

## PHD POSITION ON “PHOTONIC INTEGRATED CIRCUITS FOR UV RAMAN SENSING OF BIOMOLECULES”

Ghent University – IMEC, Photonics Research Group  
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*We are looking for a PhD candidate to develop and study photonic integrated circuits operating at ultraviolet wavelength for on-chip Raman spectroscopy, in view of biomedical applications.*

### CONTEXT:

For ten years, the Photonic Research Group (PRG) has built a world-renowned expertise in silicon-nitride-based photonic integrated circuits (PICs) for biological Raman spectroscopy and sensing. To further push the detection limit of on-chip Raman sensors toward ultimate values that would be relevant for biomedical applications, PICs that are compatible with UV light are foreseen as a promising approach, in particular because this allows to take advantage of resonant enhancement of Raman scattering. It requires however a paradigm shift in terms of material platform and design strategies in line with large-volume fabrication. The primary objective of the PhD project is to develop a new photonic integrated platform for on-chip UV Raman spectroscopy, in a way that is compatible with the materials and processes found in a CMOS-foundry. Major breakthroughs are expected in this new field.

### JOB DESCRIPTION:

The position will encompass simulations, design, fabrication and optical characterization of UV photonic integrated circuits (PICs) as well as the implementation of on-chip UV Raman sensing in a suitably chosen biomedical application

### PROFILE:

We are looking for candidates with a MSc degree in photonics engineering, electrical engineering, engineering physics or MSc degree in physics, that already have a good background in photonics or in spectroscopy, and good simulation and experimental skills. The PhD students will be able to gain experience in areas such as chip design, clean room processing, optical imaging, and UV spectroscopy.

### APPLICATION:

Apply online at <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 part of the Department of Information Technology of Ghent University and is associated with IMEC. The group is chaired 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- or SiN-based photonic devices using standard lithographic techniques compatible with CMOS-processing. The group has an e-beam lithography system for rapid prototyping of photonic integrated circuits.

The Photonics Research Group has been participating in numerous EU-funded projects. Five of its PIs have been awarded ERC grants. Furthermore, the group is partner of the Center for Nano- and Biophotonics of Ghent University.

