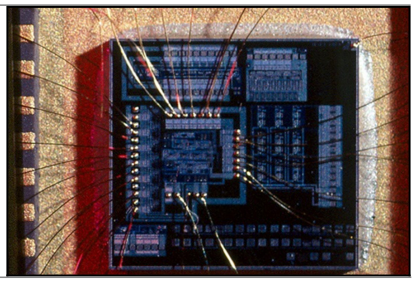
INSTITUT d'OPTIQUE GRADUATE SCHOOL | Continuing Education
Formation Continue

SC15 | Optoelectronics



New training

LEVEL: ADVANCED

Audience: Technician or engineer willing to understand optoelectronics systems functionning and their components

Prerequisites: Basic knowledge in optics corresponding to EF1 - Optics without calculation

Pedagogical manager(s): Nicolas Dubreuil - Enseignant-chercheur à l'Institut d'Optique

Language of the training: French

Maximum capacity: 12

Price: 1380€ HT - **Duration:** 3 jours - 21 h

Objectives

- Acquire the basic skills in optoelectronics
- Be able to communicate in the domain of optoelectronics
- Be able to understand technical specifications
- Learn how to use current optoelectronics components and instruments
- Design and set-up a simple experiment.

Next sessions

- 25 march 2019 au 27 march 2019 - Palaiseau

Addressed topics

Wave optics
Emission, modulation, guided optics
Semiconductor based components
2D detectors
Transmission

SC15 | Optoelectronics

The program

Introduction to optoelectronics
- Reminders in optics, diffraction, scattering and light propagation effects

Optical functions
- Emission, detection and deflection of light
- Optical modulation: accousto- and electro-optics, example of modulators
- Guided optics: waveguides and optical fibres

Semiconductors components
- Basics in semiconductor materials
- PIN and avalanche Photodiodes: principle of operation, characteristics, source of noise
- DEL light source: principle of operation, characteristics,
- Fabry-Perot, DFB, DBR, VCSEL... laser diode types: principle of operation, characteristics, comparison

Array detectors
- CCD/CMOS array detectors in the visible range: principle of operation, architectures, characteristics, applications
- Infrared array sensors (thermal and quantum): principle of operation, architectures, characteristics, applications

Labworks and demos
- Characterization of a LED and a laser diode
- Noise detection
- Characterization of a CMOS camera
- Optical fibre transmission: modulation formats, electro-optical modulator, set-up of a 10 Gbit/s transmission

Methodology and assessment

Tutorials and exercises
Interactive experimental demonstrations
Labworks on instruments