PhD Position on Photonic integrated circuits for UV sensing

Ghent University – IMEC, Photonics Research Group
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Since more than 15 years, the Photonic Research Group has developed an internationally recognized expertise in the field of silicon photonics for applications using visible to mid-infrared light. To enable new sensing applications, there is a need for developing an integrated photonic platform that is compatible with ultra-violet (UV) light and with large-scale fabrication. As such a platform does currently not exist, any achievement in this field will be a first.

One of the main objectives of this PhD project is initially to make passive waveguide circuits for UV light, comprising low-loss single mode waveguides, optical filter functions and optical interfaces to the chip. Different materials and waveguide geometries will be investigated. An optical set-up will be built to study these UV photonic integrated circuits. In a second phase of the project, UV fluorescence and Raman sensing of biological molecules and cells will be demonstrated on the developed waveguide platform.

Job description:

The PhD will encompass simulations, design, fabrication in the UGent cleanroom and characterization of the light propagation in the photonic structures, as well as demonstrate the capabilities of the platform for different sensing applications. The PhD student will be able to gain experience in areas such as chip design, clean room processing and optical measurements.

Profile:

We are looking for a candidate with a MSc degree in photonics engineering, electrical engineering or applied physics, that already has a good background in photonics, and has good simulation and experimental skills.

Application:

Apply online: http://photonics.intec.ugent.be/contact/vacancies/Application.htm

More information:

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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, 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 FP7 projects ActPhast, PLAT4M, Cando, and Pocket and the H2020 projects MORPIC, TOPHIT, TeraBoard, PIXapp, PIX4Life, MIRPHAB and Phresco. 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.