

# PhotonHub Demo Centre

Course 0x

Optical Fibre Sensing Applications

## Course Provider

Brussels Photonics,  
Vrije Universiteit Brussel,  
Belgium

# Course Overview

Optical fibre sensors (OFS) are part of the field of optical metrology, which is the science and technology of performing measurements with light. An optical fibre sensor encodes a measurand of interest (the perturbation that you want to measure) in one (or more) properties of an optical signal that is guided through an optical fibre.

This one-day hands-on training course provides industry, especially those addressing a sensorization need, with a detailed overview of important point and distributed OFS sensing techniques and how they are applied in engineering environments.

The course will focus on three hands-on sessions; 1) Fabrication and Characterization of fibre Bragg gratings (FBGs); 2) Measurement campaign with FBGs and optical frequency domain reflectometry (OFDR); 3) Processing of raw data into engineering values & Interpretation; Course attendees will learn how OFS are fabricated, installed and interrogated and what measurements they deliver.

# Target Audience

It is desirable but not essential that course attendees have a basic understanding of photonics. The course is ideally suited to those planning to implement optical fibre sensors.

## Expected Outcomes

- 1) Understanding of operation principles of optical fibre sensors
- 2) See the fabrication process to produce fibre Bragg gratings (hands-on activity)
- 3) Perform measurements on an asset instrumented with optical fibre sensors (hands-on activity)
- 4) Understand, process and interpret the raw sensor data (hands-on activity)

# Course Schedule

<b>Time</b>	<b>Demo Activity</b>
09:00 – 10:30	<b>VUB B-PHOT Orientation, Course Introduction &amp; Tutorial</b>
11:00 – 12:30	<b>Demo 1: Fabrication and Connectorisation of a FBG-based sensor chain (hands-on)</b>
13:30 – 15:00	<b>Demo 2: Measurement campaign with FBGs and OFDR (hands-on)</b>
15:30 – 17:00	<b>Demo 3: Processing of raw data into engineering values &amp; Interpretation (hands-on)</b>
17:00 – 17:30	<b>Follow-Up Questions &amp; Close</b>

# Course Trainers



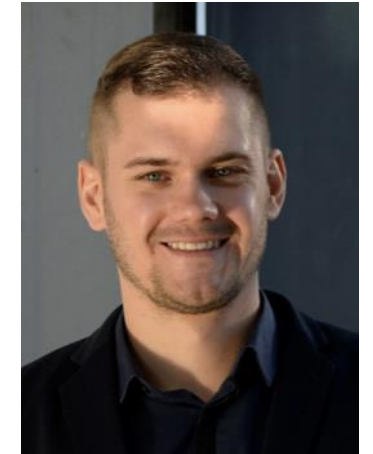
**Course Director: Prof. Thomas Geernaert**

**Course Manager: Teresa?**

**Demo 1: Dr. Tigran Baghdasaryan**

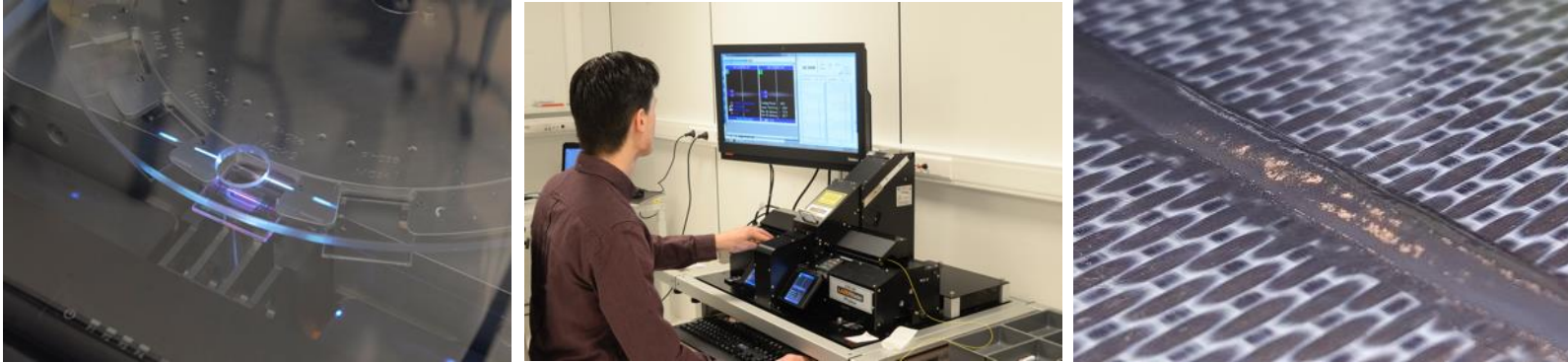
**Demo 2: Dr. Sergei Mikhailov**

**Data processing: Dr. Sidney Goossens**



# Course Demonstrators

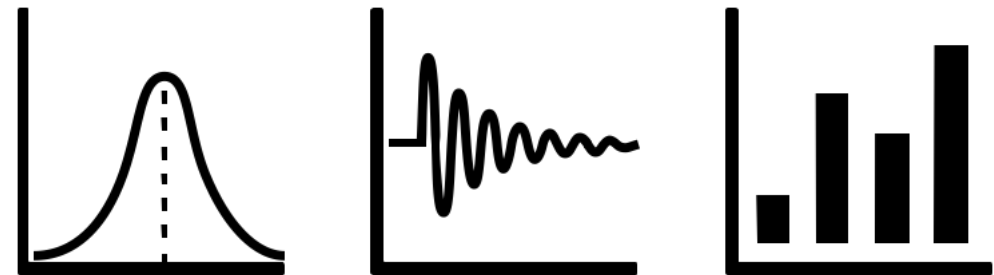
## Fabrication and connectorization of fibre Bragg grating sensor chains



## Measurement campaign with FBGs and OFDR



## Processing of raw data into engineering values & Interpretation



# Course Location, Schedule & Cost



- Course Schedule (January, July, December – exact dates to be confirmed)
- Number of people (Groups of 3/6/9 people per course)
- Course Cost (250 Euros per person, includes catering and project consumables)

## Further Information

- [Thomas.geernaert@vub.be](mailto:Thomas.geernaert@vub.be)
- <https://www.b-phot.org/contact>
- [www.photonhub.eu/euphotonicsacademy](http://www.photonhub.eu/euphotonicsacademy)

# Course Material (technical hand-outs)



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**Training Course notes**



# Keywords

**Optical measurement, Sensor, Optical Fibre, Manufacturing, Pilot Line, Equipment, Automation, Optical fibre sensing, strain and temperature sensing, structural health monitoring, Fibre Bragg grating, Distributed sensing, Data interpretation and reporting**