

Physical modeling and strain analysis of III-V laser structures

Record number : OPR-1096

Overview

RESEARCH DIRECTION

Gwenaëlle Hamon, Professeure -
Department of Electrical and Computer
Engineering

INFORMATION

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ADMINISTRATIVE UNIT(S)

Faculté de génie
Département de génie électrique et de
génie informatique
Institut interdisciplinaire d'innovation
technologique (3IT)

LEVEL(S)

3e cycle

LOCATION(S)

3IT - Institut interdisciplinaire d'innovation
technologique

Project Description

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Strain of the III-V semiconductor heterostructures is observed during its manufacturing processes. When used for laser fabrication, those strained heterostructures lead to a decrease in optoelectronic performances or wafer thinning mechanical failure. The objective of this project is to develop new design structures based on analysis of the strained III-V semiconductor heterostructures and its modeling.

Main tasks

- Physical modeling of strain in laser structures using COMSOL
- Optimization of III-V laser structures to minimize strain and enhanced performance
- Comprehensive materials characterization using SEM, TEM, EDX, profilometry, XRD, photoluminescence, etc.
- Regular follow-up meetings with the industrial partner

Your profile

- Master's degree in physics, materials science, nanotechnology or a related field
- Assets: Knowledge of photonics, optoelectronics and semiconductor physics
- Experience in physical modeling, materials characterization and epitaxy
- Ability to work autonomously
- Strong interpersonal skills and ability to work effectively in a team with individuals from diverse backgrounds

Working environment

The thesis work will be carried out primarily at the Interdisciplinary Institute for Technological Innovation (3IT) at the University of Sherbrooke, under the supervision of Prof. Gwenaëlle Hamon and in collaboration with an industrial partner.

To submit your application : recrutement-groupe-hamon@usherbrooke.ca

**Discipline(s) by
sector**

Funding offered

To be discussed

Sciences naturelles et génie

Génie électrique et génie électronique

The last update was on 12 September 2024. The University reserves the right to modify its projects without notice.