Unity Semiconductor SAS
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Internship on Nanophotonics & Metasurface design

Design and integration of metasurfaces in optical inspection and metrology machines for the semiconductor industry

UnitySC designs and develops high precision tools to optically control processes for the semiconductor industry. The same semiconductor industry can now produce metasurfaces, which can be used in the inspection tools developed by UnitySC for extended or novel optical capabilities.

We are currently developing metasurface-based solutions to enhance the capabilities of our machines. You will continue this work with a focus towards extending our design capabilities. We would also like to tackle the challenge of extending the depth of field to enhance the performances of our machines. You will design the nanostructures using existing software to solve the Maxwell equations, with the aim of subcontracting the fabrication, and integrating the metasurface in one of our tools.
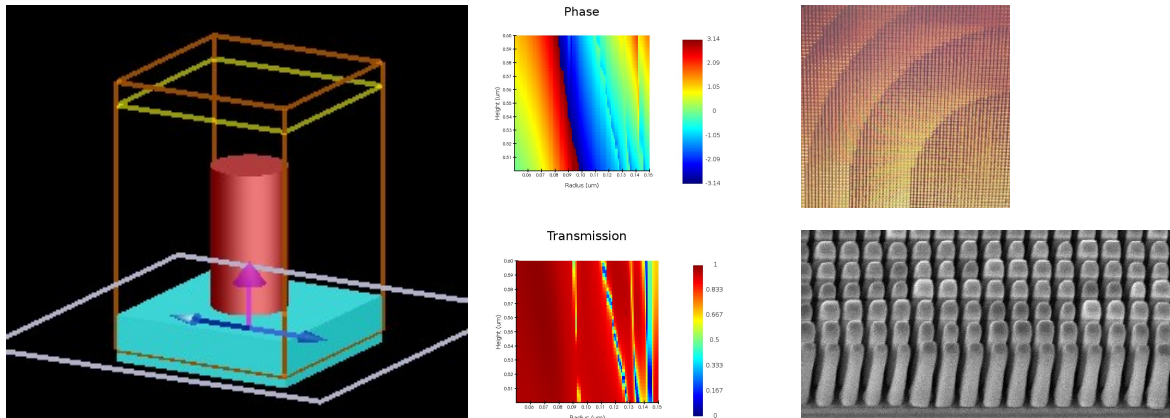
You will be part of the R&D team and will have as objectives to:

-   Identify through the scientific literature the best solutions to extend the depth of field of some of our machines.
-   Design a metasurfaces for this application.
-   Follow-up the fabrication with a metasurface foundry or an academic partner and adapt the design to the fabrication constraints.
-   Test the produced metasurface on an optical bench.
-   Integrate the metasurfaces in one of our R&D machine.
-   Rigorously assess the results on reference samples.

You are enthusiastic regarding optics and nanophotonics in particular. You are at ease with using simulation software and you can ideally provide a working knowledge of MATLAB and Python. Eager to

work on new high-tech tools, you want to understand how they work and how to push their performances forward.

You want to make an impact on a research and development project. You communicate easily with the other members of the team and are at ease in an international environment.

Duration : 6 months.
A subsequent extension towards an industrial PhD ("thèse CIFRE") is possible.

Please send a resume and a cover letter to: guillaume.vienne@unity-sc.com