



# MILADO

Multiwavelength Laser for fast Diagnostic in Biomedical and Manufacturing Applications

Revolutionizing Precision Diagnostics with Advanced Multispectral Laser Technology for Biomedical and Industrial Innovations

## ISSUE 1

Newsletter

### Technical Lead

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Fraunhofer IAF

### Scientific Lead

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### Project Coordinator

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#### Duration

36 Months

01/06/2024 -  
31/05/2027



#### Consortium

7 Partners

4 countries



#### Budget

€ 4.9 Million

100% EU contribution

## Message from the Coordinator

<https://milado.eu>



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The intention of this Newsletter is to open a new communication channel to provide news on the project progress and to discuss ongoing topics relevant to MILADO. This newsletter is intended 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 project website, which is constantly updated with the latest project related news: [milado.eu](https://milado.eu). The project has successfully started with a kick-off meeting in September 2024 in Villach. The event was organised and coordinated by

Technikon, with the main purpose of verifying plans and matching team members with first activities and to build the foundation for further collaboration. Hence, part of the agenda was the introduction of all the partners involved and their roles in the project. In addition, the work packages, including technical discussions and the planning of the next steps, took place. Since the kick-off, the consortium has been meeting virtually on a regular basis and is working relentlessly towards achieving the project objectives in this challenging and interesting topic.

## MILADO's ambition

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The MILADO project is set to revolutionize mid-infrared (MIR) laser technology by dramatically lowering the cost of Quantum Cascade Lasers (QCLs), key components in many spectroscopic applications. While QCLs offer high performance and broad spectral coverage, their high price has limited wider use. By merging "group III-V" materials with silicon photonics and leveraging CMOS manufacturing, MILADO aims to reduce QCL costs from thousands to just tens of euros. This shift from labour-intensive production to scalable processes will not only cut costs but also enable new applications in bioanalysis, like cancer detection, and gas sensing. Additionally, MILADO's integration of sensors and actuators using micro-electromechanical systems (MEMS) technology will lead to compact, portable, and robust MIR solutions for a wide range of industries.

### **Commissariat à l'énergie atomique et aux énergies alternatives (CEA), FRANCE**

CEA-Leti, a technology research institute at CEA, is a global leader in miniaturization technologies enabling smart, energy-efficient and secure solutions for industry. From sensors to data processing and computing solutions, CEA-Leti's multidisciplinary team delivers solid expertise, leveraging world-class pre-industrialization facilities tackling critical challenges in healthcare, energy and digital migration. CEA-Leti, renowned for their groundbreaking research and technological advancements, is leading the scientific efforts of the MILADO project. With their expertise and innovative spirit, they are at the forefront of revolutionizing sensing technology through mid-infrared lasers.

### **Eclypia, FRANCE**

Eclypia, a company dedicated to pioneering innovations and fostering a vibrant community of creators and innovators is contributing to MILADO with the development of a non-invasive continuous glucose monitoring system using an indirect multispectral mid-infrared photoacoustic measurement technique. Eclypia is eager to collaborate with esteemed partners across Europe, driving innovation and pushing the boundaries of III-V and QCL technology and research.

### **Fraunhofer Gesellschaft zur Förderung der angewandten Forschung EV, GERMANY**

Fraunhofer's cutting-edge research and innovation in technology will be pivotal in driving MILADO's mission. Acting as the technical lead of the MILADO project, Fraunhofer IAF is contributing its skills in design, epitaxy, module assembly and characterization to realize laser sources integrating III-V and silicon. As quantum cascade lasers are the source of choice in the mid-infrared when high spectral power density and broad spectral coverage is needed, MILADO is aiming on making quantum cascade lasers cost-efficiently producible to leverage the huge potential of the technology for spectroscopic applications.

## The MILADO Consortium

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The MILADO consortium consists of seven highly qualified business and applied research partners from four different countries (Austria, France, Germany, and Finland) who combine the know-how that is necessary to implement the project.

### **Technikon Forschungs- und Planungsgesellschaft mbH, AUSTRIA**

Technikon is an independent, privately owned research service company in Austria combining engineering competence with knowledge in security requirements, technology roadmaps and IT infrastructure services for our industrial customers. Technikon drives European innovation by managing the planning, budgeting and execution of industrial driven research, spotlighting technology by designing, animating, and illustrating novel concepts and products.

### **ADMIR, FRANCE**

ADMIR, a cutting-edge company specializing in advanced sensing technologies, is a key partner in revolutionizing mid-infrared laser applications. With a strong commitment to innovation and excellence, ADMIR is dedicated to pushing the boundaries of what's possible in health applications.





### Gasera OY, FINLAND

Gasera is known for developing advanced gas analysis and measurement technologies, specializing in high-performance gas sensors and analysers used in applications such as environmental monitoring, industrial safety and healthcare. Gasera is eager to contribute to pioneering advancements in mid-infrared laser technology and revolutionizing sensing solutions in both biomedical and manufacturing applications.”

