Postdoctoral researcher

Profile: Researcher in nanoptics/nanomaterials
Status category: Contract position (2 years)
Grade /Job-type: Postdoc (approximately €3500 gross monthly salary)
Institution: Université de Technologie de Troyes (UTT) – 12, rue Marie Curie – 10000 Troyes – FRANCE
Department: L2n laboratory
Start date: from February 1st, 2026

Institution Overview

Research, education, and technology transfer are the three core missions of UTT. Founded in 1994, UTT is now one of the ten largest engineering schools in France. Each year, it trains around 3000 students, from post–high school to PhD level, supported by 168 faculty members, 220 administrative and technical staff, and 90 research contract staff.

UTT also coordinates the "European University of Technology" (Eut+) project, selected during the second call for proposals launched by the European Commission.

Context and Work Environment

The L2n (Light, nanomaterials, nanotechnologies) is a research unit at the University of Technology of Troyes, in partnership with the CNRS. Recognized as a Joint Research Unit (UMR 7076) since 2024, it brings together over a hundred researchers, faculty, engineers, and PhD students around a common goal: understanding and exploiting light–matter interactions at the nanoscale. Its research spans nano-optics, integrated photonics, nanofabrication, and advanced material characterization. L2n develops innovative technologies for various fields including energy, health, the environment, telecommunications, and security.

The laboratory hosts a state-of-the-art technological platform, Nano'Mat, and leads major national and European collaborative projects in close partnership with industry. It is also a key contributor to education and research within the Nano-PHOT graduate school, dedicated to photonics and nanotechnologies.

Position Responsibilities

The work will take place within the BERNARDO project, funded by the PEPR LUMA program (https://www.pepr-luma.fr/). The project focuses on chiroptical interactions, which play an essential role in fields such as biomolecular recognition, optically active materials, and polarized light emission. At the nanoscale, however, these interactions remain poorly understood, especially regarding the relationship between near-field and far-field phenomena. It is often (and incorrectly) assumed that a strong chiroptical response in the far field necessarily implies strong chiral behavior in the near field. This simplification overlooks complex phenomena such as hidden chirality, where strong near-field effects are not observable in the far field.

To address these limitations, better characterization of chiral observables is necessary. Metrics such as optical chirality density, optical spin density, and the various elements of the Mueller matrix make it possible to quantify and control light-matter interactions at different spatial scales. The BERNARDO project aims to meet this challenge by designing nanostructures optimized to maximize these observables and by establishing fundamental connections between near-field and far-field chiral phenomena.

More specifically, the recruited researcher will develop experimental approaches to position quantum emitters within chiral hot spots in order to control their emission.

Main activities

- Design and fabrication of chiral nanostructures.

- Numerical modelling (typically, FDTD).
- Optical characterization (microscopy, near-field imaging, fluorescence lifetime measurements, etc.).
- Writing scientific articles.
- Participation in project meetings.

Essential skills

- Strong theoretical knowledge in nano-optics
- Significant experience in experimental optics/nano-optics
- Experience in nanofabrication is an asset
- Excellent scientific writing skills in English (for publications and reports)
- Ability to work independently

Specific working conditions

- Work in a cleanroom
- Position subject to prior approval by the Defense Security Officer (FSD)

How to apply

The application file must include:
- A motivation letter
- A curriculum vitae with a list of publications
- A summary of previous research work
- A copy of the PhD degree

Applications must be submitted electronically before January 11th, 2026, to the following address:
davy.gerard@utt.fr

UTT is committed to equal opportunity and encourages applications from all qualified individuals, regardless of origin, gender, disability, or sexual orientation.
