Optimization of Ion-Based Processes for Spintronic Materials and Devices

Spin-Ion Technologies (www.spin-ion.com) is a CNRS spin-off founded in 2017 and hosted at the Center for Nanoscience and Nanotechnology (C2N) in Palaiseau. Spin-Ion Technologies has developed an innovative and patented fabrication process that significantly enhances the performance of spintronic devices. This technology is particularly relevant for MRAM memories, magnetic sensors, and neuromorphic components dedicated to artificial intelligence. Spin-Ion Technologies aims to establish a new industrial standard by equipping the production lines of semiconductor manufacturers.

As part of Spin-Ion Technologies' transition toward industrial maturity (scale-up phase), the intern will actively contribute to the optimization of our innovative process applied to magnetic materials provided by our industrial partners.

The intern will be involved in the experimental implementation of the process—based on light-ion irradiation—as well as in the structural and magnetic characterization of the treated materials. This experimental work is carried out in an environment closely aligned with industrial constraints, with direct interactions with our partners.

The internship will take place at the heart of a deeptech startup, offering full immersion in an environment combining cutting-edge research, semiconductor technologies, and industrial applications. The intern will also participate in team meetings, gaining practical understanding of innovation challenges, technology transfer, and entrepreneurship.

This internship represents a unique opportunity to directly contribute to the development of a breakthrough technology with potential impact on future generations of spintronic devices.

Candidate Profile
We are looking for a Master's level student (M1 or M2) in physics and/or materials science, ideally with knowledge in nanomagnetism and spintronics. Curious and motivated, you have a strong interest in semiconductor technologies, technological innovation, and entrepreneurship. You are also interested in the industrial and international dimension of the project and enjoy working at the interface between R&D and industrial applications.

Please send your CV and a cover letter to: dafine.ravelosona@spin-ion.com and noel.montblanc@spin-ion.com

Electrical Characterization of Advanced Spintronic Chips for Memory Applications

Spin-Ion Technologies (www.spin-ion.com) is a CNRS spin-off founded in 2017 and hosted at the Center for Nanoscience and Nanotechnology (C2N) in Palaiseau. Spin-Ion Technologies has developed an innovative and patented fabrication process that significantly enhances the performance of spintronic devices. This technology is particularly relevant for MRAM memories, magnetic sensors, and neuromorphic components dedicated to artificial intelligence. Spin-Ion Technologies aims to establish a new industrial standard by equipping the production lines of semiconductor manufacturers.

As part of Spin-Ion Technologies' transition toward industrial maturity (scale-up phase), the intern will actively contribute to the characterization of advanced electronic chips (critical dimensions < 50 nm) processed with our innovative technology, in collaboration with our industrial partners.

The intern will be involved in the experimental implementation of the process—based on light-ion irradiation—as well as in the electrical characterization of spintronic chips after treatment. The work will focus on state-of-the-art devices, representative of technologies currently under development in the semiconductor industry.
This internship takes place in an environment closely connected to industrial constraints, with regular interactions with our partners, providing direct exposure to the technological and industrial challenges of next-generation spintronic chips.

The internship will take place at the heart of a deeptech startup, offering full immersion in an environment combining cutting-edge research, semiconductor technologies, and industrial applications. The intern will also participate in team meetings, gaining concrete insights into innovation challenges, technology transfer, and entrepreneurship.

This internship represents a unique opportunity to contribute directly to the development of a breakthrough technology with potential impact on future generations of spintronic devices.

Candidate Profile
We are looking for a Master's level student (M1 or M2) in physics and/or materials science, ideally with knowledge in nanomagnetism and spintronics. Curious and motivated, you have a strong interest in semiconductor technologies, technological innovation, and entrepreneurship. You are also interested in the industrial and international dimension of the project and enjoy working at the interface between R&D and industrial applications.

Please send your CV and a cover letter to: dafine.ravelosona@spin-ion.com and noel.montblanc@spin-ion.com

Development of Innovative Algorithms for a Neuromorphic Spintronic Chip

Spin-Ion Technologies (www.spin-ion.com) is a CNRS spin-off founded in 2017 and hosted at the Centre for Nanoscience and Nanotechnology (C2N) in Palaiseau. Spin-Ion Technologies has developed an innovative and patented fabrication process that significantly enhances the performance of spintronic devices. This technology is particularly relevant for MRAM memories, magnetic sensors, and neuromorphic components dedicated to artificial intelligence. Spin-Ion Technologies aims to establish a new industrial standard by equipping production lines of semiconductor manufacturers.

Current artificial intelligence systems are extremely energy-intensive. To address this challenge, neuromorphic computing draws inspiration from the human brain by using new hardware components, such as MRAM memories, that enable computation directly within memory (In-Memory Computing). This approach drastically reduces energy consumption compared to current solutions (GPUs, TPUs…).
Following a first proof of concept of a neuromorphic chip developed in partnership with a major industrial player, this internship will focus on the development, optimization, and validation of algorithms designed to leverage the behavior of spintronic neuromorphic devices. The main objective will be to develop innovative neural network algorithms that integrate the physical constraints of the neuromorphic chip. This approach will enable ultra-low-power use cases, ranging from medical applications to robotics.

The internship will take place at the heart of a deeptech startup, offering full immersion in an environment that combines cutting-edge research, semiconductor technologies, and industrial applications. The intern will also participate in team meetings, gaining concrete insights into innovation challenges, technology transfer, and entrepreneurship.

Candidate Profile
We are seeking a Master's level student (M1 or M2) in artificial intelligence, computer science, applied mathematics, or computational physics. Required technical skills include strong proficiency in Python and, ideally, hands-on experience with a Deep Learning framework (preferably PyTorch, or TensorFlow/Keras). A good understanding of neural network architectures is expected.
Curious and motivated, you have a strong interest in semiconductor technologies, AI, technological innovation, and entrepreneurship. You are also interested in the industrial and international dimension of the project and enjoy working at the interface between R&D and industrial applications.

Please send your CV and a cover letter to: dafine.ravelosona@spin-ion.com and zakariya.chaouai@spin-ion.com