PHOTOGENIC

Issue 01
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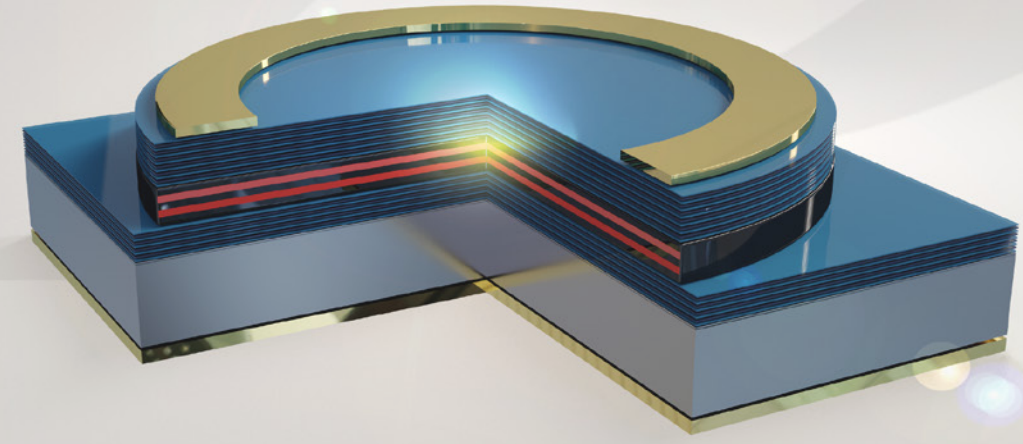
A GAME CHANGER FOR THE PHOTONICS INDUSTRY

NOVEL LASER TECHNOLOGY



Message from the Coordinator

This Newsletter intends to open a new communication channel to provide news on the project's progress and discuss ongoing topics relevant to PhotoGeNIC. This newsletter is designed for internal and external project partners, stakeholders, and all other interested bodies. For more detailed information about the project, we invite you to visit our website, which is constantly updated with the latest project-related news: **Website**. The project has successfully started with a kick-off meeting on 27th-28th October 2022 in Villach, Austria. The event was coordinated by Technikon, with the primary purpose of verifying plans and introducing team members to first activities, and building the foundation for further collaboration. Hence, part of the agenda was the presentation of all the partners involved and their roles in the project. In addition, the work packages, including technical discussions and planning the following steps, took place. Since the kick-off, the consortium has been meeting virtually regularly and working relentlessly to achieve the project objectives in this challenging and exciting topic.

The PhotoGeNIC project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No. 101069490.

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Budget

€ 4.8 Million
100% EU-funded

Consortium

8 Partners
5 countries

Duration

36 Months
10/2022 - 09/2025

Main Project Info

The Vertical-Cavity Surface-Emitting Lasers (VCSEL) sector is developing dynamically, with laser production expected to triple in the next five years. With its innovative Ge-VCSEL solution, the project has the potential to be a game changer for the photonics industry. The PhotoGeNIC Project involves advanced photonics, and concerns semiconductor VCSEL, widely used in the photonics industry, including short-distance communication systems, LIDARs, time-of-flight sensors, autonomous vehicles, robots, and drones. The goal is to meet the demand of the constantly growing photonics market by providing a novel solution that will increase production yield, reduce defectivity, and introduce reduced environmental impact. Moreover, the project findings can be developed into usable tools bringing innovative change across various end-user industries.

Project status and first achievements:

Exciting progress has been made in developing VCSEL technology on Ge substrates. The consortium has completed preliminary work and designed a 940nm VCSEL structure. They have focused on crucial elements such as the Al content in DBRs, the active region, and the optimization of the oxidation layer.

Collaborative efforts have produced high-quality GaAs buffers on Ge for MOCVD/MBE growth of the VCSEL structure. The first series of full laser epi-stack has been grown, and advanced material characterization processes are being used to distinguish between VCSEL epi-structures grown on GaAs and Ge.

The consortium is also pleased to report significant achievements in developing the basic process flow and completing the VCSEL process flow. Moreover, progress has been made developing ohmic contact on N-type Ge wafers.

General Information:

The Photogenic consortium combines world-class facilities with a vast pool of expertise, enabling it to tackle and resolve technological challenges. They take the project from concept through to delivery in close collaboration with the industry. Technikon has published videos that will deliver an overview of PhotoGeNIC and their Partners aimed at the general public seeking more information.

Please feel free to watch them:

Project Teaser	Overview of PhotoGeNIC's Objectives.
Ivan from Umicore	talks about Umicore's main tasks and their role in the Project.
Jorrit from XenomatiX	looks forward to working on the new generation of VCSELs and LiDARs at PhotoGeNIC.
Guilhem from CNRS	looks forward to working on the demonstrators together with the other industrial partners of the consortium.
Roland Jäger from pmdindustrial GmbH	talks about WP5 "Automotive LiDAR and industrial camera demonstrator," and why PhotoGeNIC is also relevant for the younger generation.

The PhotoGeNIC Consortium

The PhotoGeNIC consortium comprises seven partners from 5 countries (AT, BE, DE, FR, PL). It consists of a well-balanced mixture of academic and industrial players, from large to small semiconductor companies.

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PHOTOGENIC

Upcoming Events

Be sure to attend all upcoming events. Make sure you follow PhotoGeNIC on Linkedin and Twitter, where all events and important information are being published.

VCSEL day
13th European Workshop
22nd September 2023
@Turin, Italy

Members of the PhotoGeNIC consortium will be present at the VCSEL Day and be more than happy to discuss the project and the first activities with interested parties.