

Research Engineer in Single-Photon Source Fabrication (M/F)

General information

- **Location:** Palaiseau, France
- **Contract:** Fixed-term contract initially, with transition to a mission-based permanent contract
- **Salary:** From €2,932.84 gross per month (depending on experience)
- **Education level:** PhD
- **Experience:** 1–3 years (PhD included)

Your role

We are seeking a **Research Engineer** to contribute to the **fabrication and optimization of single-photon sources based on quantum dots integrated into optical microcavities**.

These devices, developed within the **GOSS-QD team** at C2N, rely on semiconductor quantum dots emitting at various wavelengths and embedded in AlAs/GaAs micropillar cavities. They are core building blocks for **quantum photonic technologies**, with applications ranging from single- and entangled-photon sources to spin–photon interfaces.

You will join an internationally recognized research team whose mission is to **enhance device performance** (brightness, photon indistinguishability) and to **integrate advanced functionalities**, such as:

- control of the quantum dot charge state,
- optical mode engineering,
- strain control.

Within the framework of the **QDlight joint laboratory (C2N–Quandela)**, you will actively contribute to the **scientific and technological roadmap** by:

- improving existing fabrication processes,
- proposing and developing new technological approaches,
- designing next-generation devices.

You will also perform **basic optical setups and measurements** to characterize how fabrication steps influence the optical properties of microcavities. Your results will directly guide design choices and research strategies, advancing the state of the art in quantum photonic devices.

Main activities

- Participate in the fabrication of quantum-dot-based micropillar devices
- Work closely with researchers to define technological objectives
- Identify and optimize fabrication steps that impact device performance
- Design and test new device architectures
- Perform optical and electrical characterization measurements
- Systematically document results and report conclusions to the team

Profile

Technical skills

- PhD (or equivalent) with approximately **3 years of research experience**
- Strong background in **micro- and nanofabrication techniques** (thin-film deposition, lithography, etching, etc.)
- Good understanding of **optical microcavities** and **semiconductor heterostructures**
- Experience in **optical and/or electrical characterization**
- **English:** minimum B2 level (CEFR)

Personal qualities

- Strong team spirit and ability to work in multidisciplinary environments
- Ability to work independently and with scientific rigor
- Good written and oral communication skills
- Strong analytical skills and proactive mindset
- Ability to clearly structure and synthesize results

Work environment

The **Centre for Nanoscience and Nanotechnology (C2N)** is a leading research institute located near Paris, within Université Paris-Saclay. It brings together approximately **400 staff members**, including over 100 permanent researchers, across 30 research teams.

C2N hosts a **2,900 m²** **state-of-the-art cleanroom**, the largest and most recent in France, enabling world-class research in nanofabrication, photonics, optoelectronics, materials science, and quantum technologies.

You will join the **GOSS-QD (Group for Optoelectronics and Spintronics on Semiconductor)** team, internationally recognized for pioneering work in quantum photonics, including:

- record-brightness and near-perfect indistinguishable single-photon sources,
- high-rate spin–photon entanglement,
- photonic quantum computing prototypes,
- advanced spin–photon interfaces.

The **QDlight joint laboratory**, created through a strategic partnership between C2N and **Quandela**, provides a unique environment at the interface between **fundamental research and industrial innovation**, accelerating the transfer of scientific breakthroughs into real-world quantum technologies.

Send your CV and cover letter to pascale.senellart-mardon@universite-paris-saclay.fr