

Recruiting a 36 months Fixed Term R&D Engineer for the development of nanofabrication processes



CONTEXT

Context. . As part of the strategy France 2030 and the “Programme et Equipements Prioritaires de Recherche (PEPR)”, the French Spintronics community has recently obtained funding for the strategic and exploratory project “PEPR-SPIN”, to address spintronic innovations for a more frugal, agile and sustainable digital technology. Within the framework of this PEPR-SPIN project on MRAM, Skyrmion and Radiofrequency technologies, Spintec is opening an **R&D engineering position** for a duration of up to **36 months** with the aim to develop nanofabrication processes for spintronic devices. The work will be carried out within the “Nanofabrication” team and in close collaboration with researchers, PhD students and postdoctoral fellows of the different research teams of SPINTEC involved in PEPR Spin.

Context at SPINTEC. The candidate will carry out and coordinate in full autonomy the nanofabrication and the electrical characterization of spintronic devices in relation with the research projects of PEPR SPIN. He/she will be in charge of developing new and/or adapting existing processes that are necessary for reaching the goals of the different PEPR-SPIN research projects. This includes the nanofabrication of state-of-the-art magnetic tunnel junctions implemented in a Spin Transfer Torque (STT) (two terminal) or Spin Orbit Torque (SOT) (three terminal) configuration. The nanofabrication will be carried out using the upstream technology platform (PTA) as well as other cleanroom facilities. For the evaluation of the devices, the candidate will conduct electrical and magnetic characterization.

POSITION

The mission of the candidate will be to realize complex devices within the framework of nanofabrication processes in place in the laboratory and involving all the clean room techniques including electronic, laser, Deep Ultraviolet (DUV) & Ultra-violet (UV) lithography, resist chemistry, material deposition by evaporation, sputtering, Atomic Layer Deposition (ALD), Ion Beam Etching (IBE), Reactive Ion Etching (RIE) and Chemical Mechanical Polishing (CMP).

The candidate will carry out standard inspection and characterizations throughout the processes using optical and electron microscopy, profilometry and ellipsometry techniques.

He/She will develop new processes involving the micro/nanofabrication techniques mentioned above.

All optimizations will take into account physical measurements performed (structure, topography, electrical transport, magnetism).

The candidate will have experience in a cleanroom environment as well as in research and development.

The desired skills are the following:

- Theoretical knowledge and know-how in the following nanofabrication technics:
 - Electron, UV, and laser lithography.
 - IBE, RIE etching.
 - Evaporation deposition of materials.
 - Resist chemistry.



- Theoretical knowledge and know-how in characterization with scanning electron microscope.
- Basic knowledge of structural properties and characterization of materials.
- Basic knowledge on electrical measurement.
- Know-how in systematic optimization procedures, experimental protocols.
- Ability to work in interaction with research teams and PTA platform team.
- Ability to document and follow-up process developments
- English language: Level B1-B2 (European framework of reference for languages).

We are offering an **up-to 36 months engineering position in the Spintec « Nanofabrication » team.**

How to apply:

- Contact: DISDIER Florian (florian.disdier@cea.fr) and EBELS Ursula (ursula.ebels@cea.fr)
- Starting date: October – December 2023
- Employer: CEA

SPINTEC

Positioned at the crossroad of science and technology, **SPINTEC (SPINtronique et TEchnologie des Composants, <https://www.spintec.fr>)** is one of the leading spintronics research laboratories worldwide. SPINTEC was created in 2002 and rapidly expanded to currently exceed 100 persons, of which 48 permanent staff from CEA, CNRS and Grenoble-Alpes University. The lab aims at bridging the gap between fundamental research and applications in spin electronics. As such, the outcome of the laboratory is not only scientific publications and communications at international conferences, but also a consistent patent portfolio and implementation of relevant functional demonstrators and device nanofabrication. The lab has launched four start-up companies in the past 12 years, and another two are in the pipes. This synergy has placed SPINTEC at the forefront of spintronics research, having actively contributed to the emergence in industry of spintronic memories called MRAM, on which the laboratory holds key patents.

SPINTEC benefits from an idea local environment with a large spectrum of opportunities:

- SPINTEC belongs with the Interdisciplinary Research Institute of Grenoble ([IRIG](#)), gathering 10 laboratories with of total of 1000 researchers, technicians, doctoral and post-doctoral students. IRIG covers interdisciplinary skills (physics, chemistry, biology), and provides access to cutting-edge scientific and technological platforms such as PTA cleanroom, and nano-characterization PFNC.
- The [Giant Campus](#) Site (also called Scientific Presqu'île) offers an exceptional scientific environment with partners such as CEA-LETI, Néel Institute and major European facilities (ESRF and ILL on the EPN Campus).
- The entire Campus of [Grenoble Alpes University](#), whose excellence was recently recognized by the national IDEX award, bears a collective dynamics of research challenges in all fields of knowledge.

Grenoble is a cosmopolitan city at the heart of the French Alps. One out of five people living there works in the field of research, innovation or higher education. In addition, Grenoble offers various cultural and sportive opportunities all year round.