

POSTDOC POSITION ON MICRO-TRANSFER-PRINTING OF GAAs/Si LASERS

Ghent University – IMEC, Photonics Research Group
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Silicon photonics is a field that is maturing and attracting strong interest from industry and academia to realize miniaturized photonic systems for applications in datacommunication, telecommunication and sensing, as well as in other emerging fields. However, currently the lack of wafer-scale integrated laser source and optical amplifier hampers a take up of the technology in other markets. Several technologies are being developed in the Photonics Research Group to accommodate this such as flip-chip integration, die-to-wafer bonding and hetero-epitaxial growth. In recent years, in the Photonics Research Group, much emphasis is put on the use of a novel integration approach, micro-transfer-printing, to realize the integration of such III-V semiconductor laser sources. The approach combines the advantages of flip-chip integration (pre-processing and pre-testing of the devices) and die-to-wafer bonding (high throughput integration). Several successful proof-of-principle demonstrations have been made using this approach on a die level using in-house III-V semiconductor device fabrication, such that the time is right to further mature this approach and demonstrate the wafer-scale integration.

JOB DESCRIPTION:

You will be working in the Horizon Europe project PUNCH to further mature the micro-transfer-printing of III-V-on-silicon lasers and semiconductor optical amplifiers (SOAs). This includes the transfer of the III-V semiconductor device technology to an GaAs foundry, the demonstration of the micro-transfer-printing on a 200mm wafer-scale as well as the demonstration of state-of-the-art O-band quantum dot SOAs and widely tunable lasers on this platform, addressing applications in optical communication. You will be designing photonic integrated circuits in the imec silicon photonics platforms, as well as do transfer printing process development in the Ghent University cleanrooms. You are also responsible for the III-V/Si device characterization.

PROFILE

You have a PhD in integrated optics. You have a strong track record in the design, fabrication and characterization of III-V semiconductor devices and their heterogeneous integration on silicon photonic integrated circuits.

You possess strong verbal and written English communication skills allowing you to effectively communicate with industrial and academic partners, also those that are not experts in photonics and photonic integrated circuits.

OUR OFFER

In exchange for your talent, passion and expertise, you will get an interesting position in a multicultural and high-tech institute, with challenges for the taking. This is your opportunity to contribute to the technology that will determine the society of tomorrow.

We offer a position of 3 year in the Photonics Research Group, imec's associated lab at Ghent University.

APPLICATION:

Please submit your expression of interest with resume and motivation letter by no later July 1 2022 by applying online through the following link: <http://photonics.intec.ugent.be/contact/vacancies/Application.htm>

For more information, please contact gunther.roelkens@ugent.be
<http://www.photonics.intec.ugent.be/>

ABOUT THE PHOTONICS RESEARCH GROUP

The Photonics Research Group (about 85 people) is associated with IMEC, and is part of the Department of Information Technology of Ghent University. The group is headed by Prof. Dries Van Thourhout and has been active in photonics device research for many years. The other professors in the group are Roel Baets, Peter Bienstman, Wim Bogaerts, Stephane Clemmen, Bart Kuyken, Nicolas Le Thomas, Yanlu Li, Geert Morthier, Gunther Roelkens and Kasper Van Gasse. The main research directions are silicon nanophotonics, heterogeneous integration, optical communication, photonic (bio)sensors and photonic integrated circuits for biomedical applications in the near-infrared and mid-infrared wavelength range. More in particular, the silicon nanophotonics work focuses on the design and fabrication of SOI-based photonic devices using standard lithographic techniques compatible with CMOS-processing.

The Photonics Research Group has been coordinating the network of excellence ePIXnet and is involved in a number of EU-projects, including the H2020 projects ActPhast4R, AQUARIUS, CALADAN, FUN-Comp, Hydrooptics, InSiDe, INSPIRE, MedPhab Pilot Line, MIRPHAB Pilot Line, PIX4Life Pilot Line, MORPHIC, NEBULA, Neoteric, TopHit and PhotonHub. The group also host two EOS Research projects, INTERREG projects and several ITNs (MICROCOMB, OMT, WON, Phonsi). Furthermore, the group is partner of the Center for Nano- and Biophotonics of Ghent University and leads ePIXfab, the European Silicon Photonics Alliance.

The group has been awarded five ERC Independent Researcher Starting Grants, one ERC Consolidator Grant and two ERC Advanced Investigator Grants.