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Advanced multi-sensing systems

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Integrated, Modular, Multisensing, Mid- and Near- IR sensing platform

M3NIR - Deliverable report

D3.1 - Design, optimization, and manufacturing of the new modular laser sources (V1)

Disclaimer / Acknowledgment

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About M3NIR

M3NIR plans to boost photonics-based sensing technology in terms of performance, reduction of footprint, energy consumption and costs. The value chain to be implemented by the M3NIR project includes the optimization of the manufacturing approaches of mid-infrared photonic devices, the development of relevant electronics and the high-level integration of other components like microfluidics for the realization of high-performance sensors. With the extra focus towards miniaturized configuration, robustness, maintenance-free operation, low power consumption and cost-effective sensing, M3NIR aims to create a modular, highly adaptable and efficient multi-sensing platform, which will be validated in the domains of environmental monitoring and healthcare. The project makes use of novel schemes for component integration and packaging, enabling both scientific and industrial breakthroughs.

M3NIR consortium members

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Publishable summary

This deliverable is the first report on the design and fabrication of specially designed quantum cascade (QC) chips that will be integrated on photonic integrated circuits (PICs) by IMEC for use as mid-infrared (mid-IR) sources for the sensors developed in the frame of M3NIR.

This report describes the requirements for PIC integration, the various integration strategies defined between ALPES and IMEC and pursued into M3NIR, as well as the properties of the QC chips provided to IMEC during the M1-M14 period of the project.