

Novel low-cost sensors for biomedical and manufacturing applications



The Horizon Europe Project “MILADO” will provide a robust and universal technology platform for low-cost and large volume fabrication of mid infrared (MIR) lasers enabling novel sensors in medicine and production.

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Mid-infrared laser technology enables novel and sensitive sensors for all kinds of spectroscopic applications. Quantum Cascade Lasers (QCLs) are the source of choice for many of these applications. However, the high costs of the QCLs are the major bottleneck for large market penetration and limit their application to high-priced niche markets. The goal of the MILADO project is the development of a mid-infrared laser source technology merging III-V and Silicon photonics, enabling cost-efficient sensors with superior analytical performance. This will pave the way for new biomedical and manufacturing applications. The key innovations and aims of the project are:

- The technology upscale of the QCLs epitaxy on large area substrates and the development of concepts for direct III-V-epitaxy on silicon.
- Merging of III-V and Si photonics technologies by integrating QCL and Si-based MIR photonics using Complementary Metal Oxide Semiconductor (CMOS) based technology.
- Opening new markets by enabling novel low-cost sensors for personal medical diagnostics or edge-sensors in chemical production.
- Demonstrating the versatility of the approach by use cases covering process control and medical diagnostics.

MILADO is a three-year project funded by the European Union (Grant requested 4,943,399.27 EUR), which started

in June 2024. The consortium consists of seven partners including highly qualified and experienced SMEs (Technikon, ADMIR, Eclypia, Gasera), high research ranked academic partners (Commissariat à l'Énergie Atomique et aux Énergies Alternatives, Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung EV, Research Center for non destructive testing GmbH). With our strong team of SMEs, academic and research partners we are convinced that MILADO will enable the technology upscale of novel sensors in medicine and production.

About the coordinator: Technikon is a private research service company in Austria. Technikon's range of expertise makes it Europe's leading private company for technical requirements the coordination and dissemination of technology-based collaborative European research projects.

For more information about the MILADO project, visit our website or contact the project coordinator:

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