



Job vacancy: Postdoc position on integrated and nonlinear/quantum optics

**Project:** Optical wavelength conversion for quantum communications

Quantum optical systems operate on a wide variety of wavelengths so that a transduction between those wavelengths is required to interface those system to each other. This is especially the case for color centers operating at near visible wavelength (600-750nm) and long range telecommunications optimized at 1550 nm. The main project consists in creating a wavelength converter based on the process of difference frequency generation in gallium phosphide nanophotonic structures. The project includes many aspects of physics engineering: theory, design and experimentation. The postdoc candidate may also participate to other projects revolving around wavelength conversion for quantum optics applications and even introduce his/her own research line over time. This project fits in the [Belgian Quantum Communication Infrastructure](#) funded by the EU Digiconnect.

#### **Skills/Qualifications**

At the starting time of the contract, the applicant must hold a master's degree in physics, physics engineering, photonics engineering or any closely related field. The candidate must be fluent in English and/or French.

Prior knowledge of integrated optics and nonlinear optics is required.

Experience with photonic crystal cavities and with quantum optics is a plus.

#### **Responsibilities**

- Perform research in an increasingly independent way
- Reporting on the research
- Communication to peers orally at conference and via specialized journal publications
- A limited amount of teaching hours is foreseen (between 4 and 8 full days / year)

#### **Benefits**

Benefits include mandatory health insurance, laptop, travel to conferences and doctoral schools. The contract is for an initial duration of 1 year with foreseen extensions.

#### **Eligibility criteria**

Applications are possible as early as January 2023 and will be assessed until the positions is filled (without any hard deadline). The contract can start as early as one month after agreement. To apply, submit your CV and a cover letter to Stéphane Clemmen by email ([sclemmen@ulb.ac.be](mailto:sclemmen@ulb.ac.be)).

#### **Institution**

The project will take place at the Université Libre de Bruxelles (Belgium) under the supervision of Stéphane Clemmen and in [collaboration](#) with the [photonics research group](#) at the university of Ghent. Stéphane Clemmen is affiliated with OPERA-photonics (engineering faculty) and the [Quantum information laboratory](#) (science faculty) that share a large lab dedicated to nonlinear and quantum optics. Both the science faculty and the engineering school offer regular scientific talks and events, as well as courses and social events dedicated to postdocs.