### RECENDT – Research Center for Non-Destructive Testing GmbH, AUSTRIA

RECENDT is well-known for their advanced research in non-destructive testing and sensor technology as well as pushing the boundaries of innovation in production monitoring. Within the MILADO project, RECENDT will work on cutting-edge sensor concepts for continuous monitoring of production processes and will contribute with their expertise and wide network to enable successful use-cases in various application scenarios.

## What happened in the last 6 months...

### MILADO Kicked-off

The project successfully started with a virtual and a physical kick-off meeting in June 2024 and September 2024. Both events were organized and coordinated by TEC and focused primarily on project, work package and task management inclusive of reviewing plans and bringing team members together, as well as laying the foundation for further collaborations for the next 36 months of innovation. The physical kick-off meeting took place at TEC in Villach, Austria from 10-11 September 2024. The agenda included productive discussions as well as a dinner in the beautiful city centre to strengthen the team and the associated cooperation. Looking ahead, the next consortium meeting is scheduled for March 2025 in Freiburg im Breisgau, hosted by our technical lead, Fraunhofer.



## Communication activities

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To visualize the objectives and ambition of the MILADO project, short videos outlining the objectives and explaining the approach have been created and uploaded to the project website.

- **Objectives video**
- **Explainer video**

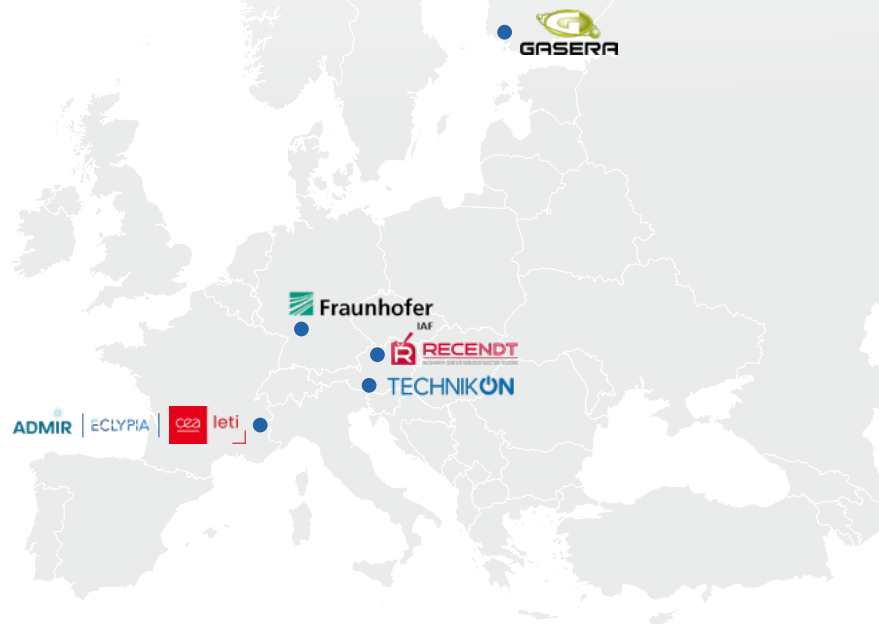
To provide insight from our experts into the MILADO project, we have recorded and published four partner interviews. We have spoken to partners from Fraunhofer IAF, CEA-Leti, Gasera and RECENDT elaborating on their role in the project, where they see the

main challenges and how they are planning to address them by providing some examples.

- **Marko Härtelt**
- **Maeva Doron**
- **Tuomas Hieta**
- **Markus Brandstetter**

# Mapping the project's progress

In the first six months all work progressed according to plan. We have made technical progress in all areas related to the MILADO technical work packages. For WP3 and WP4, the involved partners defined the requirements and specifications for the MILADO use cases. We also submitted our first deliverable in WP3 and thus achieved our first technical project milestone 'Design of QCL heterostructure for Si-integration defined'. For WP6, we worked on the definition of required laser parameters for our use cases and started to work on the definition of potential measurement configurations. Some of our WPs will start later in the project, so we are looking forward to providing you with updates in the next newsletter issues.




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**Upcoming Events**

All past and upcoming events can be found on the MILADO official webpage:  
<https://milado.eu/events/>

## Project Facts

**Consortium:** 7 partners (4 countries)  
**Project Coordinator:** Barbara Gaggl (Technikon)  
**Technical Leader:** Marko Haertelt (Fraunhofer IAF)  
**Scientific Leader:** Badhise Ben Bakir (CEA Leti)  
**Project number:** 101070008  
**Project website:** <https://milado.eu>  
**Project start:** 1st June 2024  
**Project end:** 31st May 2027  
**Duration:** 36 Months  
**Total cost:** EUR 4,943,399,27  
**EC contribution:** EUR 4,943,399,27  
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