

Internships : Silicon Photonics

Data traffic is exploding! At Lumiphase, we are on a mission to create the fastest and most energy-efficient communication chip the world has ever seen – to enable global IT infrastructure to handle this massive increase in data.

We are a young and dynamic deep-tech startup, based in the Zürich area, Switzerland. Lumiphase was founded in 2020, after nearly 10 years of research within IBM. We currently have 50+ strong talents on the team, and we support the growth of our students and recent graduates.

Our internships

Our team hosts working students and interns for 6-12 months, beginning in Spring and Autumn every year. Upon joining, you will work in tight interaction with one of the Lumiphase R&D teams to develop novel processes. Every year, we have internships in many different areas. This year, we offer internships in:

- Packaging / Reliability
- Materials
- Data Science
- Testing

What we are looking for

We are seeking a highly motivated candidate with a strong interest in difficult topics in the field of micro- and nano-scale photonics. What you should bring:

- Strong interest (and ideally prior experience) in experimental hands-on work with delicate semiconductor components, advanced assembly equipment, and/or electrical and optical measurement equipment;
- Drive to solve difficult technical challenges with practical applications in industry in mind;
- Excellent communication skills and the desire to contribute within a dynamic deep tech startup;

For an **internship**, you need to be enrolled in a masters, completed a bachelors or recently graduated from a masters in micro-engineering, mechanical engineering, physics, electrical engineering, materials science, chemistry or similar.

Why Lumiphase?

We have developed a unique technology to bring a material with extremely strong Pockels coefficient into a scalable silicon photonics platform. Having this physical effect available in integrated photonic circuits has been a scientific and technological breakthrough, which enables the realization of advanced photonic structures and completely new applications, e.g. for photonic AI networks and quantum computing. At Lumiphase, we are bringing this new technology to market, while at the same time developing new scientific and technological concepts. The internship projects are placed at the heart of our R&D activities and will ensure that our groundbreaking semiconductor chips can realize their full performance potential with appropriate electrical, optical and mechanical integration solutions.

In addition, we provide an agile environment with plenty of opportunities for our young talents to develop their skills and ideally to become permanent team members. And we have a lot of fun together as well!

How to apply?

Please submit your application via this link [Lumiphase Corporation - INT](#). For any questions you can write us at talents@lumiphase.com.

Project 1 – Packaging and Reliability: Semiconductor and optical packaging and testing

During this internship project, you will collaborate closely with R&D engineers to enhance our test capabilities. You will gain understanding of our electrical and optical testing hardware, learn about our characterization methods, and engage in both conceptual and practical lab work. This hands-on experience will provide you with a comprehensive background in industry-driven R&D activities. Your daily tasks may include:



- Design and improvement of experimental setups for electrical or electro-optical characterization and robustness testing of integrated photonic devices.
- Implementation of new test methods within these setups (instrument selection, integration, and measurement routine coding)
- Design of PCBs for mechanical sample fixation and electrical routing.
- Conducting measurements, analyzing data, and preparing documentation.
- Engaging in hands-on lab tasks, such as setting up new instruments, installation of hardware components and samples into test chambers, or definition and execution of calibration routines

Eligibility: Enrolled to Master's or Bachelor's program in electrical or mechanical engineering, mechatronics, applied physics, or similar field.

Project 2 – Materials Sciences: Characterization of Ferroelectrics

In this internship, you will develop a novel methodology to comprehensively analyze electro-optic measurements obtained from ellipsometry, infrared spectroscopy, and microwave spectroscopy. You will gain understanding of our electrical and optical testing hardware, learn about our characterization methods, and engage in both conceptual and practical lab work. Your daily tasks may include:

- Developing an advanced fitting model merging data from different spectral techniques
- Participating and conducting different spectroscopic measurements
- Analyzing data and preparing documentation and reports

Eligibility: Completion of a Bachelor's program in electrical engineering, applied physics, mechanical engineering or similar field.

Project 3 - Materials Sciences: Characterization of thin films by X-ray and light scattering



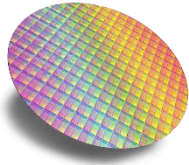
Strain and composition can have dramatic effects on the physical properties of materials. In epitaxial thin films both can be controlled (engineered) by finely tuning the growth process parameters. X-ray and light scattering techniques provide essential information about the film structure which are used to optimally drive the growth process.

During this internship project, you will study, measure, and analyze the parameters of epitaxial thin films. The goal is to improve our fundamental understanding of the functional properties of our devices. Your daily tasks may include:

- Developing X-ray data collection procedures for the accurate determination of structural parameters of the thin film
- Developing the required software (Python based) for the data analysis
- Conducting measurements, analyzing data, and preparing documentation and reports

Eligibility: Completion of a Bachelor's program in Materials Engineering, Physics, Chemistry or similar field.

Project 4 – Automation Engineering: Developing a new optical set up



During this internship project, you will work in tight interaction with the Lumiphase materials R&D team to develop and automatize an optical set up. Your daily tasks may include:

- Improving existing and developing new experimental setups for thermal characterization of integrated photonic devices
- Developing integrated control software for experimental setups
- Analyzing reproducibility and accuracy of the instrumentation

Eligibility: Completion of a Bachelor's program in electrical engineering, applied physics, mechanical engineering or similar field.

Project 5 – Testing Engineering: Hardware development for Characterization Techniques in Silicon Photonics

During this internship project, you will collaborate closely with R&D engineers to enhance our test capabilities. You will gain understanding of our electrical and optical testing hardware, learn about our characterization methods, and engage in both conceptual and practical lab work. Your daily tasks may include:

- Modeling and designing new 3D parts for automated test equipment
- Improving existing parts for production environment
- Implementing and executing characterization procedures
- Working daily in a lab
- Engaging in hands-on lab tasks, such as setting up new instruments and installing hardware components and samples into test chambers

Eligibility: Completion of a Bachelor's program in electrical engineering, applied physics, mechanical engineering or similar field.

Project 6 – Testing Engineering: Data analysis for Silicon Photonics Characterization

During this internship project, you will collaborate closely with R&D engineers to enhance our test capabilities. You will gain understanding of our electrical and optical testing hardware, learn about our characterization methods, and engage in both conceptual and practical lab work. Your daily tasks may include:

- Running Design of Experiment to support our new development or failure analysis
- Developing Python scripts to improve Test methods and analyzing the data
- Sharing reports with the team

Eligibility: Completion of a Bachelor's program in electrical engineering, applied physics, mechanical engineering or similar field.

Project 7 – Data Engineering: Development of live monitoring and analysis tools for Silicon Photonics testing

During this internship project, you will collaborate closely with R&D and data engineers to enhance our test capabilities. You will gain understanding of our electrical and optical testing capabilities, learn about our characterization methods, and engage in restructuring some key metrics data flows to provide a live feedback of the testing results. Your daily tasks may include:

- Building live analysis pipelines
- Structure data streaming techniques and develop visualization web apps to visualize key insights of test results
- Developing Python scripts to improve visualization of the data
- Sharing developments and visualizations with the team

Eligibility: Completion of a Bachelor's program in computer science, electrical engineering, data sciences or similar field.