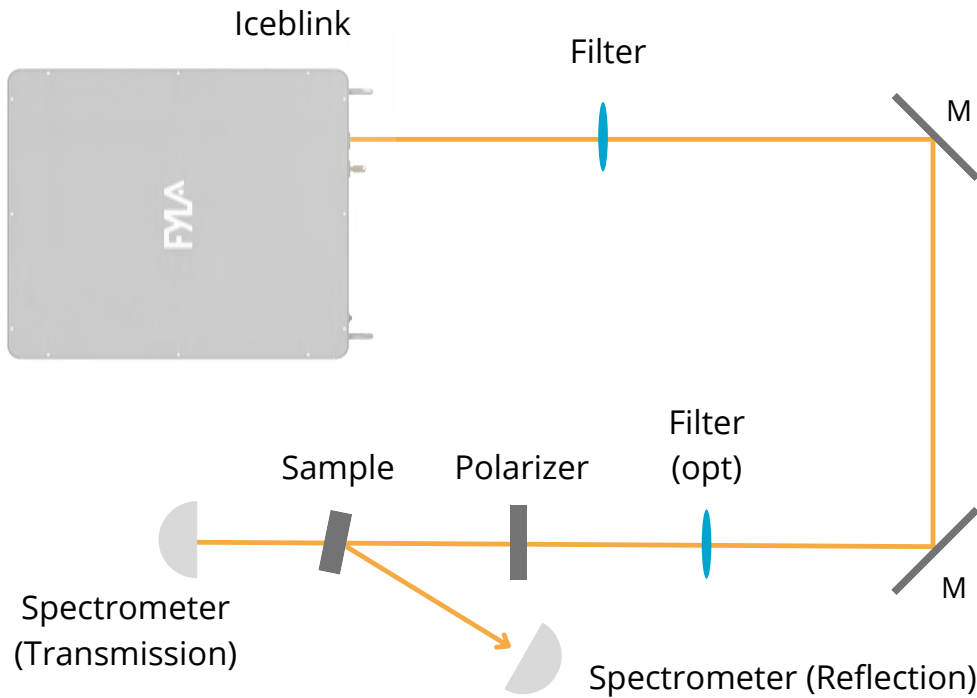
Do you need this setup?  
[Contact us!](#)

### More about the research

Courtesy of V. Otgon, J. Abreu-Afonso, H. Muñoz-Marco, S. Torres-Peiró, P. Pérez-Millán from FYLA LASER SL, Ronda Guglielmo Marconi 12, 46980 Valencia, Spain

# Measurement of the reflection and transmission spectra

## Setup for photonic device characterization



This setup consists of a supercontinuum laser (Iceblink), two mirrors to direct the light, one (or two, depending on the detector) neutral density filter used to reduce the intensity of the light and avoid saturating the camera and a polarizer.

The sample is placed in a rotatory support that allows the incident angle control. Reflected and transmitted signals are detected with two different spectrometers: AvaSpec-2048 and SR 303I-A with camera ANDOR DU490A.

Do you know the price of this setup?  
[Contact us!](#)

