Physics or BSc Thesis Project

Design & fabrication of Dielectric DBR Mirror

Description
Join us to work on the design and fabrication of dielectric mirrors [1] for wavelength tunable micro-electro-mechanical-system (MEMS) vertical-cavity-surface-emitting laser (VCSEL). You will be working on the deposition of thin dielectric films on Ion Beam Sputter Deposition (IBSD) at Danchip to create the mirror for the desired wavelength and reflectivity. You will also be involved in the simulation of such structures on MATLAB. We are currently working on the deposition of mirrors for higher wavelengths (1000nm-1700nm).

The mirror fabricated in this project will be used for the MEMS VCSEL shown in the figure above which has applications in near-infrared spectroscopy (NIRS) and optical coherence tomography (OCT) [2,3,4].

We will tailor the project to your interests and qualifications.

Goals:
- Modeling/Simulation of DBR stacks on MATLAB
- Cleanroom fabrication & Characterization of dielectric layers to make the DBR mirror.

Skills/Knowledge Acquired:
- Modeling of dielectric DBR on MATLAB
- Cleanroom fabrication using IBSD/III-V Dielectric evaporator
- Characterization of DBR mirrors.

Background Requirement:
- Basics of optics / semiconductor technology
- Knowledge of MATLAB a plus

ECTS: 15

Contact Persons:
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