



GUIDAGE PHOTONIQUE

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| Lecturers : 0.0 | TC : 0.0 | PW : 18 | Autonomy : 0.0 | Study : 2 | Project : 0.0 | Language : FR

Objectives

During this course, the students will experiment different aspects of the conception and realization of nanophotonic components in guided optics, on silicon substrate.

After an introduction (about the context of integrated photonics on silicon, challenges), using specific simulation tools, students will conceive the different photonic building blocks necessary to the elaboration of complex systems for routing/guiding light on silicon. They will work in clean room on the different aspects of elaboration (optical and electronic lithography, plasma-assisted etching,...). The elaborated structures will be then characterized by optical and electronic microscopies.

Keywords : Nano-photonics, photonic components, guided optics, lithography, microscopy.

Programme

BE1 (2h): context, challenges of nanophotonics on silicon, description of tools and methods (simulation, elaboration in clean room)

TP1 (4h): simulation of structures and basic components

TP2 (10h): elaboration of guided optics components in clean room

TP3 (4h): structural characterization (electron microscopy) and optical microscopy (guided optics characterization set-up) of elaborated components

Learning outcomes

- Understand the challenges and problematics of photonics on silicon.
- Know and use several techniques and equipments used in nanotechnologies.
- First approach of working in clean room environment.
- Conceive and achieve a photonic integrated system.

Independent study

Objectifs :

Méthodes :

Core texts

Assessment

30% for theoretical questions, 30% for involvement and active participation, 40% of methodology and experimental report