

## NordAmps AB – FEM Master’s thesis project

NordAmps, a startup company based in Lund, Sweden is looking for preferably one master's thesis worker for a FEM modelling project related to the generation of 3D Models for high power/performance nanowire transistors. The thesis work will be carried out in collaboration with the Nanoelectronics group at the Department of Electrical and Information Technology at LTH.

### Background

We develop InGaAs nanowire transistors on Si-substrates with competitive device performance high speed operation enabled by optimal material properties and by the vertical topology. NordAmps technology combines the high performance of III-V materials in a scalable technology with the economy of scale supported by silicon substrates.

20 years of research pioneered at Lund University constitutes the basis of the technology. The transistor development has been performed within the Nanoelectronics group at the department of electrical an information technology at Lund University, led by Prof. Lars-Erik Wernersson.

### Project description

Nanowire transistors fabrication is a very high-cost time consuming task. Simulation enables a cost-effective examination of “what if” scenarios, system interactions, and malleable topologies that traditional fabrication processes would not have time to consider. A high-fidelity simulation can reflect reality closely and serve as an accurate predictor of a design’s performance.

The FEM modelling project will consist of:

- 3D modelling of the transistor structure with optimized meshing, capturing material gradients and parasitic capacitance.
- Electrostatic simulation of the gate-all-around (GAA) structure.
- Optimization of device structure (mobility, saturation velocity, etc.).
- Transfer of the electrical data to a compact analytical model.
- If time allows small and large signal model implementation.

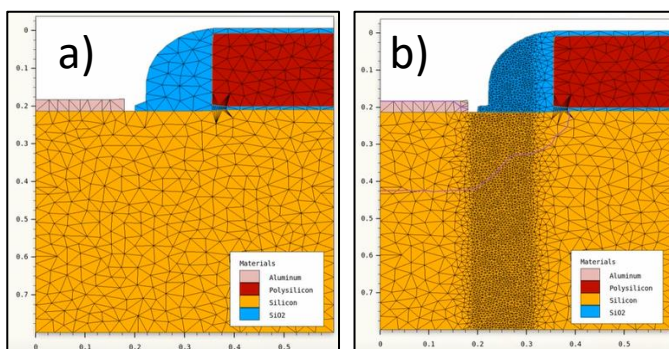


Fig. 1 MOFET structure a) without and b) with meshing refinement

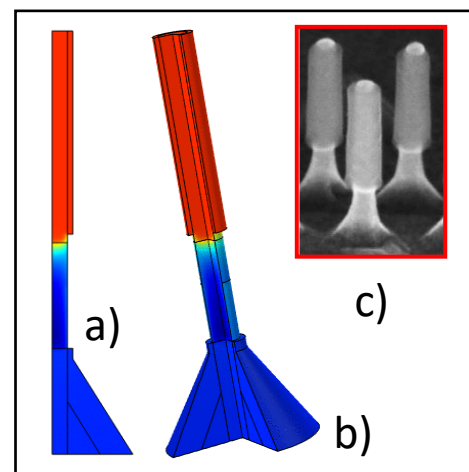


Fig. 2 a) 2D Nanowire Transistor (NW)  
b) 3D NW c) NW SEM Image

## Qualifications

- Master's students in Engineering Physics, Engineering Nanoscience. Electrical Engineering, Mechanical Engineering or equivalent.
- Familiar with device-physics of transistors (MOSFETs).

## Application

Please send an email with your application.

Start date: March/April 2021

Location: NordAmps AB, Ideon Lund <https://nordamps.com>

Questions about the position will be answered by: **Lars Tilly, CEO NordAmps**,  
[lars.tilly@nordamps.com](mailto:lars.tilly@nordamps.com).