



Materials and Process Engineer, Caen (14) (and partially Grenoble, 38)

Mission :

In the frame of the “Sintermagrec” project, funded by the French National Research Agency, your mission will be to develop new fabrication processes of NdFeB magnets from recycled NdFeB magnets collected in urban mines. In the proposed process, sintered magnets collected in WEEE (Waste of Electrical and Electronic Equipments) are, first, pulverised into REFeB powders. In a second step, the development of non-conventional sintering techniques using the powder opens up an interesting valorization perspective. Two technologies are possible in order to develop the microstructure and the magnetic properties in a new magnet REFeB: microwaves heating and SPS (Spark Plasma Sintering). Thus, within the framework of the proposed study, attention will be given to:

- The powders preparation by mechanical milling and solid state reactions (the so-called hydrogen decrepitation process)
- Develop and implement the rapid sintering of the powders by microwave and SPS processes.
- Study the influence of the induced microstructure on magnetic properties
- study the development of anisotropy of magnetic properties by controlling materials texturing
- characterize the functional properties of the produced magnets in real devices (electric machines).

As part of the CRISMAT laboratory, you will manage the technical project in collaboration with two technicians and several researchers: you will design the experience, implement and develop the corresponding devices and instrumentation, assemble the parts, conduct the tests, exploit the results, report on the results (both written and oral reports) and manage the collaboration with CNRS Grenoble (exchange of samples, short stays to conduct experiment there, periodic reporting, etc...). This work will be done in collaboration with Institute Néel (The National Center for Scientific Research or CNRS-Grenoble) and Valéo Company.

Profile and Eligibility criteria:

Applicants must hold an Engineer diploma and/or PhD degree

- General engineering curriculum with a speciality in Materials Science.
- Interest for experimental development of devices as well as instrumentation- Experience in material processing
- Knowledge in physicochemical processes and/or metallurgy (relationship between microstructure and properties) is welcome.
- English communication skills: both oral and written
- Autonomy, initiative and ability to work in collaboration with several teams and to adapt to a collaborative project, which includes partners from academic research and industry.

Location: CRISMAT-CNRS Caen including periodical stays at CNRS Grenoble

Type of contract: temporary (minimum of 18 months contract with the Gross salary: according to the CNRS Engineer salary grid).

Starting date: 1st November 2018

Application deadline: 31th August 2018

Applicants will have to send an application letter to jacques.nouDEM@ensicaen.fr and sophie.rivoirard@neel.cnrs.fr and attach:

- Their last diploma
- Their CV
- Letters of recommendation are welcome.