

Post-doc position on Non-destructive testing devices based on silicon photonics

Ghent University – IMEC, Photonics Research Group
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Job context:

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. In the past 5-10 years the Photonics Research Group has developed proof-of-concept photonic integrated circuits for a sensing modality called Laser Doppler Vibrometry (LDV). In this modality the chip sends a coherent beam to a moving target and captures the reflected beam which is Doppler shifted due to mechanical movement. The Doppler shift is measured on-chip by a homodyne or heterodyne interferometric approach. Typically the chip contains an array of LDV-circuits so that movement of an object can be traced simultaneously in multiple positions.

This approach has many applications. In the H2020-funded CARDIS project the technique has been successfully applied to the non-invasive measurement of arterial Pulse Wave Velocity, as a means to estimate the stiffness of arteries. This is a marker for cardiovascular diseases. In view of the highly promising results this research will be taken further in the H2020-funded project InSiDe, in collaboration with Medtronic and other partners.

The same technique can also be used for non-destructive testing of critical infrastructure, such as blades of wind mills. In the IOF-project ALOUD we intend to develop a proof-of-principle demonstration system for this purpose, whereby the LDV-system will be drone-mounted so as to access difficult-to-reach constructions. If successful we will explore opportunities for industrialization of this technology, possibly in the form of a spin-off company.

Job description:

You will join the research team working on LDV-applications based on silicon photonics. You will participate in the design and building of the photonic systems and the supporting electronics, in their testing, and in the subsequent algorithmic work to extract reliable data. Depending on your interest you will also contribute to the design of the silicon photonics chips. You will come up with innovative ways to boost the performance of these systems and help in creating relevant IP and/or high impact publications. You will be inventive in identifying new application cases for the technology. For these new applications you will be involved in the market validation with industrial players.

Profile:

You have a PhD in photonics or electronics. You have expertise in the design and testing of advanced photonic/electronic systems as well as in signal analysis. You can work independently, you have a problem-solving attitude as well as an entrepreneurial spirit.

You possess strong verbal and written English communication skills allowing you to effectively communicate with team members as well as with industrial and academic partners.

Our offer:

In exchange for your talent, passion and expertise, you will get an interesting position in a multicultural and high-tech institute, with ample scientific and technical challenges..

We offer a position of 2 years in the Photonics Research Group.

Application:

Please submit your expression of interest with resume and motivation letter by no later Nov 1 2019 by applying online through the following link:

photonics.intec.ugent.be/contact/vacancies/Application.htm

For more information, please contact roel.baets@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. R. Baets and has been active in photonics device research for many years. The other professors in the group are P. Bienstman, W. Bogaerts, S. Clemmen, B. Kuyken, N. Le Thomas, G. Morthier, G. Roelkens and D. Van Thourhout. 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 OMT, HOT, TOPHIT, TeraBoard, PIX4Life, MIRPHAB, AQUARIUS, Phresco, PIXAPP, CARDIS and InSide. Furthermore, the group is partner of the Center for Nano- and Biophotonics of Ghent University and the group has been awarded four ERC Independent Researcher Starting Grants, one ERC Consolidator Grant and one ERC Advanced Investigator Grant.