

Internship offers

Enabling novel spintronic applications by enhancing magnetic materials with ions

Keywords

Spintronics, nanotechnologies, magnetic materials, ion irradiation

Context

In an era of explosive data growth driven by AI and IoT applications, it is imperative to reduce the energy consumption of power-hungry semiconductor chips. One of the most promising ultra-low-power emerging technologies is spintronics based on magnetic nanodevices, which have seen substantial development in the past few years, with the first large-scale commercialization by major foundries. Spin-Ion Technologies has developed a revolutionary manufacturing process based on ion beam irradiation to enhance the performances of spintronic chips for applications to MRAM memories, sensors, neuromorphic computing, IA chips, and logic devices. Spin-Ion Technologies aims to establish a new industry standard by integrating its process in the production lines of chips manufacturers within five years.

Description of the offer

The intern will have for objective the optimization of the process on advanced magnetic ultra-thin films. She/He will contribute to the implementation of the ion irradiation process using a prototype implanter developed by the start-up company, as well as to the magnetic (AGFM, MOKE, FMR) characterization of the processed materials. She/He will perform Monte-Carlo simulations to determine the effect of ion irradiation on structural properties. She/He will also perform micromagnetic simulations to better understand the results. The internship within the start-up company will be carried out in close collaboration with, on the one hand, the researchers and Ph.D. of the start-up, and on the other hand, the researchers of the Center for Nanoscience and Nanotechnology (C2N), where Spin-Ion is hosted. The intern will also participate in business meetings of the start-up to acquire knowledge in entrepreneurship.

The company

Spin-Ion Technologies is a CNRS spin-off created in 2017 and hosted at C2N in Palaiseau. It received the i-Lab 2019 grand prize from the government, which rewards the most innovative deep-tech start-ups and benefits from long-term partnerships with several major industrial players.

Required profile

Minimum level: M2 (or equivalent) with a major in Nanophysics/Condensed Matter Physics. Strong interest in nanotechnology. Knowledge in nanomagnetism & Spintronics, and/or programming would be appreciated.

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