

# IPN-Bio School

The consortium of the European Project Integrated Photonics-Nano Technologies for Bioapplications (IPN-Bio, Ref.: H2020-MSCA-RISE-2019-872049) organizes in Valencia the IPN-Bio School. This school is cofunded by project PROMETEO-2019-048 of the Generalitat Valenciana.

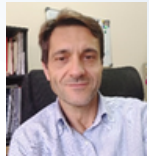
1st – 3rd December 2021, Valencia, Spain.

The School includes technical tutorials, workshops, training on professional development and technological recent developments.

- Photonic crystal fibres
- Fibre gratings
- In-fibre acousto-optics
- Special fibre lasers

Time	1st December	2nd December
8:45–09:00	<b>Introduction</b> Chairman Miguel V. Andrés	<b>Introduction</b> Chairman Sergio Rota
	<b>Tutorial 1 (1)</b> Photonic crystal fibres Antonio Díez	<b>Tutorial 4 (3)</b> Special Fibre Lasers Pere Pérez-Millán
9:00 – 11:00	<b>Tutorial 2 (1)</b> In-fibre acousto-optics Miguel V. Andrés	<b>School Training 2 (3)</b> Tutorial on Entrepreneurship, Business and Innovation Ismael Almazán
11:00 - 11:30	<b>Coffee Break</b>	<b>Coffee Break</b>
	<b>Tutorial 3 (1)</b> Fibre gratings Kaiming Zhou	<b>Workshop 4 (3)</b> Special Fibre Lasers Héctor Muñoz-Marco and Azahara Almagro-Ruiz
11:30 – 13:30	<b>School Training 1 (1)</b> Scientific publication writing, grant application, project planning Xianfeng Chen, and Miguel V. Andrés	
13:30 – 15:30	<b>Lunch</b>	<b>Lunch</b>
	<b>Workshop 1 (2)</b> Photonic crystal fibres Antonio Díez	
	<b>Workshop 2 (2)</b> In-fibre acousto-optics Martina Delgado-Pinar	
15:30 – 18:00	<b>Workshop 3 (2)</b> Fibre gratings José Luis Cruz	<b>School Training 3 (3)</b> Practical Activities on Entrepreneurship, Business and Innovation Ismael Almazán

## 1st December 2021



### **Tutorial 1: Photonic cristal fibres** **Antonio Díez**

Photonic crystal fibers feature outstanding properties that have contributed to widen the catalog of applications of optical fibers. We will review its main characteristics, paying attention to manufacturing aspects and to the most relevant and successful applications.



### **Tutorial 2: In-fibre acousto-optics** **Miguel V. Andrés**

Acoustic waves and light can be guided simultaneously in an optical fibre, giving rise to strong acousto-optic interactions. Light can be modulated with an acoustic wave, enabling a number of characterization and sensor applications.



### **Tutorial 3: Fibre gratings** **Kaiming Zhou**

This tutorial will include a brief history of the fibre gratings, different types including Bragg gratings, long period gratings and tilted gratings. In addition, the applications on sensing, fibre laser and communication will be discussed as well.



### **School Training 1: Scientific publication writing, grant application, project planning** **Xianfeng Chen and Miguel V. Andrés**



Preparation of scientific publications and grant applications is an important activity of academic and industrial researchers. The preparation of a good proposal raises a number of questions and some significant points need to be addressed correctly.



### **Workshop 1: Photonic cristal fibres** **Antonio Díez**

Basic characterization of photonic crystal fibres, paying particular attention to non linear propagation and supercontinuum generation.



### **Workshop 2: In-fibre acousto-optics** **Martina Delgado-Pinar**

In-fibre acousto-optic is a versatile technique based on the coupling of different fibre modes by means of an acoustic wave propagating along the fibre, which enables the real-time control of the optical response of different devices. In the workshop, we will show its main features, and how it can be used for measurements with spatial resolution.



### **Workshop 3: Fibre gratings** **José Luis Cruz**

A demonstration of grating fabrication in optical fibers is presented. Gratings are made by the phase mask method, the transmission and reflection spectra are analyzed under stress and temperature variations.

## 2st December 2021



### **Tutorial 4: Special Fibre Lasers** **Pere Pérez-Millán**

In this session we will review the basics of laser physics, with a particular focus in the generation and properties of ultrafast fiber lasers, from passively mode-locked femtosecond oscillators to ultrabroadband supercontinuum sources. Applications in nonlinear biological microscopy will be introduced.



### **School Training 2: Tutorial on Entrepreneurship, Business and Innovation** **Ismael Almazán**

The aim of the tutorial is to introduce and expand the nature of business creation based on high technology and science-based assets, commonly known as "Deep Tech companies". The tutorial will work on the journey to create and growth a Deep Tech business initiative, from the specifics of Deep-Tech companies,



### **Workshop 4: Special Fibre Lasers** **Azahara Almagro-Ruiz and Héctor Muñoz-Marco**

In this workshop you will learn how to manufacture a fiber passively mode-locked laser while doing it yourself, and also the different ways of characterizing it by measuring all the key parameters: spectrum, temporal pulsedwidth and average power.



### **School Training 3: Practical Activities on Entrepreneurship, Business and Innovation** **Ismael Almazán**

The session will include practical cases about Time-to-Market, Capital Intensity, Technology Risk and Complexity, and how to manage the Market Access considering the mixture of Technical Expertise and Business Knowledge required in Deep Tech companies.

## Locations

Tutorial 1, 2, 3 and School training 1:  
UVEG, Lise Meitner Hall, Faculty of Physics.

Workshops 1, 2, 3:  
UVEG, Department of Applied Physics.

Tutorial 4, School training 2, 3 and Workshop 4:  
FYLA Laser, Parque Tecnológico. Ronda Guglielmo Marconi, 14, 46980, Paterna, Valencia  
By public transport: bus no. 133 and 144