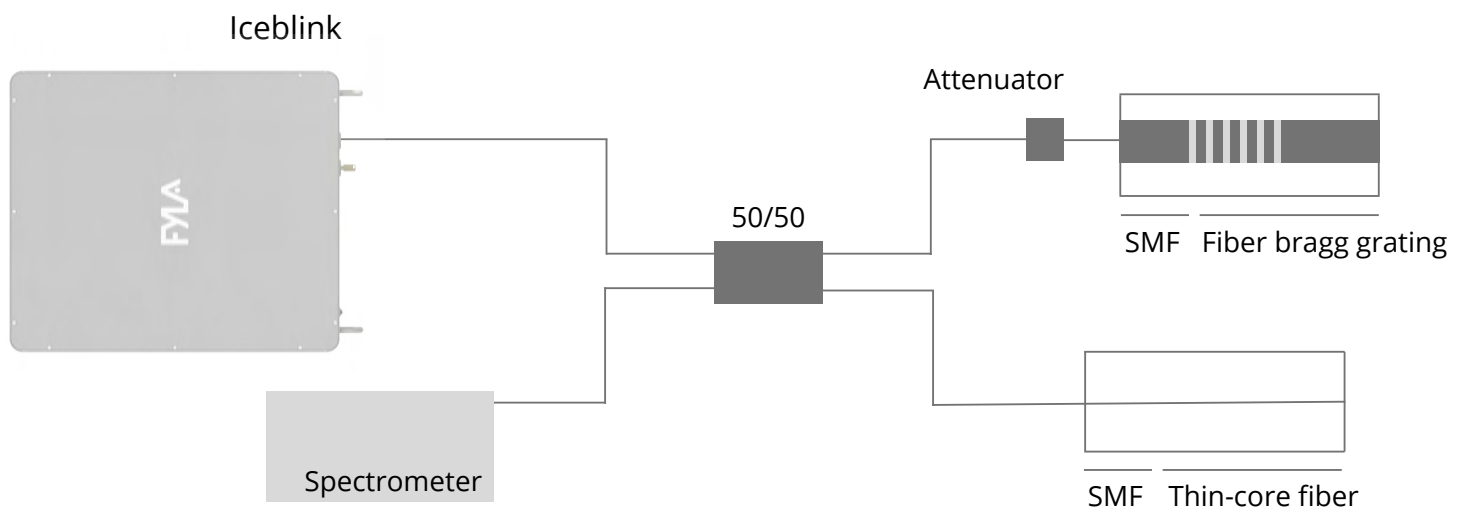
### More about the research

Courtesy of [Crina Cojocaru](#) from Departament de Física i Enginyeria Nuclear, Universitat Politècnica de Catalunya, Colom 11, E-08222 Terrassa-Barcelona, Spain



UNIVERSITAT POLITÈCNICA  
DE CATALUNYA  
BARCELONATECH

## Setup of multimode fiber optic interferometer



The setup shows the fiber-optic sensor system. It consists of a broadband source (Iceblink), a grating-based spectrometer with 0.3 nm resolution (Ibsen I-MON 512), and a  $2 \times 2$  coupler (Thorlabs, TW1550R5A2).

The components are connected with a  $2 \times 2$  coupler (Thorlabs, TW1550R5A2). The FBG sensor (Optromix) is inscribed in an SM1500 fiber and exhibits a reflectivity of 79% and full-width half-maximum (FWHM) of 0.2 nm.

The multi-mode interferometer (MMI) is fabricated by splicing a 14.2 mm section of thin-core (TC) fiber (SM400) or coreless (CL) fiber (FG125LA, Thorlabs) to the end of a single-mode fiber (SMF).

Are you interested in  
this setup?  
[Contact us!](#)

### More about the research

Courtesy of Markus Solberg Wahl, Øivind Wilhelmsen, Dag Roar Hjelme from [Norwegian University of Science and Technology \(NTNU\)](#), Department of Electronic Systems, 7491 Trondheim, Norway, Norwegian University of Science and Technology (NTNU), Department of Energy and Process Engineering, 7491 Trondheim, Norway and SINTEF Energy Research, 7034 Trondheim, Norway.

[Paper 1](#)

[Paper 2](#)

[Paper 3](#)

# FYLA white light source

## Iceblink

### 1W Supercontinuum Fiber Laser

FYLA Iceblink is a supercontinuum fiber laser covering the 450-2300 nm spectral range with over 1W of average power and superior stability (<0.5% std. dev.).

It is a very versatile white light source with a world of applications in the scientific and industrial sectors, including absorption/transmission measurements for material characterization, VIS, NIR and IR spectroscopy, single molecule spectroscopy and fluorescence excitation.

The spatial coherence and broad spectrum of the FYLA Iceblink makes it a great alternative to a classic lamp, single-line lasers, LEDs and ASE sources.



### / Highlights

VIS+NIR Power Balance

Best Power Stability

Best Jitter

**Spectral Range:**

450-2300 nm

**Average Power:**

>1000 mW

**Pulse Duration:**

< 10 ps

### / Applications

Microscopy

Fluorescence: FRET, smFRET, FCS

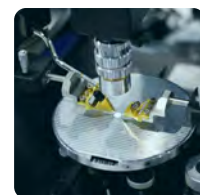
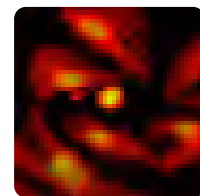
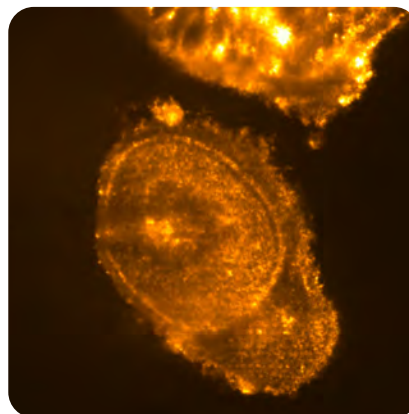
Spectroscopy: Absorption,

Transmission, Reflection.

Optical Device Characterization

Metrology

Hyperspectral Imaging



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