

**PhD Student / Doctorant
in Mineral Physics / Materials Science
from winter 2024**

The fixed-term position is available for 3 years, and paid according to French standards for PhD fellowships, including all associated social benefits.

This PhD project will investigate the *effect of pressure, temperature, iron content, and strain rate on the plastic deformation of ferro-periclase (Mg,Fe)O*. It involves high P/T deformation experiments at low strain rates in high pressure devices such as the D-DIA and laser-driven shock compression experiments. The project will involve measurement campaigns at synchrotrons such as the ESRF or NSLSII and X-ray free-electron laser such as the EuXFEL, in addition to laboratory work on the Lille High Pressure lab and Electron Microscopy platform.

The working language in the laboratory can be either French or English. English is required for collaborations with other partners. The position is based at the Université de Lille, in Northern France. Lille can be reached by train in 1 hour from Paris, 40 minutes from Brussels, and 1h20 from London.

This position is part of an ANR collaborative project, [MIN-DIXI : Mineralogical Diversity in Exoplanets Interiors](#), between Grenoble-Alpes University, the Ecole Polytechnique, the Commissariat à l'énergie atomique et aux énergies alternatives (CEA), and the Université de Lille. The MIN-DIXI project relies on a state-of-the-art combination of experiments and ab initio simulations to characterize material properties at deep exoplanetary conditions and generate consistent datasets which can be used in planetary models.

Prerequisites:

We seek a highly motivated individual with keen interest in experimental work and data processing. The candidates should have a strong background in mineralogy/mineral physics and/or materials science and/or physics with an interest in understanding Earth and planetary processes. Experience in high pressure, diffraction, and/or synchrotron techniques is desirable but not required. Availability to travel is required. Applicants should hold a Master's degree or equivalent in Earth Sciences, Physics, Materials Science, Chemistry or a related field at the time of the appointment.

Applications:

Candidates should submit, in a single pdf file, a short statement of research experience and interests, a CV including a list of scientific productions, and the names and contact information of two or three potential referees by December 1st 2023 to Prof. Dr. Sébastien Merkel (sebastien.merkel@univ-lille.fr). Review of applications will start immediately and will continue until the position is filled.

Do not hesitate to contact Prof. Dr. Sébastien Merkel for additional information.

Links and supplementary information:

Hosting research group at Université de Lille: <http://umet.univ-lille.fr/MTP>

PhD advisor, Sébastien Merkel: <http://merkel.texture.rocks/>

MIN-DIXI project: <https://min-dixi.osug.fr/>

Large scale facilities that candidate may use during the project: large volume press such as at [ESRF](#) or [NSLS-II](#), laser-driven compression such as on the [EuXFEL](#)

Local facilities at Univ. Lille: [high-pressure lab](#), [electron microscopy platform](#)